Jobs and Degree Requirements 2030

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Overview

- This report considers the supply and demand of graduates from KBOR institutions.
- Evaluate the demand for occupations with degree requirements in the state.
- Compare rates of in- and out-migration in Kansas
- Compare salaries for workers with degrees in Kansas and surrounding states.
- Conclusions:
  - Kansas needs to produce 34,000 additional degrees than projected to meet demand in the next decade.
  - Kansas has relatively low net migration.
  - Kansas salaries are lower than surrounding states.

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Projecting Labor Market Demand & Degree Supply

Kansas needs 34,000 more degrees to meet demand.

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Projecting Labor Market Demand

- 10-year projections of expected labor demand is based on Bureau of Labor Statistics and *Lightcast* data.
- Degree requirement is based on entry level of education for jobs from Bureau of Labor Statistics and is based on Census American Community Survey.
- Retention of graduates in Kansas with post-secondary certificates and degrees is based on data provided by KBOR.

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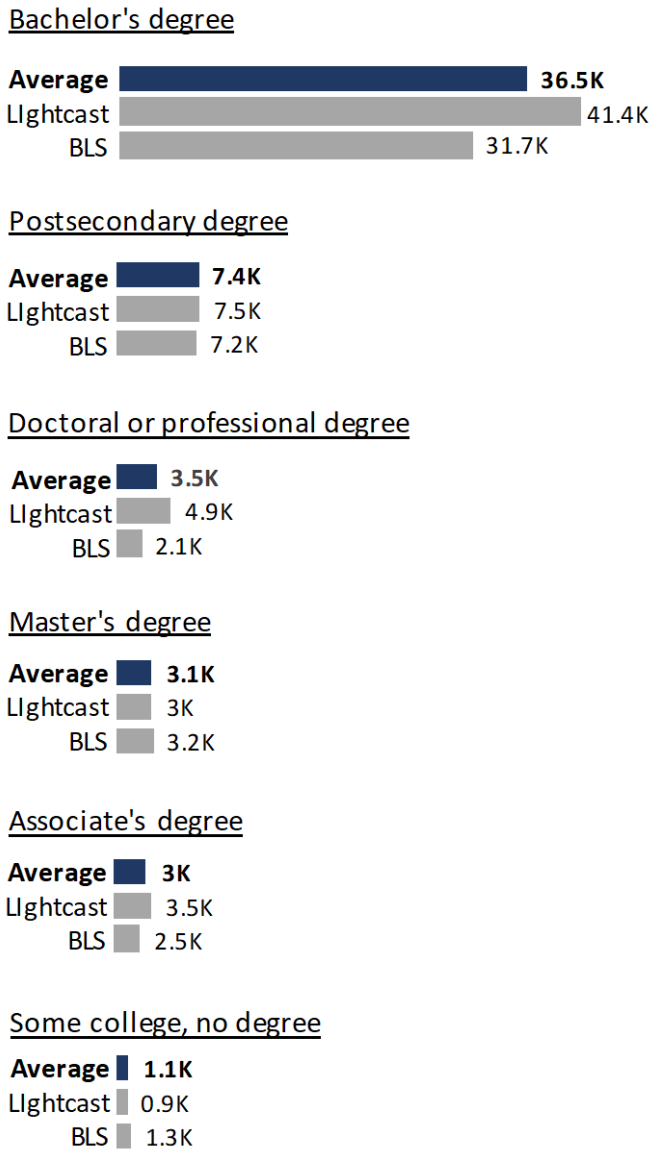
Ten Year Change in Jobs Requiring a Degree 2020-2030 by Required Degree



From 2020 to 2030 Kansas will add 54K jobs that require a degree:

- 36.5K will require a Bachelor's degree
- 7.4K will require a Postsecondary non-degree award
- 3.5K will require a Doctoral/professional degree
- 3.1K will require a Master's
- 3K will require an Associate's
- 1.1K will require Some college, no degree

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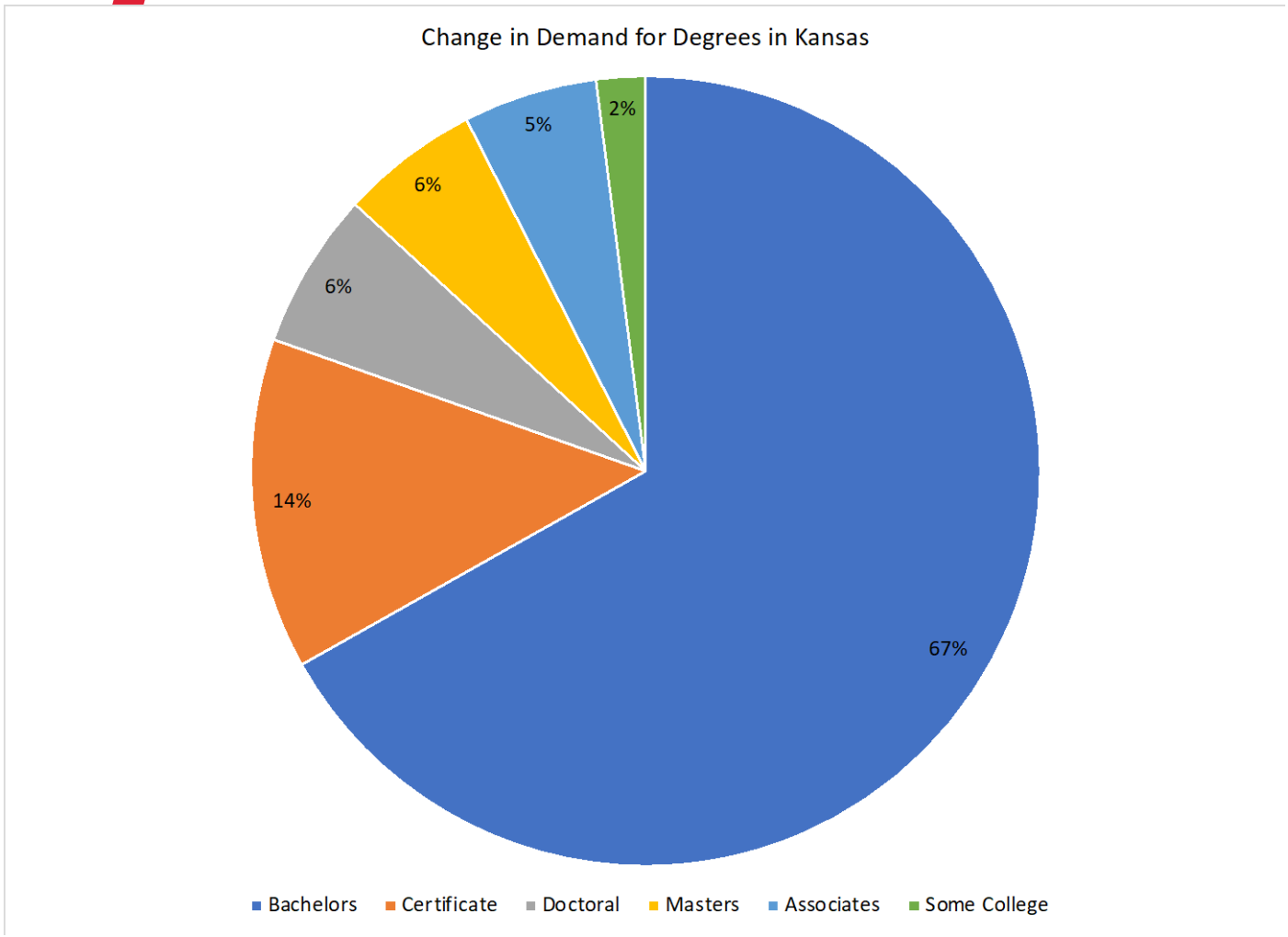
Ten Year Change in Jobs Requiring a Degree 2020-2030 by Required Degree



From 2020 to 2030 Kansas will add 54K jobs that require degrees:

- 67% will require a Bachelor's degree
- 14% will require a Postsecondary non-degree award
- 6% will require a Doctoral/professional degree
- 6% will require a Master's
- 5% will require an Associate's
- 2% will require Some college, no degree

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Kansas Projections (BLS)

	Jobs in 2020	BLS estimates: change in 10 years		Jobs in 2030
Bachelor's degree	313,454	+31,677 jobs	10.1% increase	345,131
Postsecondary non-degree award	101,127	+7,241 jobs	7.2% increase	108,368
Some college, no degree	45,977	+1,275 jobs	2.8% increase	47,252
Doctoral or professional degree	32,518	+2,123 jobs	6.5% increase	34,641
Associate's degree	26,226	+2,484 jobs	9.5% increase	28,710
Master's degree	23,867	+3,212 jobs	13.5% increase	27,079

BLS Projections indicate a 10% increase in Bachelor's degrees and a 7% increase in certificates. Demand for Masters degrees will increase almost 14%.

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Kansas Projections (*Lightcast*)

	Lightcast estimates:			
	Jobs in 2020	change in 10 years		Jobs in 2030
Bachelor's degree	281,444	+41,421 jobs	14.7% increase	322,864
Postsecondary non-degree award	94,353	+7,544 jobs	8% increase	101,897
Some college, no degree	42,989	+877 jobs	2% increase	43,867
Doctoral or professional degree	31,852	+4,855 jobs	15.2% increase	36,708
Associate's degree	25,594	+3,477 jobs	13.6% increase	29,072
Master's degree	22,120	+3,008 jobs	13.6% increase	25,128

Lightcast projections are more recent than BLS projections and use a different employment series as the basis of their projections.

Lightcast estimates a 15% increase in Bachelor's degrees and a 14% increase in Master's degrees.

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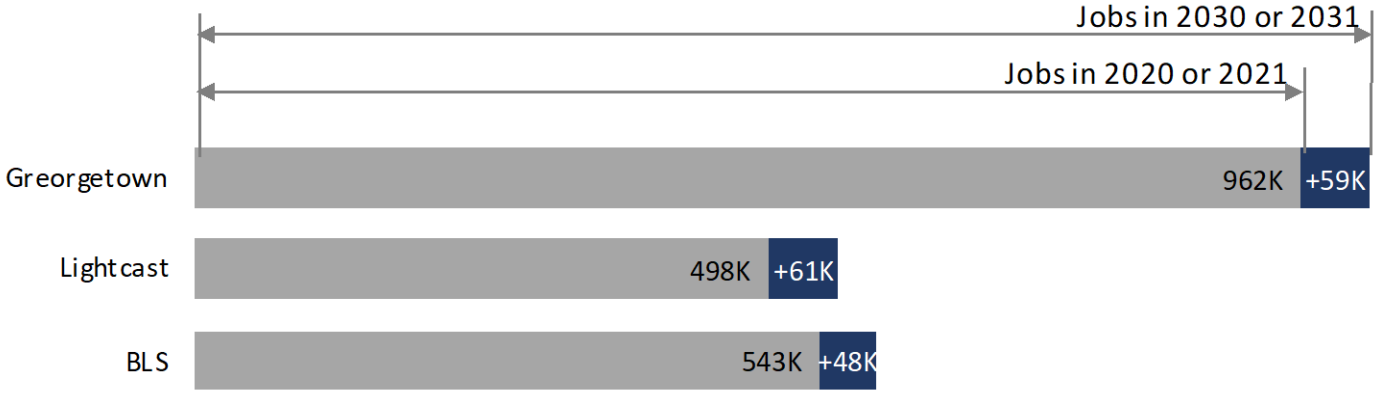
Georgetown Projections



- Georgetown Center for Education and the Workforce also provides employment projections.
- However, their estimates are much higher than BLS or *Lightcast* and out of sample comparisons are not consistent with other forecasts.

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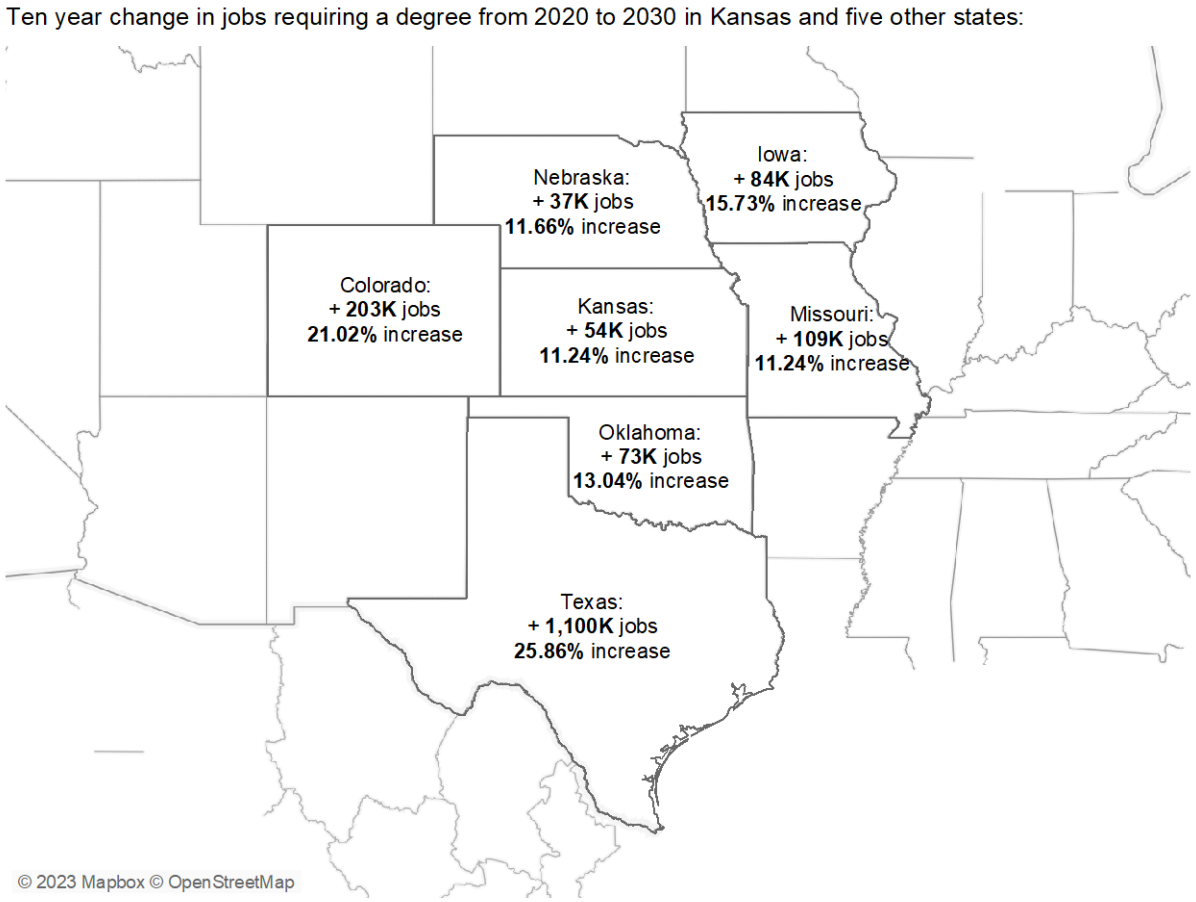
Projected New Regional Jobs Requiring a Degree

Ten Year Change in Jobs Requiring a Degree 2020-2030 in Kansas and Surrounding States



From 2020 to 2030 Kansas will add second smallest number of jobs requiring a degree:

- Surrounding states will add 1.6 million.
- By far biggest gain in Texas, followed by Colorado and Missouri.

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Exits out of the Kansas labor force over 10 years

Degree	Exits
Bachelor's degree	89,463
Postsecondary non-degree award	44,632
Some college, no degree	20,899
Associate's degree	8,772
Doctoral or professional degree	8,427
Master's degree	7,680
Total	179,873

- Labor force exits are the projected number of workers exiting the labor force entirely.
- BLS projects that Kansas will have 180 thousand exits from the labor force in 2020-2030.
- It includes workers who exit the labor force to pursue additional education with the intention of returning to the labor force.

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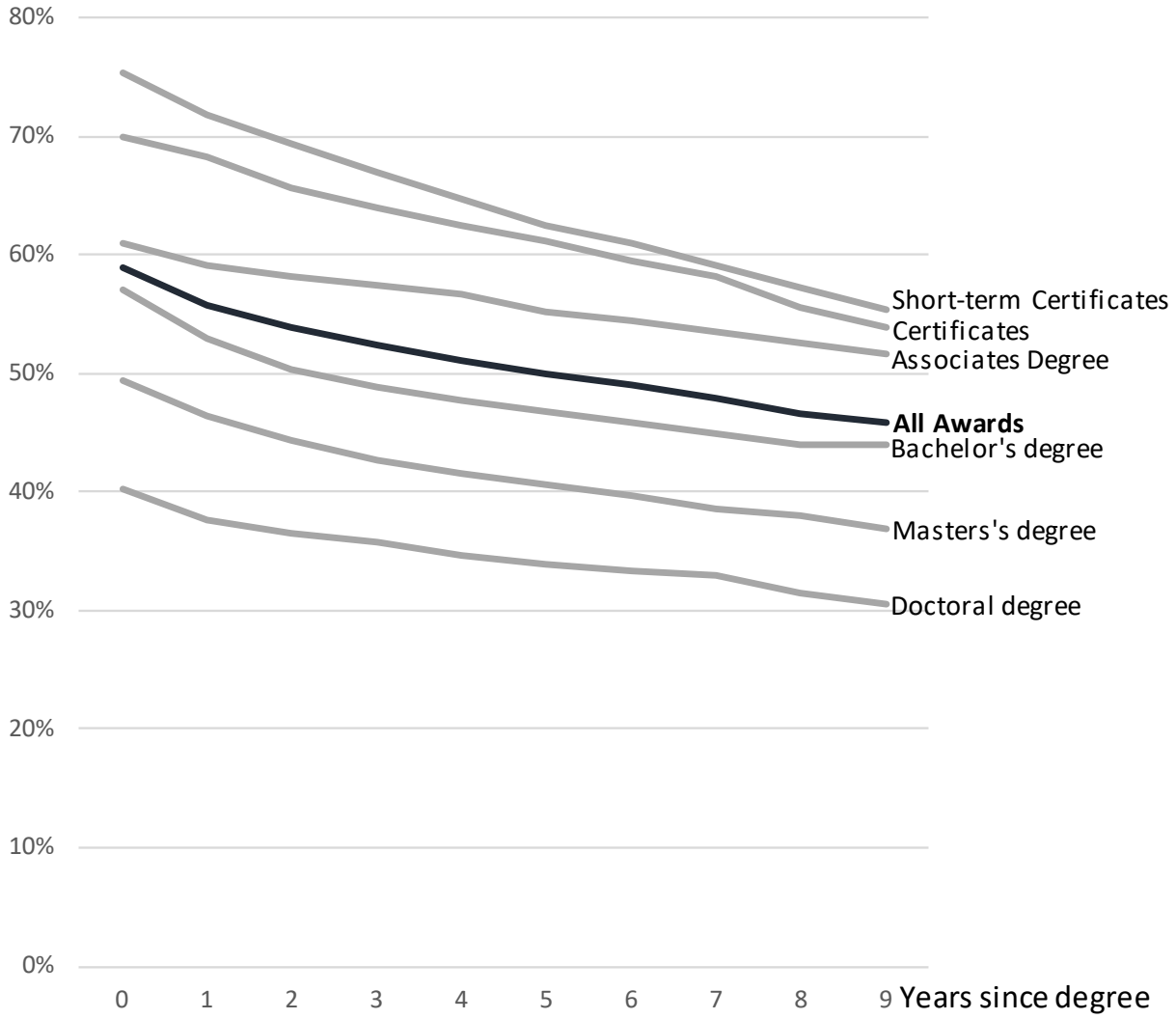
Retention of graduates from state universities in Kansas



- Kansas retains more people with Associate degrees and Certificates than other degrees.
- For BA, MA and PhD - the higher the degree, the lower the retention rate (initial and over time).
- Kansas retains fewer than half of Bachelors' degree recipients nine years after degree.

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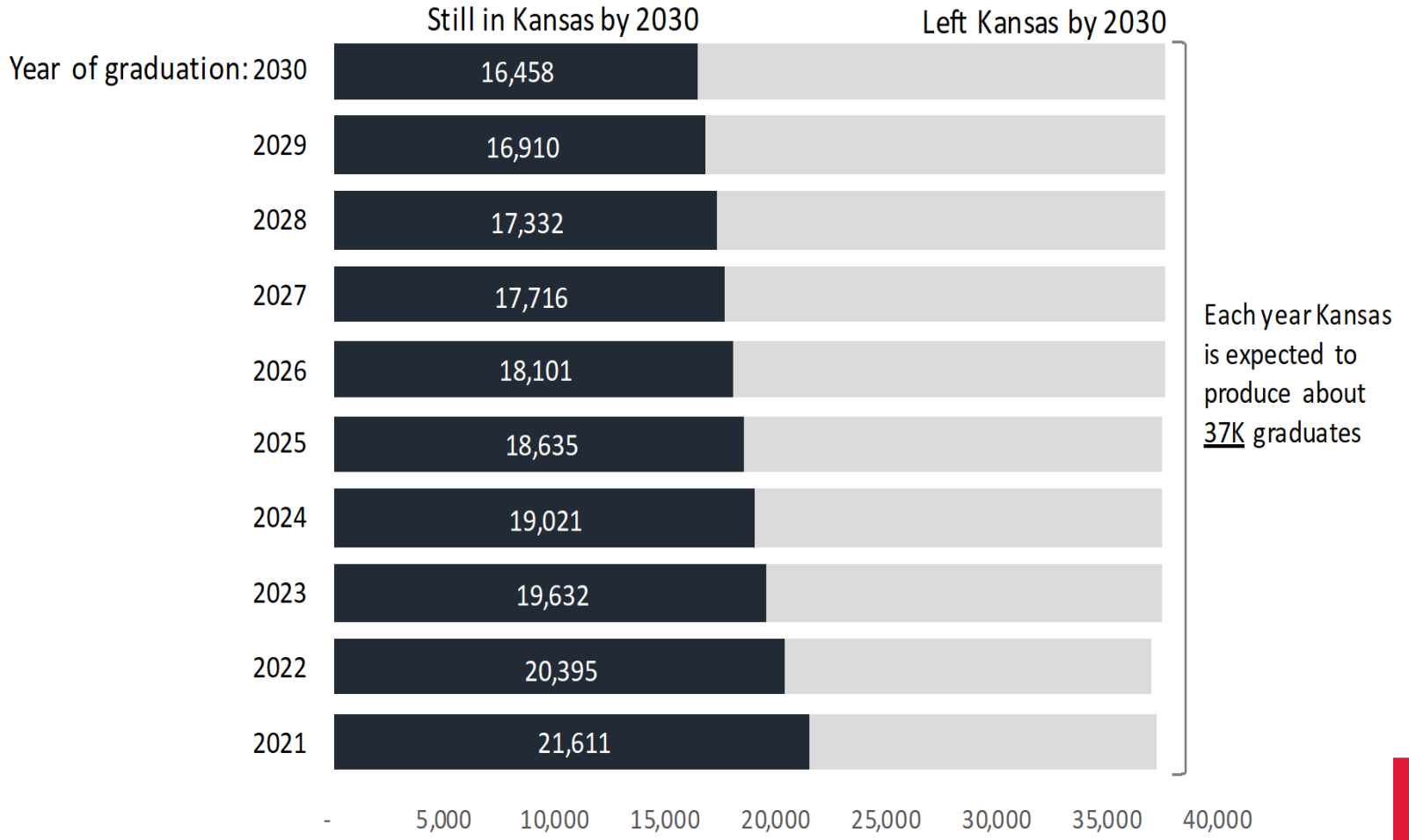
Number of new graduates over 10years



About 200,000 new graduates with post-secondary degrees will stay to work in Kansas over 10 years.

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Conclusions on Labor market demand

- Between 2020 and 2030 Kansas will add 54K jobs that require postsecondary degree.
- Another 180K jobs that require postsecondary degree will exit the labor force due to retirement or moving out of Kansas.
  - A total of 234K jobs will need to be filled with new graduates over 10 years.
- Kansas will have 200K new post-secondary Kansas graduates over 10 years.
  - This is 34K less than needed to satisfy the expected increase in jobs.

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Retention and Migration of KBOR Graduates

Kansas exports workers to Colorado and Texas

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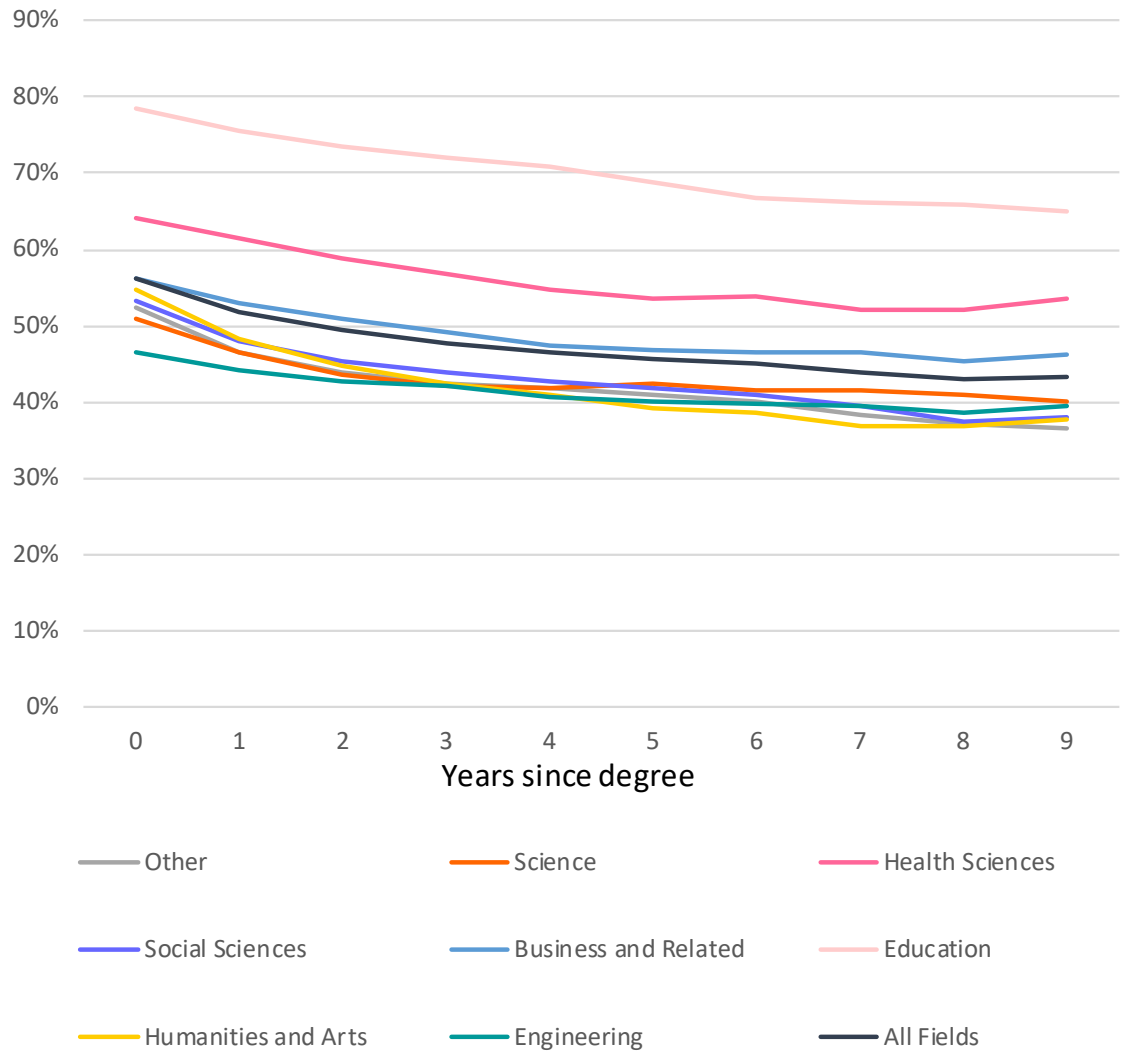
Retention of graduates from state universities in Kansas



- All degrees and fields lose about 10% of people, who initially stayed in Kansas, by the 9th year since getting their degree.
- People with degrees in Education are the most likely to stay in Kansas after receiving the degree.

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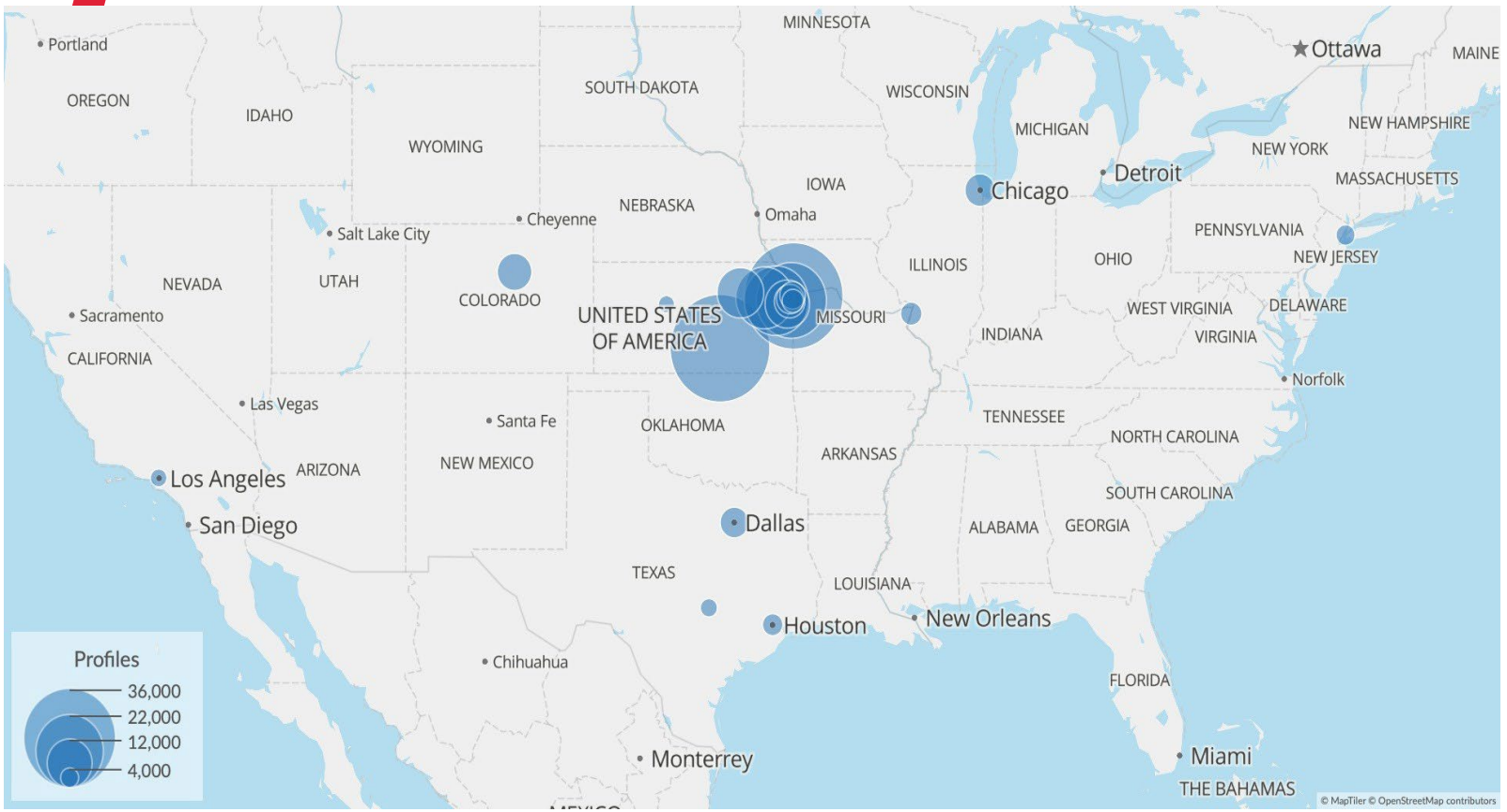
Retention of graduates from state universities in Kansas



- Kansas exports students to Texas, Missouri, Colorado and Illinois.
- In general, there are higher wages in both Colorado and Texas.

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Domestic migration in Kansas

Table 1. Kansas Domestic Migration by Age and Education for Adults Ages 20 to 55

Annual Average 2017-2021

Age	Education	Population	In-Migrants from US States	Domestic In-Migration Annual Rate	Out-Migrants to US States	Domestic Out-Migration Annual Rate	Net Domestic In-Migration (In - Out)	Net in-Migration Annual Rate
20 to 25	BA and Above	49,125	6,391	13.01%	7,123	14.50%	-732	-1.49%
26 to 35	BA and Above	139,616	10,410	7.46%	10,449	7.48%	-39	-0.03%
36 to 55	BA and Above	259,444	7,462	2.88%	6,370	2.46%	1,092	0.42%
Subtotal	BA and Above	448,185	24,263	5.41%	23,942	5.34%	321	0.07%
20 to 25	Some College, No BA	116,374	7,090	6.09%	7,052	6.06%	38	0.03%
26 to 35	Some College, No BA	124,910	7,357	5.89%	5,378	4.31%	1,979	1.58%
36 to 55	Some College, No BA	218,815	5,445	2.49%	5,827	2.66%	-382	-0.17%
Subtotal	Some College, No BA	460,099	19,892	4.32%	18,257	3.97%	1,635	0.36%
20 to 25	High School or Less	88,579	5,248	5.92%	4,271	4.82%	977	1.10%
26 to 35	High School or Less	111,061	5,322	4.79%	5,234	4.71%	88	0.08%
36 to 55	High School or Less	224,155	4,585	2.05%	5,208	2.32%	-623	-0.28%
Subtotal	High School or Less	423,795	15,155	3.58%	14,713	3.47%	442	0.10%
All ages	All education	1,332,079	59,310	4.45%	56,912	4.27%	2,398	0.18%

- In- and out-migration for Kansas falls as age rises.
- Out-migration increases as education rises.
- Out-migration rates are highest for adults ages 20-35 with a bachelor's degree or higher.
- Net domestic migration is very small in Kansas during the time span analyzed.
- Kansas loses highly educated young people to other states, but also pulls in highly educated people from other states.
- This suggests opportunities for Kansas to "recruit" its own young people with bachelor's degrees and with some college.

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Domestic migration for Kansas and comparison states

Table 2. Domestic Migration for Kansas and Comparison States for People with Bachelor's Degree or Higher, Ages 20-35

Annual Average 2017-2021

State	Population, BA+, 20-35		Out-Migration	In-Migration	Net In-Migration
Kansas	188,741	Number	17,572	16,801	-771
		Rate	9.31%	8.90%	-0.41%
Texas	1,804,300	Number	77,988	105,028	27,040
		Rate	4.32%	5.82%	1.50%
Colorado	512,969	Number	39,092	56,470	17,378
		Rate	7.62%	11.01%	3.39%
California	2,923,474	Number	122,490	131,475	8,985
		Rate	4.19%	4.50%	0.31%
Missouri	377,399	Number	31,467	26,738	-4,729
		Rate	8.34%	7.08%	-1.25%
Oklahoma	187,949	Number	15,263	11,839	-3,424
		Rate	8.12%	6.30%	-1.82%
Nebraska	136,897	Number	10,380	8,804	-1,576
		Rate	7.58%	6.43%	-1.15%
Iowa	192,848	Number	16,551	11,062	-5,489
		Rate	8.58%	5.74%	-2.85%
Minnesota	439,766	Number	23,584	24,749	1,165
		Rate	5.36%	5.63%	0.26%
Wisconsin	370,240	Number	25,846	20,068	-5,778
		Rate	6.98%	5.42%	-1.56%
Arkansas	138,450	Number	9,270	7,207	-2,063
		Rate	6.70%	5.21%	-1.49%

Comparison states: large states to which Kansas “exports” young adults with degrees; nearby states; a few additional states in Midwest.

- Overall, Kansas out- and in-migration are nearly the same for this demographic group.
- Of the states analyzed, Kansas exports the largest share of its young, highly educated adults. But Kansas also imports workers in the targeted age group. This is in part due to young people moving across the Kansas-Missouri border in the KC Metro.
- Texas, Colorado have high net in-migration rates for young, highly-educated adults.

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Top destinations for out-migration from Kansas

Table 3. Top Destinations for Kansas Out-Migrants, BA or Above, Ages 20-35

Annual Average 2017-2021

State	Domestic Out-Migration from Kansas	Domestic In-Migration to Kansas	Net Domestic In-Migration (in minus out)
Missouri-KC Area	3,603	4,116	513
Texas	2,169	1,046	-1,123
Missouri-Non KC Area	1,318	1,291	-27
California	1,104	869	-235
Colorado	1,002	376	-626
Oklahoma	997	510	-487
Nebraska	590	759	169
New York	581	437	-144
Maryland	568	150	-418
Illinois	520	388	-132
Florida	504	339	-165
Indiana	500	382	-118
All States	17,572	16,801	-771

- By far the largest number Kansas out-migrants move to the Missouri side of the Kansas City Metro Area.
- Texas attracts over 2,000 young Kansans with Bachelor's degrees each year.
- The remainder of Missouri, California, Colorado, and Oklahoma also attract large numbers of this demographic group.
- Overall, there is a small net outflow of highly educated Kansans in the 20-35 age group.

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Top states in-migration to Kansas

Table 4. Top States of Origin for Kansas In-Migrants, BA or Above, Ages 20-35

Annual Average 2017-2021

State	Domestic In-Migration to Kansas	Domestic Out-Migration from Kansas	Net Domestic In-Migration (in minus out)
Missouri-KC Area	4,116	3,603	513
Missouri-Non KC Area	1,291	1,318	-27
Texas	1,046	2,169	-1,123
California	869	1,104	-235
Nebraska	759	590	169
Iowa	733	215	518
Minnesota	522	139	383
Oklahoma	510	997	-487
All States	16,801	17,572	-771
International In-Migration	2,296		

- Kansas also attracts young educated workers from other states.
- About 25% of these in-migrants come from the Missouri KC Area.
- The remainder of Missouri, Texas, California, Nebraska, and Iowa are other significant sources of in-migration.

Salaries for KBOR Graduates in Kansas and Surrounding States

Kansas pays relatively low wages

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Salaries comparison for Kansas and nearby states

- We use data on 2022 salaries by occupation with Bachelor's degree as minimum required, from Occupation Employment and Wage Statistics, BLS.
- Salaries are adjusted for Kansas prices.
- Occupations are aggregated in a broader categories similar to CIP codes, and salaries are weighted by the number of people.

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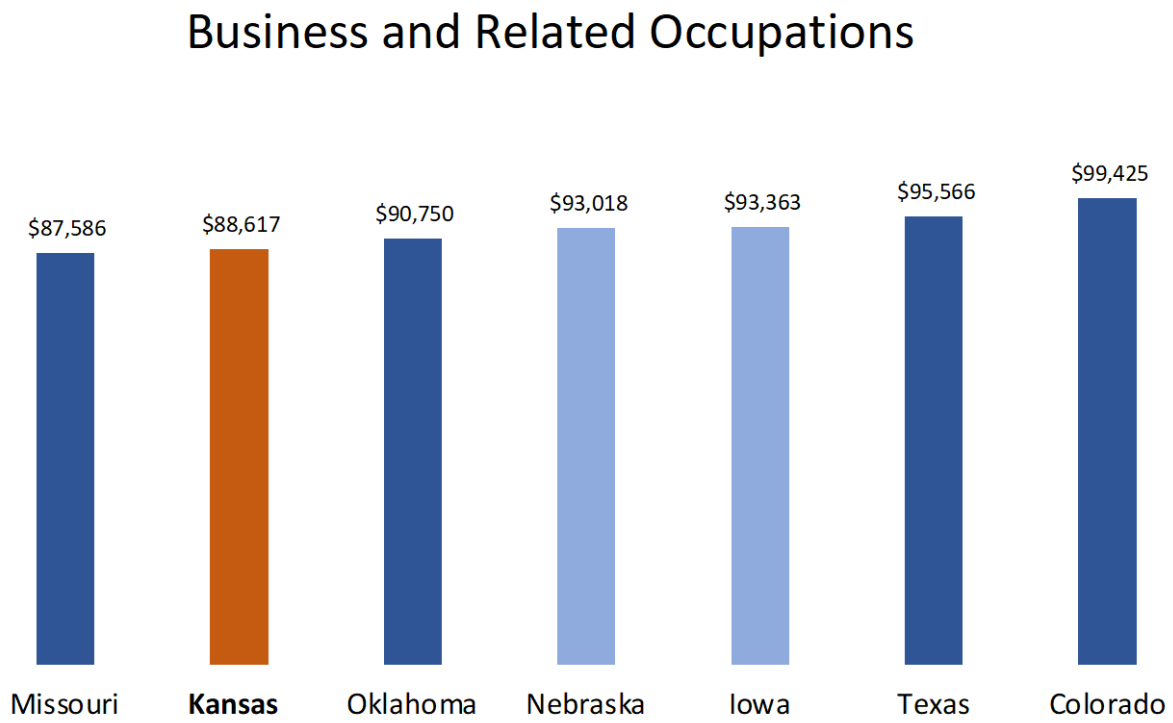
Adjustment of salaries to the Kansas Price Level

- Link to BLS methodology: Methodology for Regional Price Parities (RPP)
- Regional Price Parities: Average price indexes for each state so that the index is 100 for the US each year.
- If a state has an RPP of 110, it means that its prices are 10% higher than the US average.
- Disclaimer: we are using 2022 wages from BLS, but the 2022 RPP is not available, so we used 2021 RPPs to adjust wages to Kansas prices.
- As long as regional price differences do not vary significantly from year to year, it is safe to use the 2021 RPP for this analysis.
- In 2022 the average (weighted) salary of engineers was $113,295 in Texas.
- The average price level in 2021 was 98.502 in Texas and 91.157 in Kansas. So, on average, both states are less expensive than the US, but Texas is still more expensive than Kansas.
- We adjust Texas salaries as follows:

$$TX_{adj} = 113{,}295 * \left(\frac{91.157}{98.502}\right) = 104{,}847$$

- In other words, earning $113,295 in Texas was equivalent to earning $104,847 in Kansas in 2022.

2022 Business Salaries in Kansas and nearby states



- Compared to nearby states, Kansas has second lowest salaries in Business occupations.
- Salaries are lower than Oklahoma, Texas and Colorado, but higher than Missouri.
- Business workers earn over $10,000 less in Kansas than Colorado.

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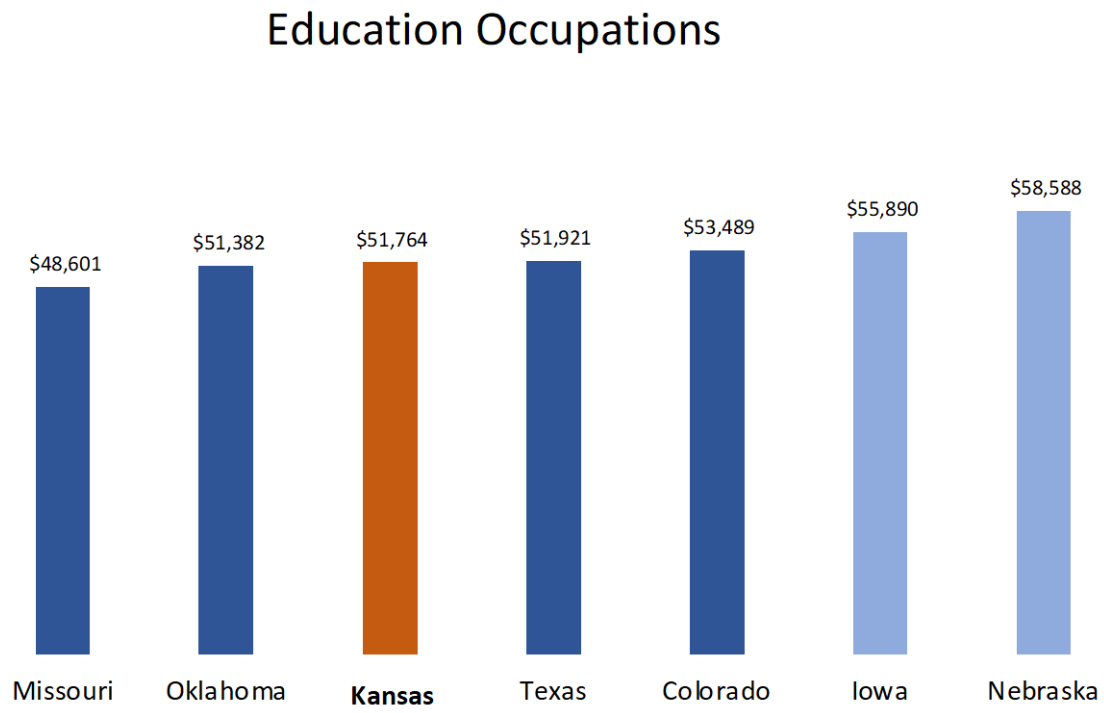
2022 Education Salaries in Kansas and nearby states



Out of nearby states, Kansas salaries in Education occupations fall somewhere in the middle.

Kansas is lower than Texas and Colorado, but higher than Missouri and Oklahoma.

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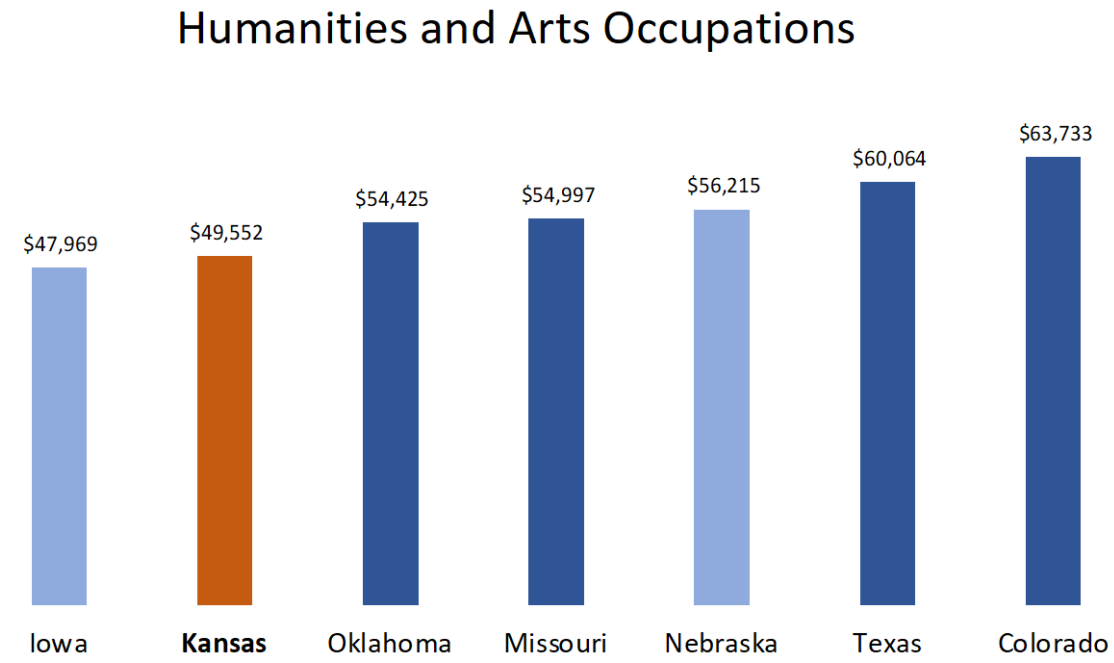
2022 Humanities/Arts Salaries in Kansas and nearby states



Out of nearby states, Kansas has second lowest salaries in Humanities and Arts occupations.

Kansas is lower than Texas, Colorado, Missouri and Oklahoma.

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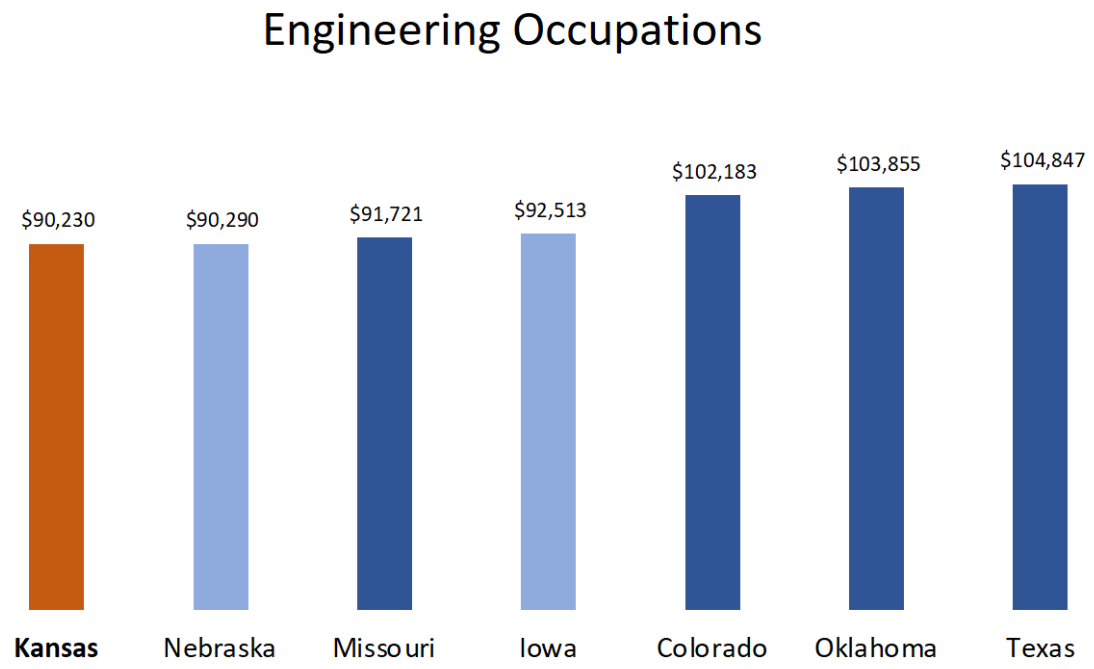
2022 Engineering Salaries in Kansas and nearby states



Out of nearby states, Kansas has the lowest salaries in Engineering occupations.

An engineer in Kansas earns $15,000 less than an engineer in Texas.

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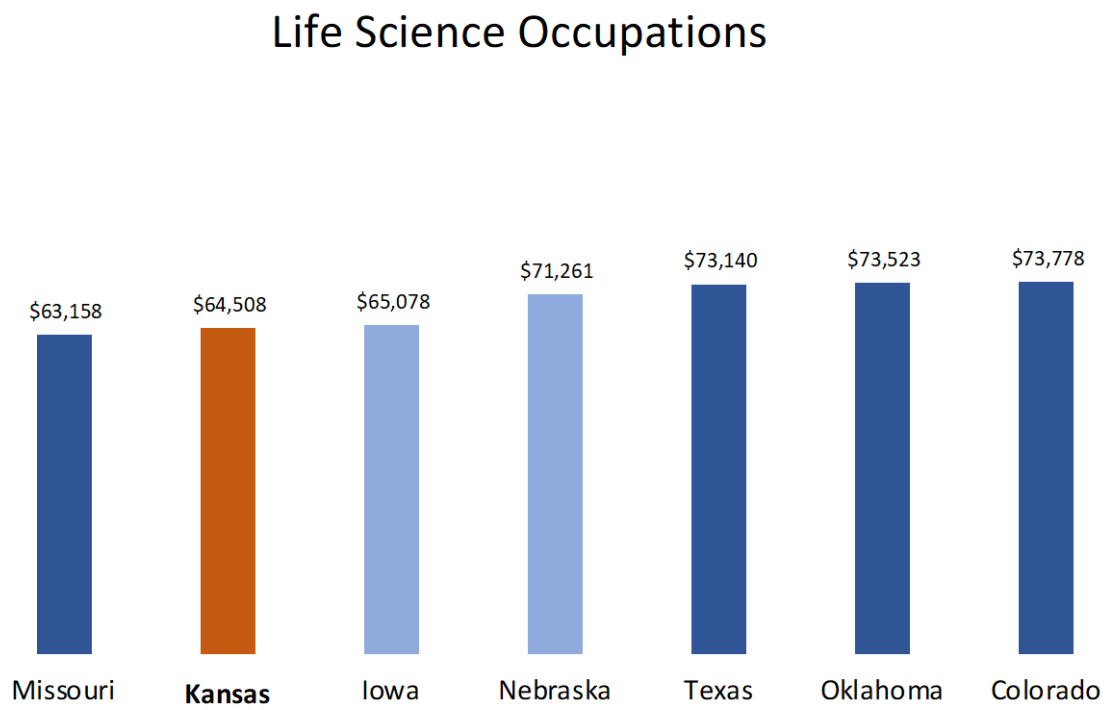
2022 Life Science Salaries in Kansas and nearby states



Out of nearby states, Kansas has second lowest salaries in Life Science occupations.

Kansas is lower than Texas, Colorado and Oklahoma, but higher than Missouri.

A life scientist in Kansas earns $10,000 less than a life scientist in Texas.

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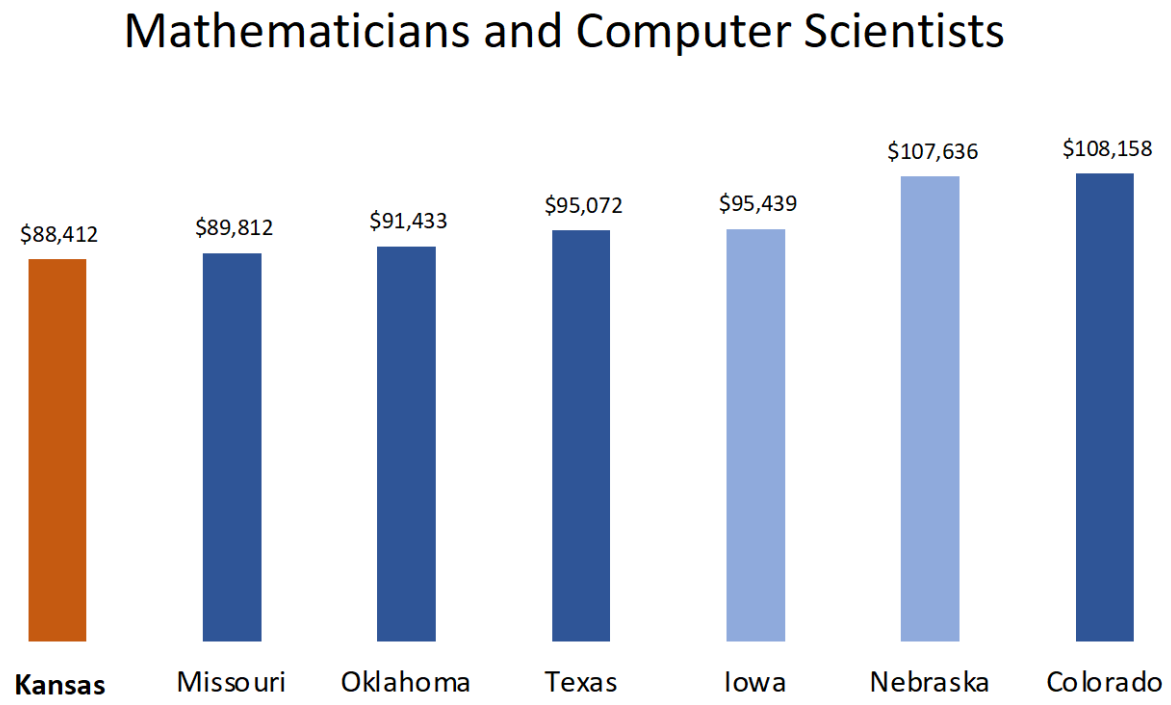
2022 Math/Computer Science Salaries in Kansas and nearby states



Out of nearby states, Kansas the lowest salaries in Mathematics and Computer Science occupations.

The gap is $20,000 per year between Kansas and Colorado.

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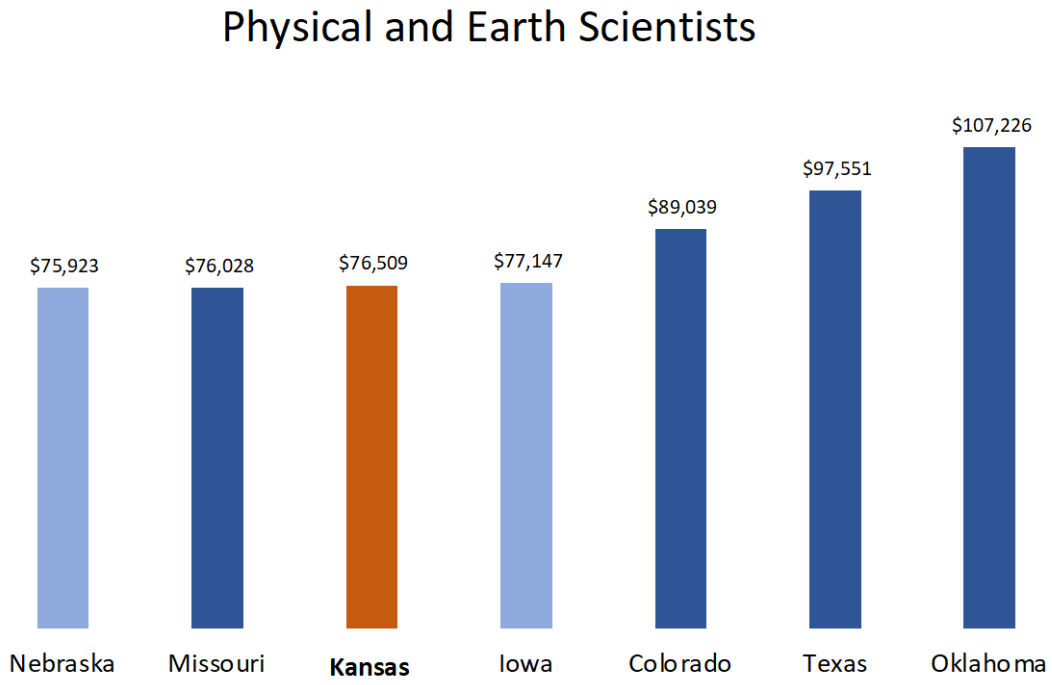
2022 Physical Science Salaries in Kansas and nearby states



Out of nearby states, Kansas has third lowest salaries in Physical and Earth Science occupations.

Kansas salaries are $15,000 lower than in Colorado.

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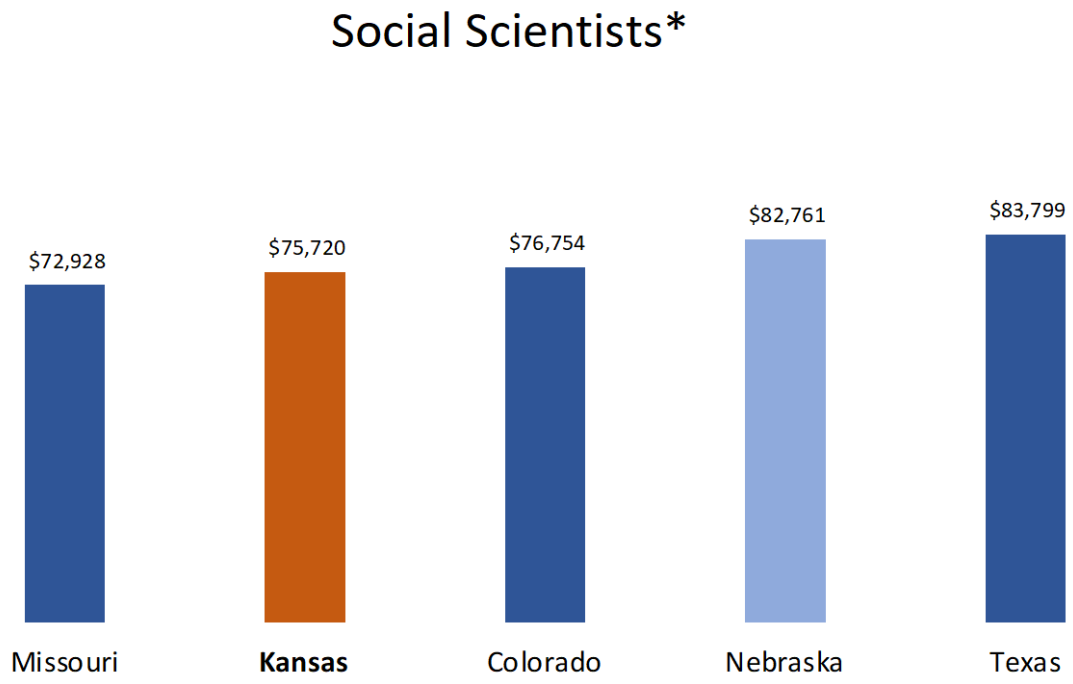
2022 Social Science Salaries in Kansas and nearby states



*No Oklahoma data

Out of nearby states, Kansas has second lowest salaries in Social Science occupations.

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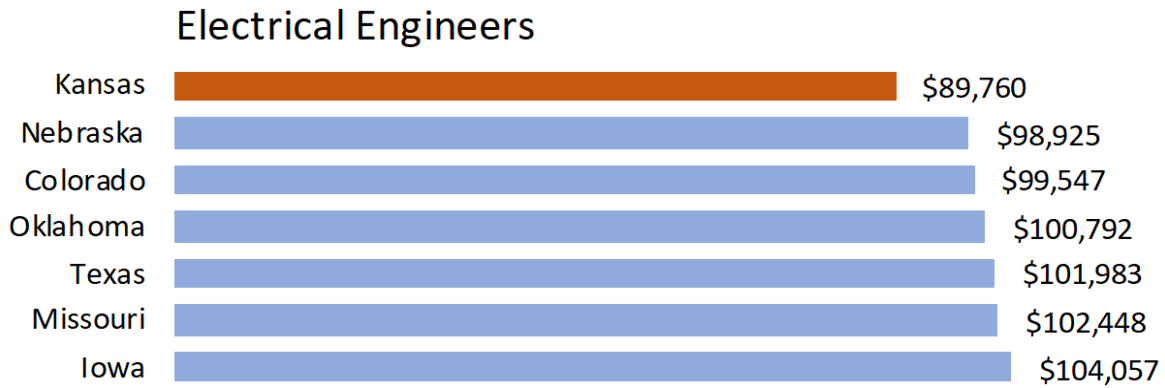
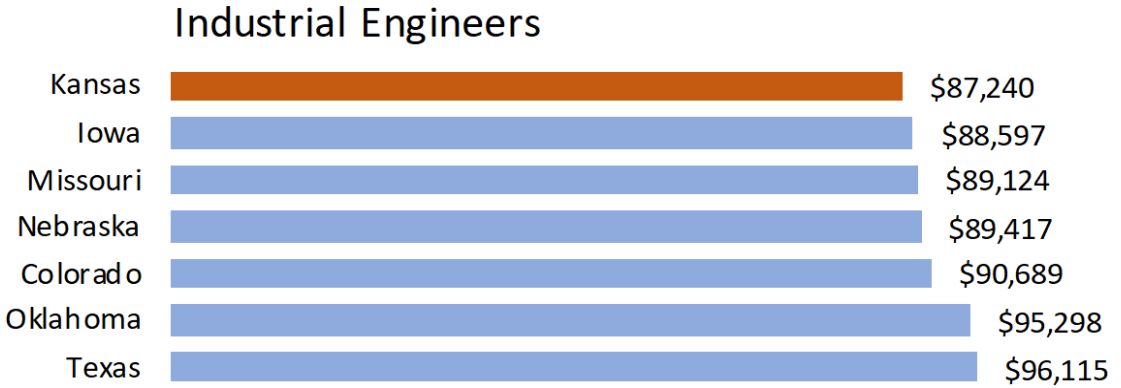
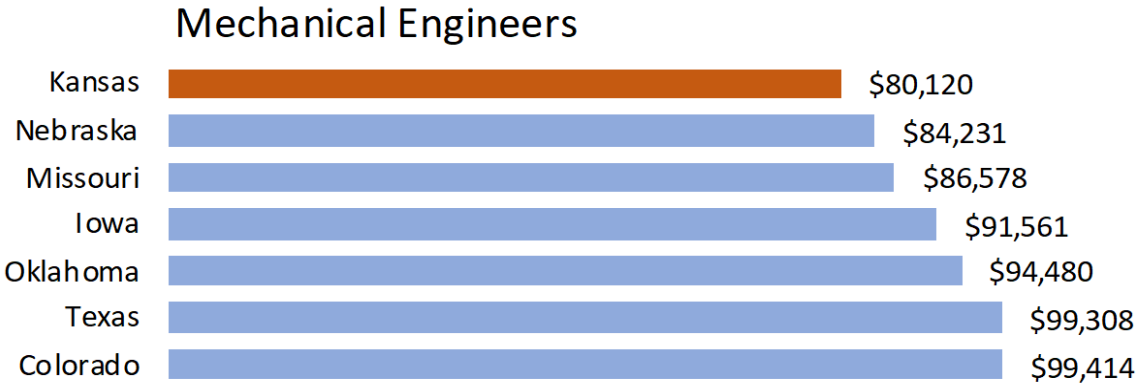
2022 Salaries in Kansas and nearby states for Engineers







After adjusting for differences in price level, engineers make between $15K to $20K less per year.

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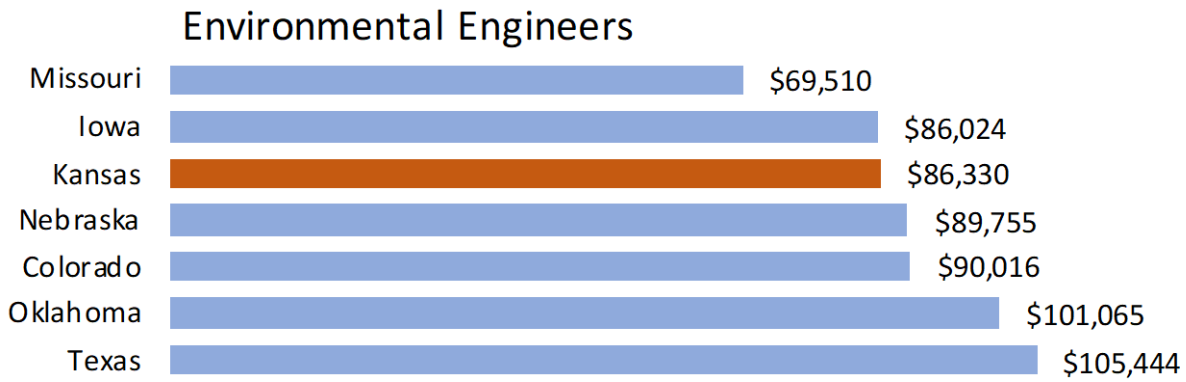
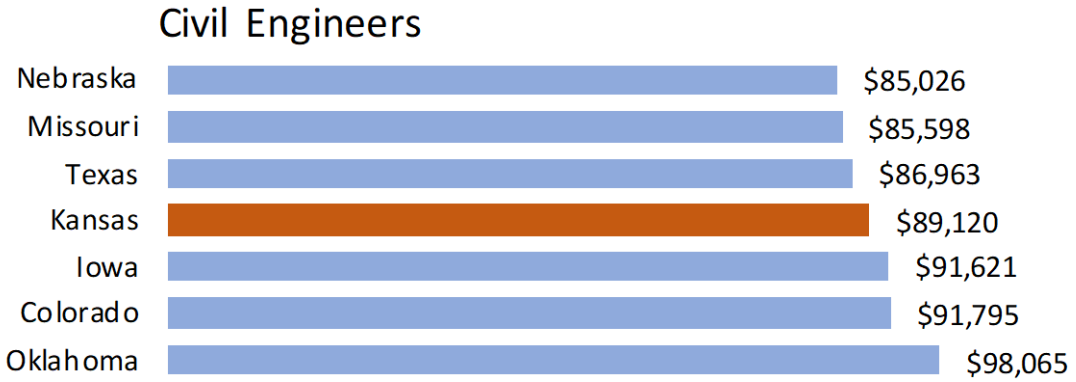
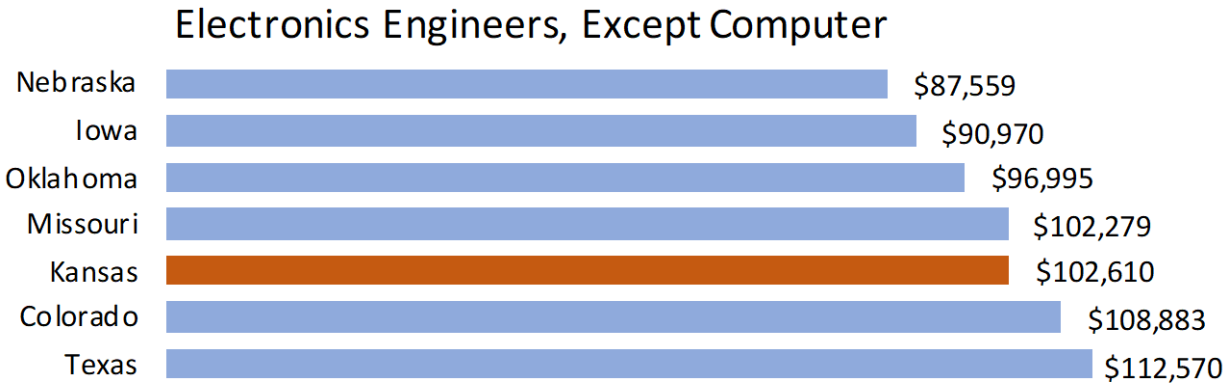
2022 Salaries in Kansas and nearby states for engineers (continued)







Salaries for environmental, civil and electronics engineers are much more competitive.

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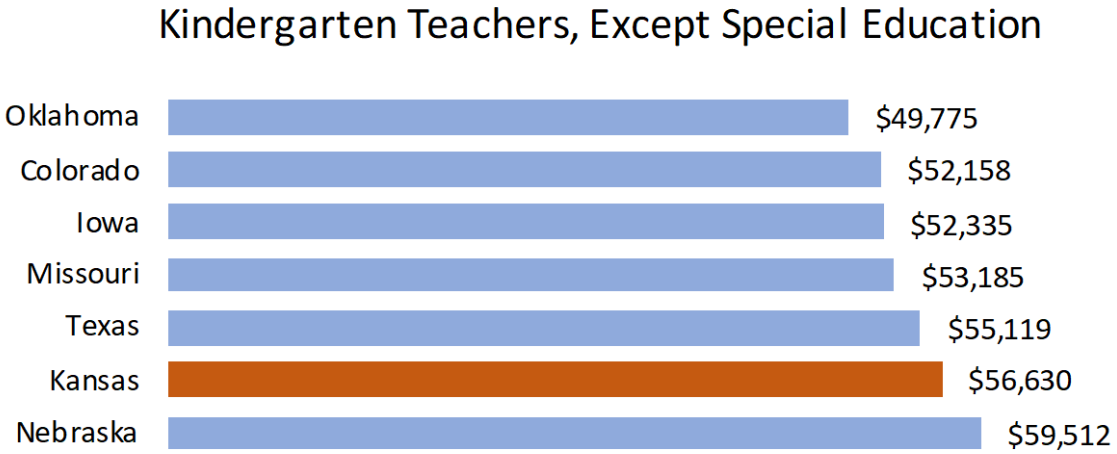
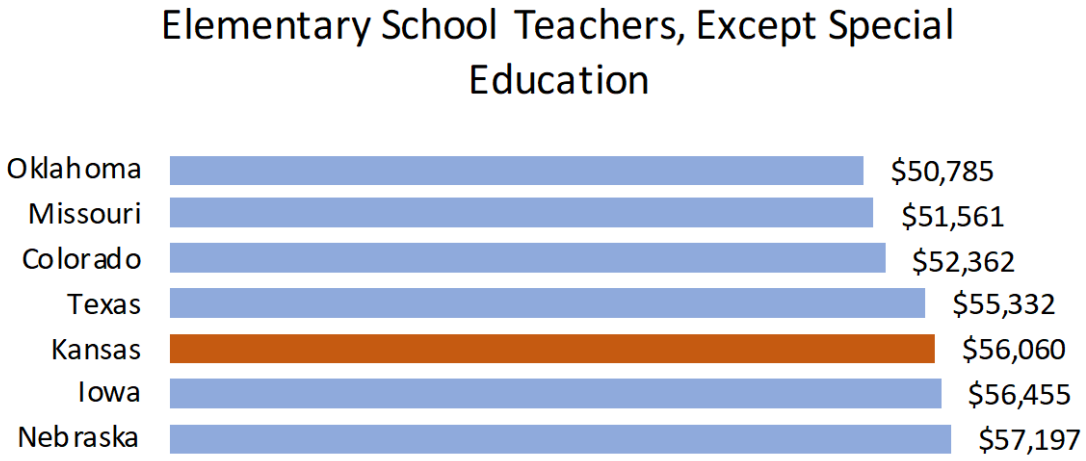
2022 Salaries in Kansas and nearby states for K-12 teachers





- Kansas pays competitive salaries for elementary school teachers.

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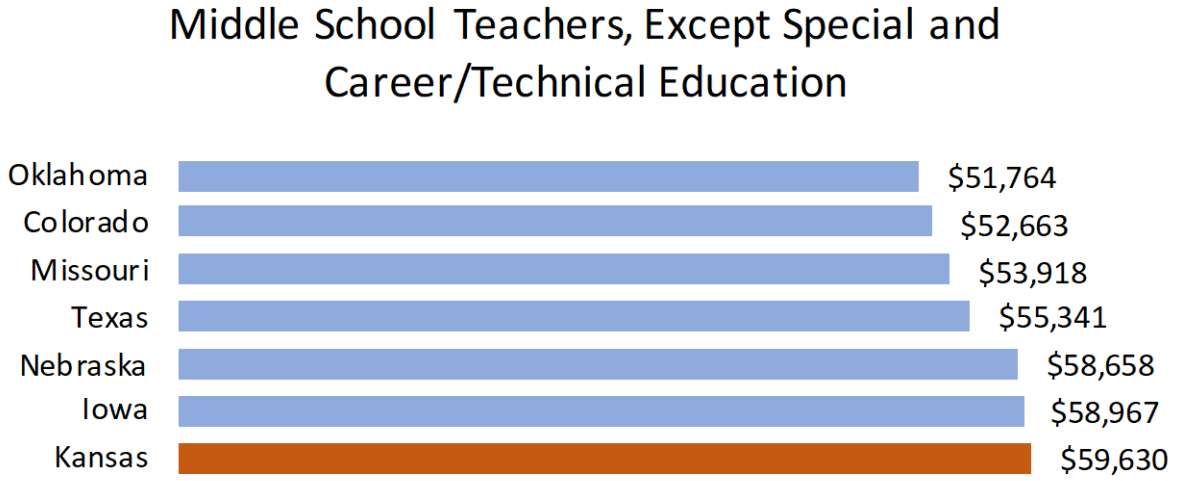
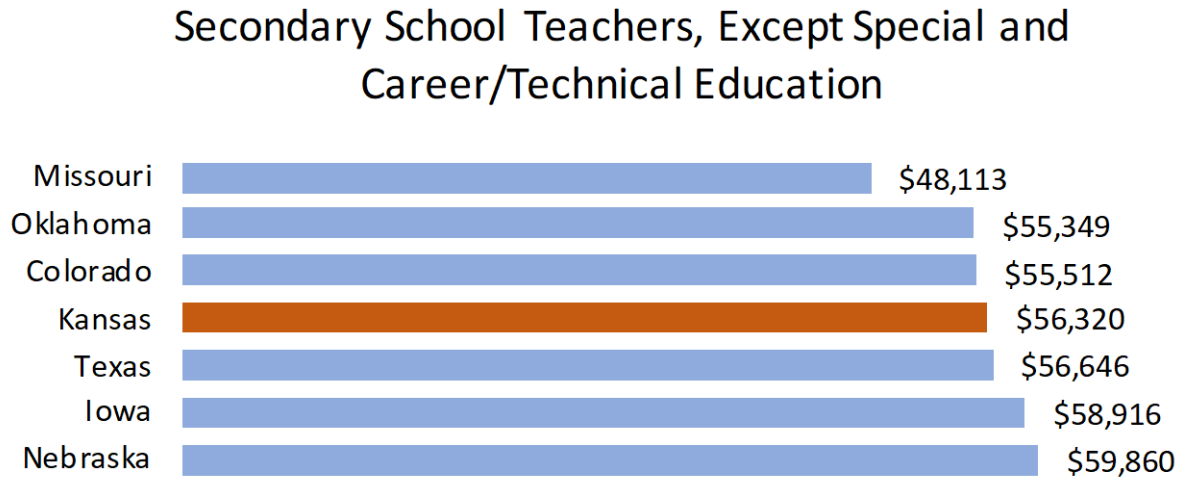
2022 Salaries in Kansas and nearby states for K-12 teachers





- Kansas middle school teachers receive the highest salaries.
- Kansas high school teachers are in the middle compared to surrounding states.
- The relatively higher salaries in elementary and middle school are “averaged out” by relatively lower high school salaries to put Kansas somewhere in the middle in terms of teacher salaries.

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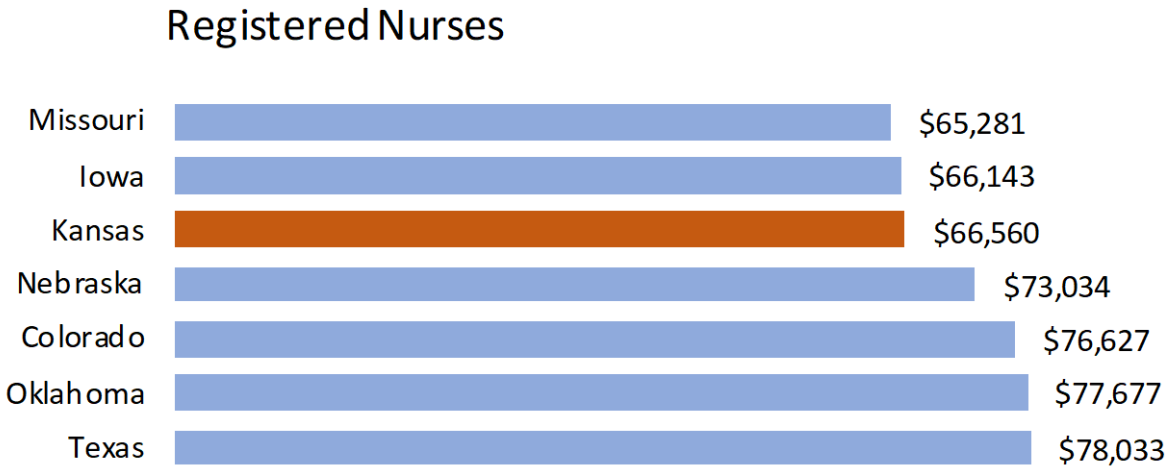
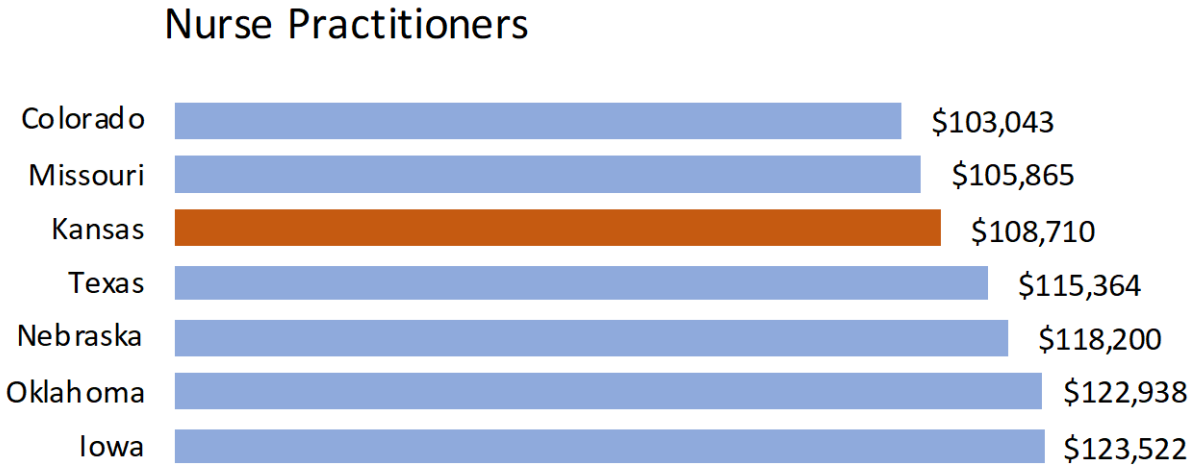
2022 Salaries in Kansas and nearby states for nurses





- Kansas Nurses and Nurse practitioners make less than similar workers in other states.

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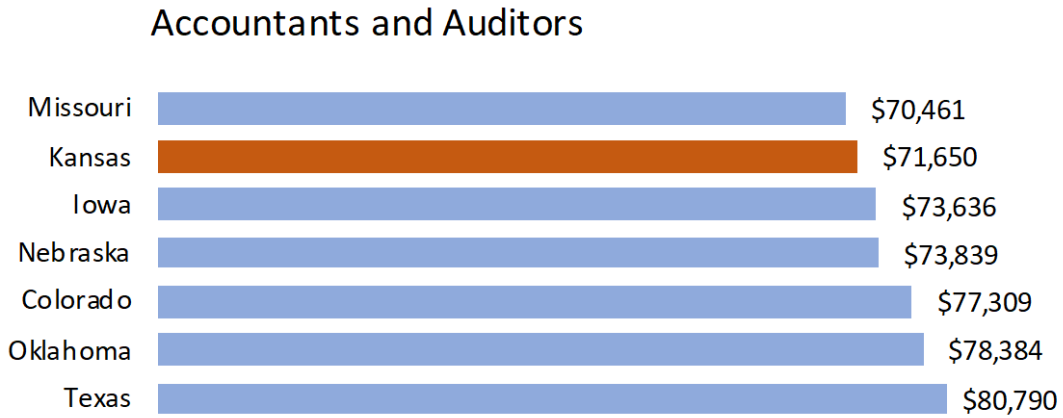
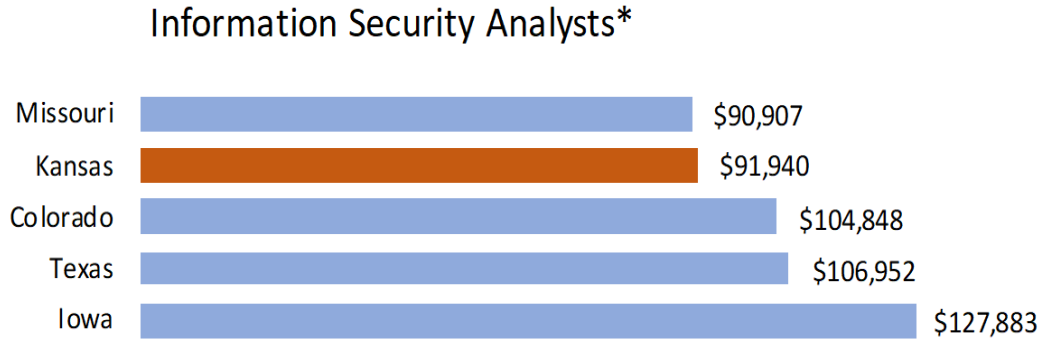
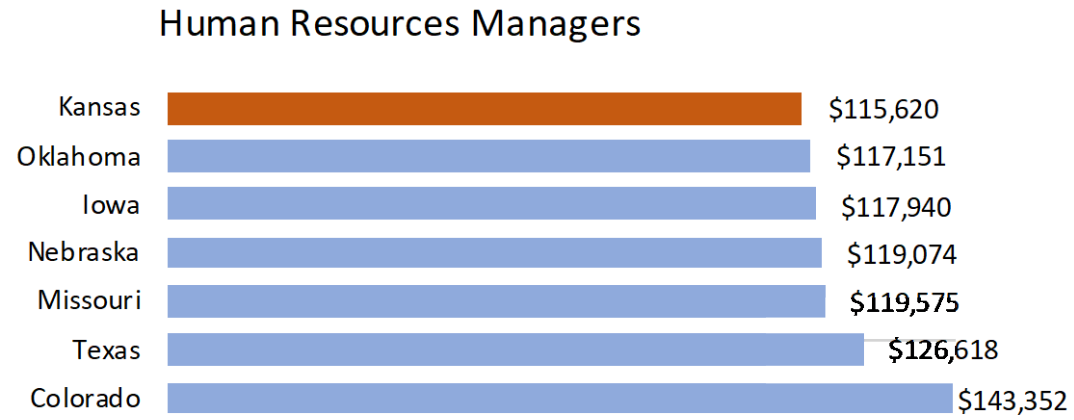
2022 Salaries in Kansas and nearby states for other select occupations





*No Nebraska and Oklahoma data



Kansas accountants, human resources managers and information Security analysts make less than similar workers in nearby states.

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Conclusions

- Based on demand projections, Kansas will need 34,000 workers in the next decade with higher education credentials than are expected to remain in the state.
- Kansas exports trained workers to Colorado, Texas and Missouri.
  - Missouri out-migration is driven by moving across the border in Kansas City.
- Compared to surrounding states, Kansas pays low salaries.
  - This likely affects retention and migration.

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Conclusions

- How can Kansas increase the number of degree holders working in the state by approximately 3,400 per year?
  - Work with Legislature and KSDE to improve college readiness of K-12 students and maintain the affordability of KBOR institutions.
  - Let employers know that higher wages elsewhere are attracting skilled labor out of the state.
  - Loan forgiveness programs for graduates in fields of high demand (e.g. nurses, engineers)

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Thank You!

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2023

Jobs and Degree Requirements for 2030: Projected Growth of the Kansas Economy and Workforce Educational Requirements

A Report Prepared by
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A REPORT COMMISSIONED BY
THE KANSAS BOARD OF REGENTS

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This report was prepared for the Kansas Board of Regents by the Institute for Policy & Social Research, at the University of Kansas. The views expressed in this document are those of the authors and do not necessarily reflect the views of the Kansas Board of Regents or the University of Kansas.

Executive Summary

This study compared the number of jobs that will be created from 2020 to 2030 to the number of new graduates entering the Kansas labor force during the same period using a variety of data sources. We found that between 2020 and 2030 Kansas is projected to have 234,500 job openings that require some type of post-secondary credential that will need to be filled by people entering the labor force. Although Kansas Board of Regents (KBOR) institutions are expected to confer approximately 370,000 degrees between 2020 and 2030, based on current retention rates, only 186,000 new graduates from Kansas institutions are expected to remain in the Kansas workforce. This means that Kansas institutions are not on track to fill the workforce demand. To satisfy the demand, the number of graduates who stay in Kansas needs to increase by 26% or an additional 48,500 graduates will need to be retained in the state.

We also examined migration to and from Kansas and compared Kansas salaries to nearby states. We found that net migration in Kansas is very small with an overall rate of 0.18% between 2017 and 2022. Young, educated adults migrate mostly to and from the Missouri side of the Kansas City metropolitan region. There is also significant migration to and from Texas and Colorado. This pattern is also true for graduates from KBOR institutions who are no longer working in Kansas.

Lastly, we looked at the salaries by occupation for Kansas and other states and found that, in general, Kansas jobs pay less compared to nearby states, even when we adjust for the cost of living.

Introduction

In order to make policy about degrees and credentials, the Kansas Board of Regents (KBOR) requires projections of employment growth and of the degrees required for these jobs. Most economic projections incorporate data from multiple sources at the national and state levels. Projections at the industry and occupation level can inform policy makers on whether the higher education system is 'on track' to meet workforce needs. The Kansas Board of Regents hired the Institute for Policy & Social Research (IPSR) at the University of Kansas to develop projections for degrees, retention of graduates, workforce demand, and salaries for Kansas and the neighboring states of Colorado, Nebraska, Iowa, Missouri, Oklahoma, and Texas. We used data from KBOR, the American Community Survey, the Kansas Department of Labor, the Bureau of Labor Statistics, the Georgetown Center on Education and the Workforce, and *Lightcast*[1] to perform this analysis. In each section below, we describe the data and methods used to perform the analysis.

Workforce and Degree Projections

We used data from the Kansas Department of Labor, the Bureau of Labor Statistics, the Georgetown Center on Education and the Workforce, and *Lightcast* to develop a series of degree projections. The Kansas Department of Labor (KDOL)[2] and *Lightcast* data contain projections for each six-digit Standard Occupation Code. Each KDOL occupation lists the minimal degree requirements[3] and the number of jobs expected by 2030. To obtain the estimated number of

[1] Lightcast data are available by subscription: https://lightcast.io
[2] These projections are available at: https://klic.dol.ks.gov/vosnet/gsipub/documentView.aspx?enc=bZzHuxoek0NJ0T158TW3mQ==
[3] Education definitions are provided here https://www.bls.gov/emp/documentation/definitions.htm.

degrees we added up the total number of jobs by degree level. We then applied the KDOL degree requirements to the *Lightcast* data to obtain similar estimates.

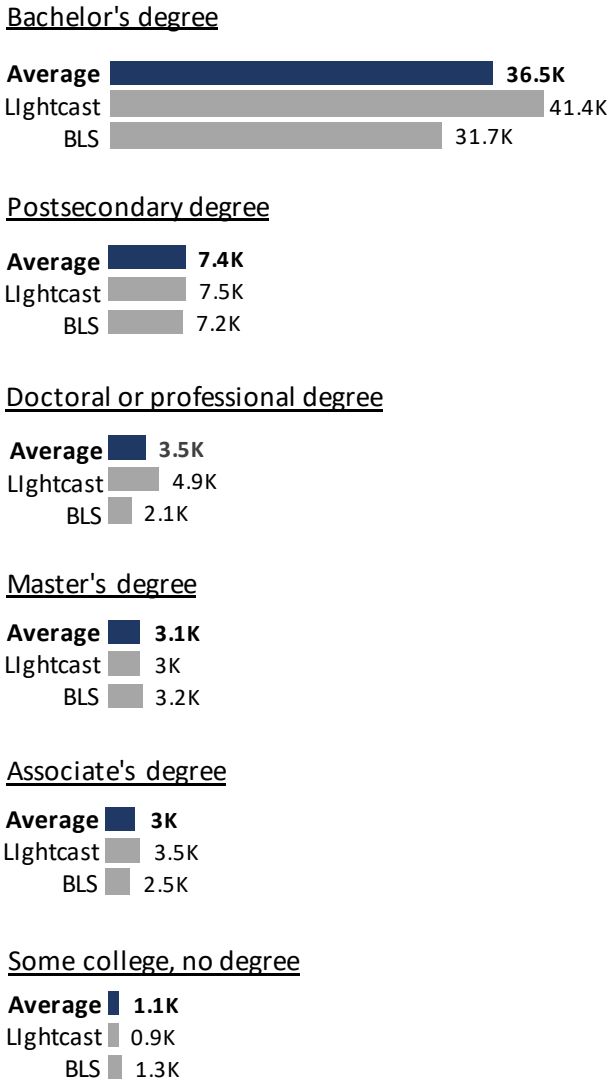
In general, these job projections take into account trends in population growth, growth in the economy, changes in consumer demand, and anticipated trends in such factors as technology changes. The projections also assume that major social and demographic trends will continue, and no major events, such as wars or pandemics, will occur. They also assume full employment in the economy.

We averaged the two forecasts to develop our preferred forecast of jobs and degree requirements in Kansas by 2030. Figure 1 shows the average as well as each individual forecast of the increase in jobs by degree.

Using the average of KDOL and *Lightcast* estimates, between 2020 and 2030 Kansas is projected to have 234,500 thousand jobs openings that require post-secondary credentials. Kansas is projected to add 54,000 net jobs that require post-secondary degrees from the growth of the economy. There will be an additional 180,000 job openings requiring post-secondary degrees from people exiting the labor force. Later in this report, we will compare the number of job openings to the number of new graduates from Kansas.

We can further break down both job openings and categories by required degree. Out of the 54,500 new jobs that require a post-secondary degree, 36,500 or about 67% of the new jobs will require a bachelor's degree. Jobs that require post-secondary non-degree credentials will increase by 7,500. Doctoral or professional degree jobs will increase by 3,500, while jobs requiring a Master's degree and jobs requiring an Associate's degree will increase by 3,000 each. The smallest increase is for jobs requiring some college without a degree – less than a thousand.

Figure 1. Forcasts of job increase from 2020 to 2030 by degree



Next we compare the KDOL and *Lightcast* forecasts. The KDOL forecasts use the Quarterly Census of Employment and Wages (QCEW), Occupational Employment and Wage Statistics (OEWS), Current Employment Statistics (CES), and the Current Population Survey (CPS) for inputs into their forecasts. Job growth in two projections varies from 48 to 61

thousand net new jobs. KDOL estimates that Kansas will add net of 48,000 jobs from 2020 to 2030 that require some post-secondary credential. Table 1 shows the details.

Table 1. Details of BLS estimates

	Jobs in 2020	change in 10 years		Jobs in 2030
Bachelor's degree	313,454	+31,677 jobs	10.1% increase	345,131
Postsecondary non-degree award	101,127	+7,241 jobs	7.2% increase	108,368
Some college, no degree	45,977	+1,275 jobs	2.8% increase	47,252
Doctoral or professional degree	32,518	+2,123 jobs	6.5% increase	34,641
Associate's degree	26,226	+2,484 jobs	9.5% increase	28,710
Master's degree	23,867	+3,212 jobs	13.5% increase	27,079
Total	543,169	+48,012 jobs	8.8% increase	591,181

Lightcast estimates that Kansas will add net of 61,000 jobs from 2020 to 2030. Table 2 shows the details. The *Lightcast* forecast is based on more recent data, and it projects an additional 41,400 jobs requiring a bachelor's degree by 2030.

Table 2. Details of Lightcast estimates

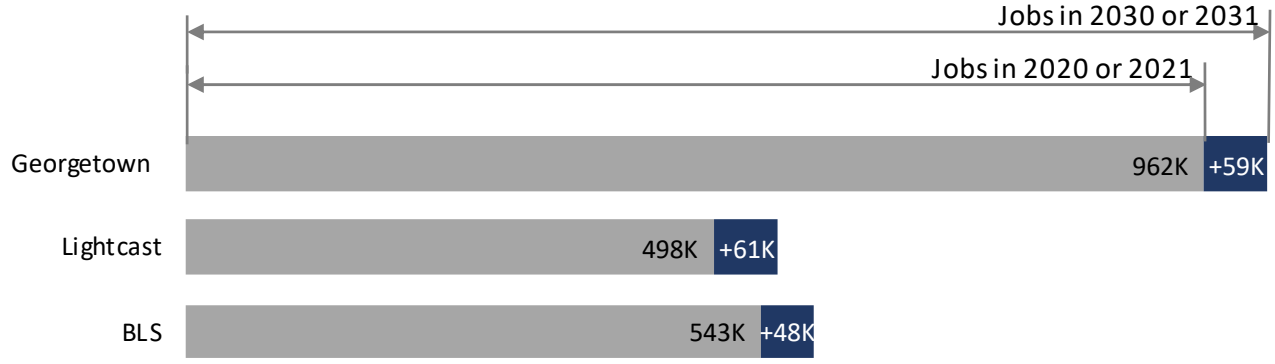
	Jobs in 2020	change in 10 years		Jobs in 2030
Bachelor's degree	281,444	+41,421 jobs	14.7% increase	322,864
Postsecondary non-degree award	94,353	+7,544 jobs	8% increase	101,897
Some college, no degree	42,989	+877 jobs	2% increase	43,867
Doctoral or professional degree	31,852	+4,855 jobs	15.2% increase	36,708
Associate's degree	25,594	+3,477 jobs	13.6% increase	29,072
Master's degree	22,120	+3,008 jobs	13.6% increase	25,128
Total	498,353	+61,183 jobs	12.3% increase	559,535

While KDOL and *Lightcast* 2020 job estimates are different, both are generally based on the QCEW but have different approaches for counting non-QCEW employees and self-employment. *Lightcast* estimates match the QCEW, which they regard to be the most accurate and reliable source of job counts. They use other sources to fill out the picture of employees that are not covered by the QCEW and self-employment.

The difference in the *Lightcast* projected 2030 jobs comes from the lag in the updates of the different projections with the newest published data. So if the newest published data shows that job growth significantly outperformed or underperformed the existing long-term forecast, the projection that doesn't account for that will be very different from the projection that does.

Finally, we consider the Georgetown Center for Education and Workforce projections. These estimate the addition of 59,000 new jobs from 2021 to 2031, which is in-line with the KDOL and *Lightcast* forecasts. However, as Figure 2 shows, Georgetown job estimates for 2021 and 2031 are very different, which is likely due to major differences in methodology and assumptions.

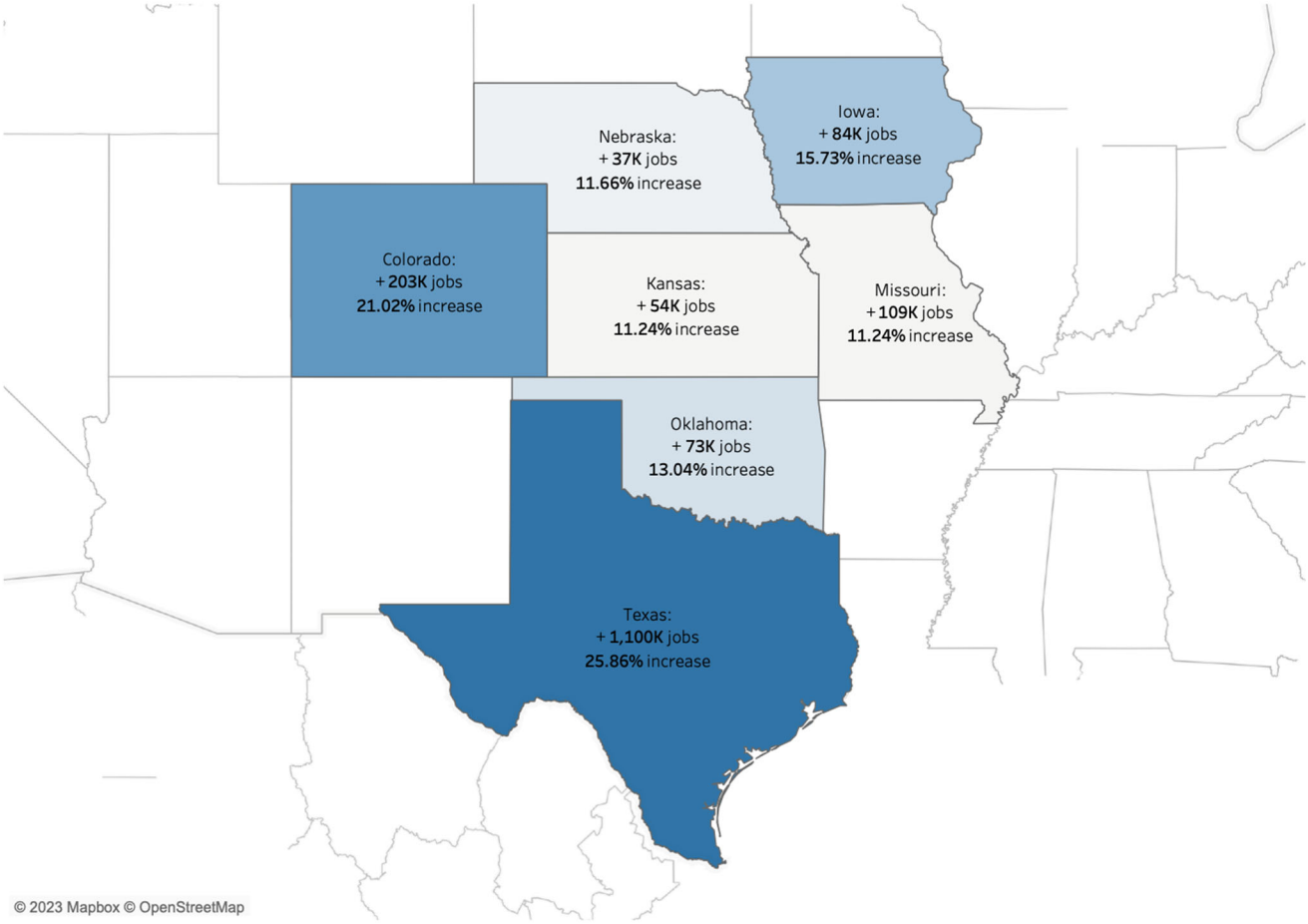
Figure 2. Georgetown job estimates for 2020-2030 compared to other forecasts.



Although these predictions indicate future need, none of them take into account current and pending production facilities such as the Panasonic plant (currently under construction), two potential semiconductor manufacturing factories, and the HARVEST Hydrogen Hub. If these plans come to fruition, the new facilities will add a significant number of jobs. For example, the Panasonic factory is expected to add 4,000 direct and an additional 4,000 indirect jobs, based on the estimations from the Department of Commerce. According to sources at KBOR, 400 of these jobs will require engineering degrees and many of the remaining 3600 jobs will require postsecondary credentials. There is insufficient information on what types of degrees and credentials will be required for the indirect jobs.

Further, we compared employment forecasts in Kansas to forecasts in the nearby states of Colorado, Iowa, Missouri, Nebraska, Oklahoma, and Texas. Kansas's expected increase in jobs is the second lowest out of these states. For this comparison, we used the same occupational employment projection data from state departments of labor. As Figure 3 shows, the largest increase is in Texas – over 1 million new jobs requiring a post-secondary degree, a 26% increase – followed by Colorado with 200,000 new jobs, a 21% increase.

Figure 3. Job increase in Kansas and nearby states from 2020 to 2030



In addition to job growth, workers entering the labor force will replace workers that exit the labor force entirely. Most exits are due to retirements, but also include workers who exit the labor force to pursue additional education with the intention of returning to the labor force. BLS projects there will be 180,000 exits out of the labor force in Kansas between 2020 and 2030 as the baby boom generation retires. Table 3 shows the breakdown of exits by required degrees.

Table 3. Exits estimates by degree in 2020-2030

Degree	Exits
Bachelor's degree	89,463
Postsecondary non-degree award	44,632
Some college, no degree	20,899
Associate's degree	8,772
Doctoral or professional degree	8,427
Master's degree	7,680
Total	179,873

Almost 90,000 workers with bachelor's degrees will exit the labor force in Kansas by 2030. An additional 64,000 workers with credentials or some college will exit as well. Although growth in jobs requiring credentials will be moderate in Kansas, replacing a sizeable number of exits will require more workers with credentials.

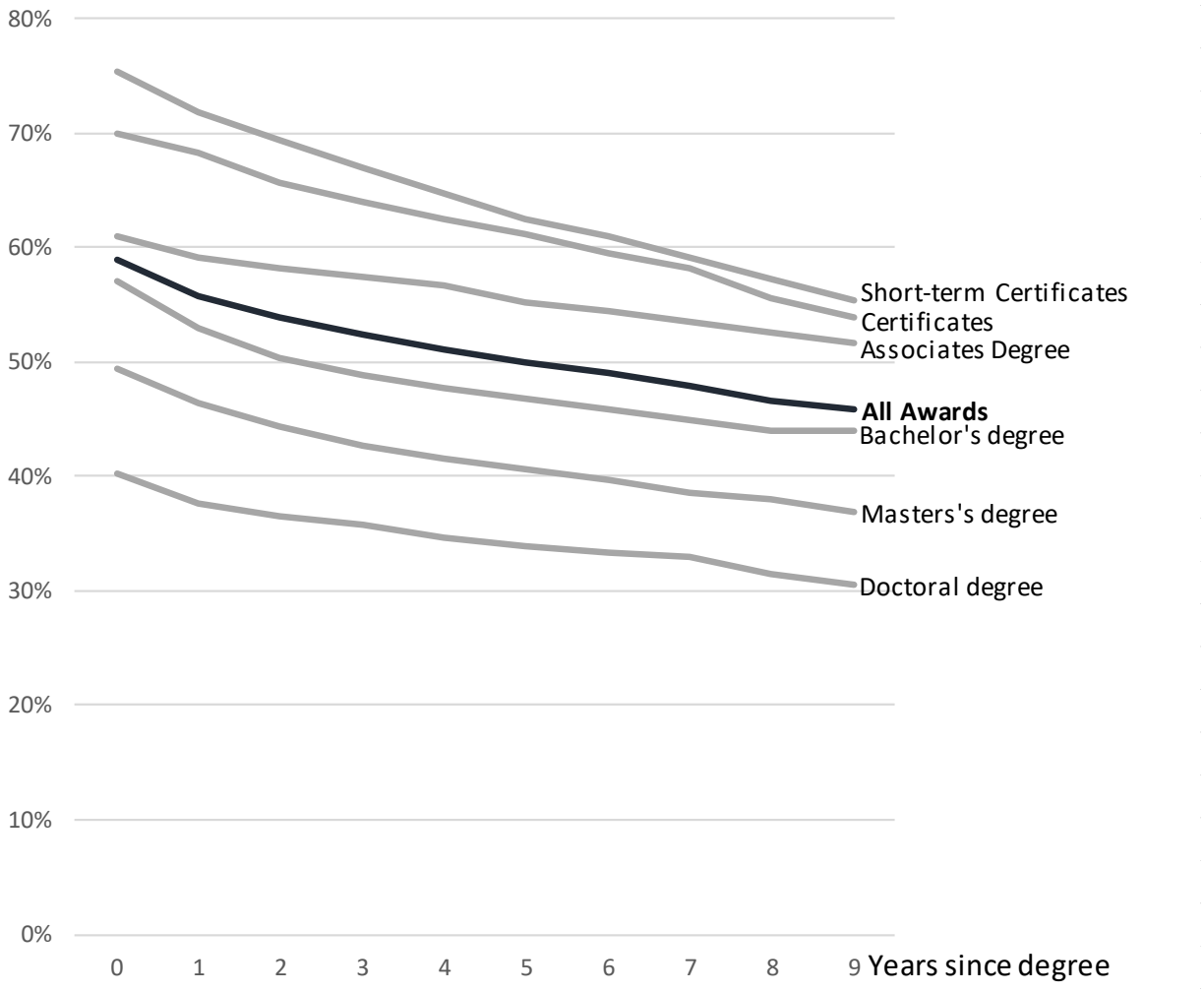
The Role of KBOR Graduates in the Kansas Workforce: 2012--2021

IPSR used KBOR data on the counts and earnings of graduates from KBOR institutions for the years 2012 to 2021 by graduation year, wage year, sector (state universities, municipal universities, community colleges, and technical colleges), degree level, field of degree, and location of job (Kansas or Missouri only). For example, we know how many people graduated in 2012, and how many of them were still working in Kansas from 2012 through 2021. With these numbers available, it was straightforward to calculate the proportion of KBOR graduates still working in Kansas zero to nine years after graduation.

Figure 4 shows retention rates for post-secondary degrees by year after graduation, as well as the average for all awards. It is based on graduates from 2012 to 2021 for all KBOR institutions. Year zero indicates the percentage of graduates who stayed in Kansas right after graduation. As the figure shows, among those who earned their degrees at Kansas public

institutions, the highest retention rate was for associate's degrees and certificates, about 70% and 60% respectively, in the first year after graduation. For BA, MA, and PhD holders, the higher the degree, the lower the retention rate, both initially and over time, varying from 57% percent for a Bachelor's in the first year after graduation to 40% for PhDs. All degrees and fields lose about 10% of people who initially stayed in Kansas, by the 9th year post-degree; for all degrees, the retention rate decreases over time, by 2 percentage points a year on average (or by degree if very different).

Figure 4. Retention rates by degree and years after graduation



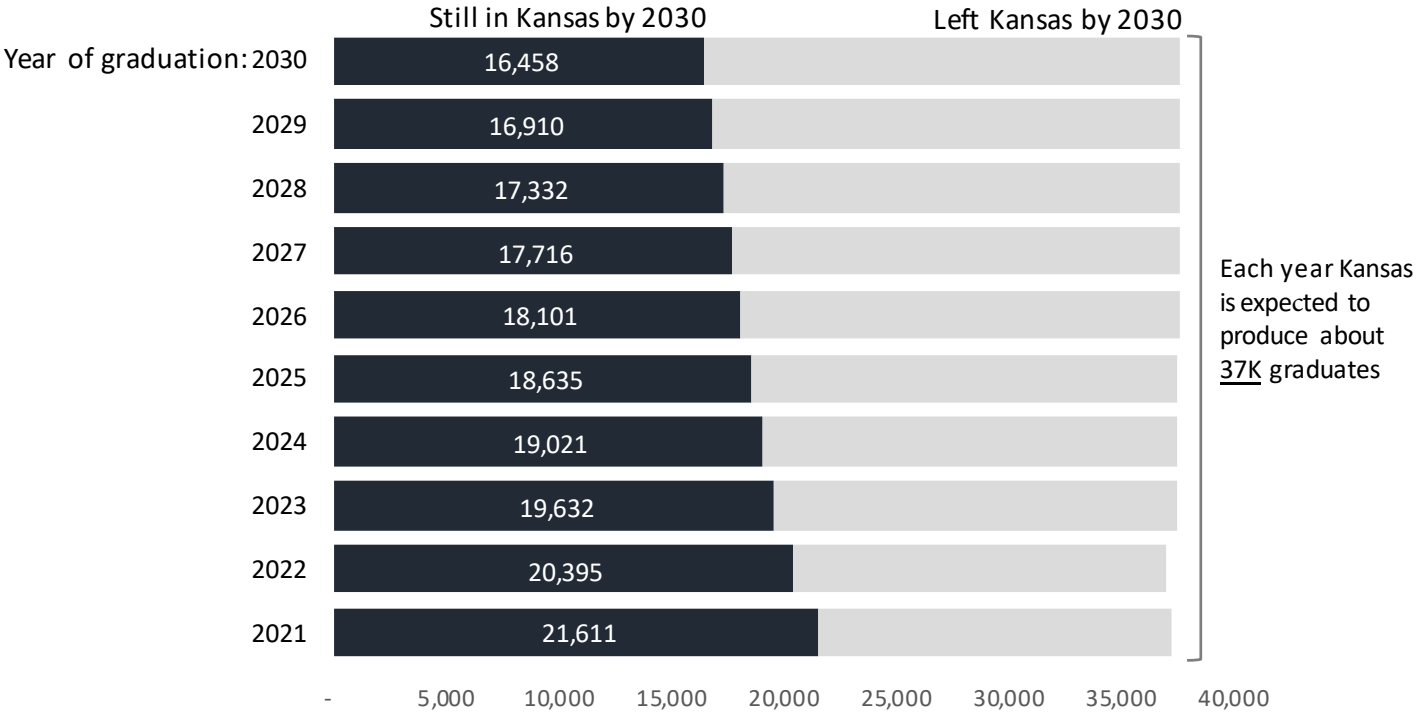
Further, we estimate that there will be about 37,000 new graduates per year with post-secondary degrees in 2020-2030. Thus, KBOR institutions are expected to produce roughly 370,000 graduates with post-secondary credentials between 2020 and 2030. We used data on the number of graduates in 2017-2022 from KBOR's state university and community college data books and continued the trend of those years to project the number of graduates through 2030. There is some volatility in the number of graduates each year, however, the overall trend is stable, and as a result, the number of graduates does not change substantially from year to year in our projections.

We used these retention rates and new graduates projections to estimate the number of graduates from Kansas institutions over 10 years from 2020 to 2030. Many factors affect the retention rate, such as economic conditions or the percentage of all graduates who are Kansas residents. We assumed that such factors will be similar to the years of historical data we used for projections. Assuming that the same trends hold, we estimated the number of graduates that will stay in Kansas between 2020 and 2030.

We applied retention rates for state universities and community colleges to the total number of graduates for each year. For example, for those who graduated in 2023, we apply the retention rate in year seven after graduation to get the number of 2023 graduates who are estimated to remain in Kansas in 2030. Figure 5 shows the share of graduates from each year from 2020 to 2030 who will remain in Kansas in 2030. For example, among 37,000 who will graduate in 2024, about 19,000 will still be in the Kansas labor force in 2030.

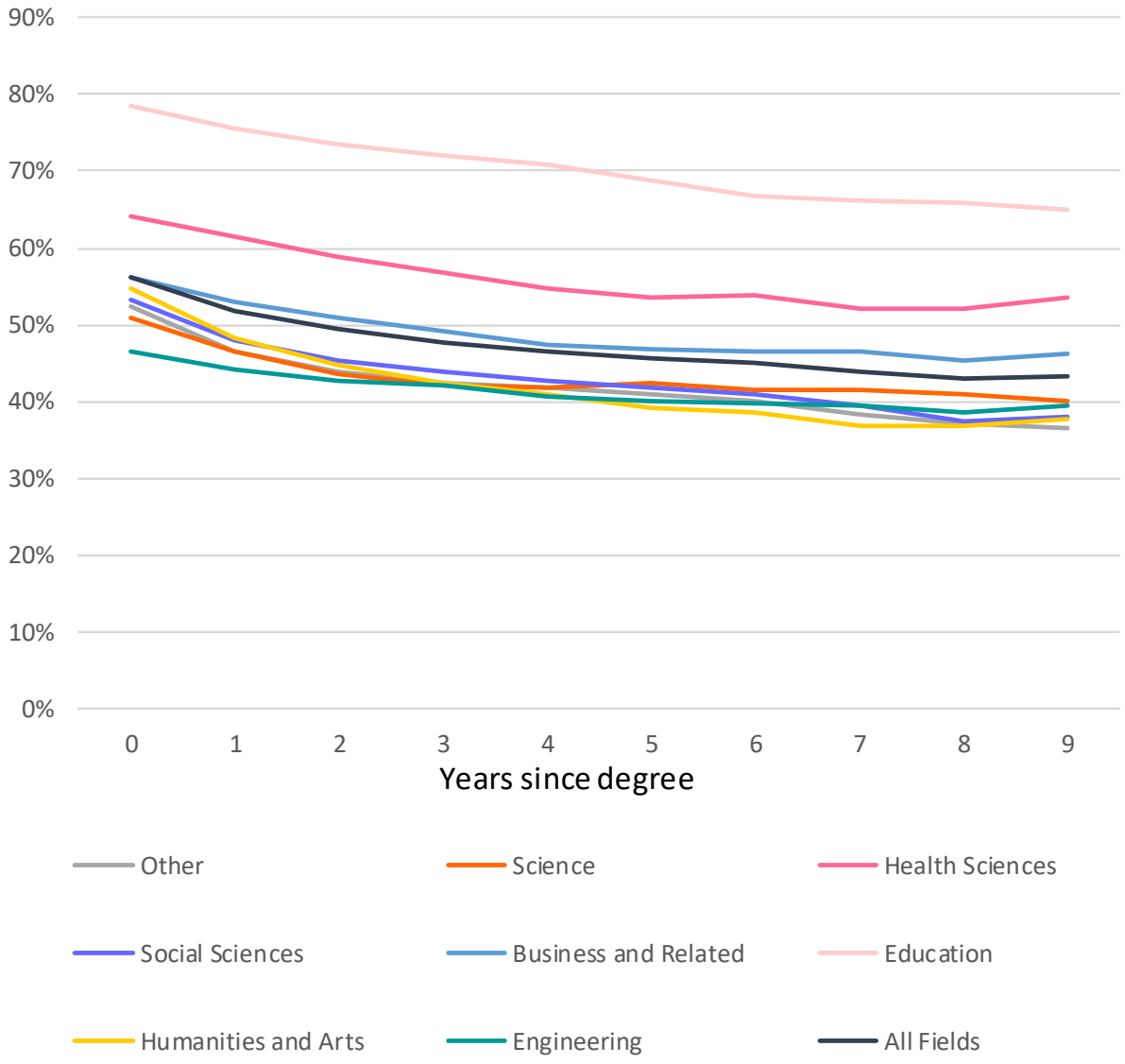
Using this method, we estimated that Kansas will produce 186,000 new graduates over 10 years who will stay in Kansas and fill job openings in those years. We will compare this number to the number of job openings from 2020 to 2030.

Figure 5. Number of 2021-2030 graduates remaining in the labor force each year by 2030.



Additionally, we looked at retention rates by field of study for state universities in Kansas. Figure 6 shows that individuals with education degrees are the most likely to remain in Kansas after receiving the degree, while Physics, Engineering, and Humanities and Art students are among those more likely to leave.

Figure 6. Retention rates by field of study and years after graduation



Will Kansas Retain Sufficient Workers to Meet Demand?

To assess whether the Kansas post-secondary system is likely to meet the state's educational requirements in the future, we compared the projected demand for certificates and degrees with the state's historic track record of retaining graduates in the Kansas workforce.

We estimate that KBOR institutions are not on track to meet demand for jobs requiring postsecondary credentials. Between 2020 and 2030 Kansas will add 54,000 jobs that require a post-secondary degree and will need to replace another 180,000 workers with a post-secondary degree who exit the Kansas labor force, mostly due to retirement. The total of 234,000 jobs will need to be filled with new graduates over the next 10 years. Kansas will have 186,000 new post-secondary graduates over the next ten years who will remain in the Kansas labor force in 2030. Thus, we estimate that Kansas will require 48,000 additional workers to satisfy demand. To satisfy the projected demand, Kansas will need to increase by 26% the number of post-secondary graduates that end up staying in Kansas. Note that Kansas produces more than enough graduates to satisfy the labor market demand, but many of them leave Kansas to work elsewhere. Increasing retention rates will help to fill the gap. Next we explore migration patterns and labor market conditions for Kansas and nearby states.

KBOR Graduates no Longer Working in Kansas

We use data from the American Community Survey from 2017 to 2021 to examine net migration by education level. We used the five-year ACS file rather than the one-year file for this analysis because it contains more observations, allowing estimation of cells that would otherwise have too few observations. We focused on the prime working-age population.

Table 4 shows in- and out-migration by age and education level for the population between 20 and 55 years old. Migration rates are highest for adults ages 20-35 with a bachelor's degree or higher. In- and out-migration for Kansas falls as age rises, and migration increases as education rises. These numbers do not include international out-migration, as the ACS does not contain that data. Young, educated adults migrate mostly to and from the Missouri side of the Kansas City

area. There is also significant migration to and from Texas and Colorado and in-migration from the rest of Missouri, California, Nebraska, and Iowa.

Net domestic migration is very small in Kansas during the time span we analyzed. Kansas loses highly-educated young people to other states, but also pulls in highly-educated people from other states. This suggests opportunities for Kansas to "recruit" its own young people with bachelor's degrees or some college.

Table 4. Kansas Domestic Migration by Age and Education for Adults Ages 20 to 55
Annual Average 2017-2021

Age	Education	Population	In-Migrants from US States	Domestic In-Migration Annual Rate	Out-Migrants to US States	Domestic Out-Migration Annual Rate	Net Domestic In-Migration (In - Out)	Net in-Migration Annual Rate
20 to 25	BA and Above	49,125	6,391	13.01%	7,123	14.50%	-732	-1.49%
26 to 35	BA and Above	139,616	10,410	7.46%	10,449	7.48%	-39	-0.03%
36 to 55	BA and Above	259,444	7,462	2.88%	6,370	2.46%	1,092	0.42%
Subtotal	BA and Above	448,185	24,263	5.41%	23,942	5.34%	321	0.07%
20 to 25	Some College, No BA	116,374	7,090	6.09%	7,052	6.06%	38	0.03%
26 to 35	Some College, No BA	124,910	7,357	5.89%	5,378	4.31%	1,979	1.58%
36 to 55	Some College, No BA	218,815	5,445	2.49%	5,827	2.66%	-382	-0.17%
Subtotal	Some College, No BA	460,099	19,892	4.32%	18,257	3.97%	1,635	0.36%
20 to 25	High School or Less	88,579	5,248	5.92%	4,271	4.82%	977	1.10%
26 to 35	High School or Less	111,061	5,322	4.79%	5,234	4.71%	88	0.08%
36 to 55	High School or Less	224,155	4,585	2.05%	5,208	2.32%	-623	-0.28%
Subtotal	High School or Less	423,795	15,155	3.58%	14,713	3.47%	442	0.10%
All ages	All education	1,332,079	59,310	4.45%	56,912	4.27%	2,398	0.18%

We compared migration patterns in Kansas to other states. The states we use for comparison include the states to which Kansas "exports" young adults with degrees, adjacent states, and a

few additional states in Midwest. We chose to compare migration rates for the population aged 20-35 with at least Bachelor's degree, as that group has the highest migration rate from Kansas. Table 5 shows migration rates per year for Kansas and comparison states among young adults with bachelor's degrees or higher. The table shows that Kansas out- and in-migration are nearly the same for this demographic group. Among nearby states, Texas and Colorado have high net in-migration rates for young, highly-educated adults, but Kansas's rates are similar to the rest of the states considered.

Of the states analyzed, Kansas exports the largest share of its young, highly-educated adults. But Kansas also imports workers in the targeted age group. This is due in part to young people moving across the Kansas-Missouri border in the KC Metro. It appears that Kansas does supply employment opportunities for young, highly-educated adults, but many of these opportunities are filled by people from outside Kansas.

Table 5. Domestic Migration for Kansas and Comparison States for People with Bachelor's Degree or Higher, Ages 20-35

Annual Average 2017-2021

State	Population, BA+, 20-35		Out-Migration	In-Migration	Net In-Migration
Kansas	188,741	Number	17,572	16,801	-771
		Rate	9.31%	8.90%	-0.41%
Texas	1,804,300	Number	77,988	105,028	27,040
		Rate	4.32%	5.82%	1.50%
Colorado	512,969	Number	39,092	56,470	17,378
		Rate	7.62%	11.01%	3.39%
California	2,923,474	Number	122,490	131,475	8,985
		Rate	4.19%	4.50%	0.31%
Missouri	377,399	Number	31,467	26,738	-4,729
		Rate	8.34%	7.08%	-1.25%
Oklahoma	187,949	Number	15,263	11,839	-3,424
		Rate	8.12%	6.30%	-1.82%
Nebraska	136,897	Number	10,380	8,804	-1,576
		Rate	7.58%	6.43%	-1.15%
Iowa	192,848	Number	16,551	11,062	-5,489
		Rate	8.58%	5.74%	-2.85%
Minnesota	439,766	Number	23,584	24,749	1,165
		Rate	5.36%	5.63%	0.26%
Wisconsin	370,240	Number	25,846	20,068	-5,778
		Rate	6.98%	5.42%	-1.56%
Arkansas	138,450	Number	9,270	7,207	-2,063
		Rate	6.70%	5.21%	-1.49%

Further, Tables 6 and 7 show where young, educated Kansans go when they leave the state, and where they come from when they move to Kansas. By far the largest number of Kansas out-migrants move to the Missouri side of the Kansas City Metro Area. Texas attracts over 2,000 young Kansans with Bachelor's degrees each year. Missouri, California, Colorado, and Oklahoma also attract large numbers of this demographic group. Overall, there is a small net outflow of highly-educated Kansans in the 20-35 age group (771 people).

As mentioned earlier, Kansas also attracts young educated workers from other states. About 25% of these in-migrants come from the Kansas City area in Missouri. Missouri, Texas, California, Nebraska, and Iowa are other significant sources of in-migration.

Table 6. Top Destinations for Kansas Out-Migrants, BA or Above, Ages 20-35

Annual Average 2017-2021

State	Domestic Out-Migration from Kansas	Domestic In-Migration to Kansas	Net Domestic In-Migration (in minus out)
Missouri-KC Area	3,603	4,116	513
Texas	2,169	1,046	-1,123
Missouri-Non KC Area	1,318	1,291	-27
California	1,104	869	-235
Colorado	1,002	376	-626
Oklahoma	997	510	-487
Nebraska	590	759	169
New York	581	437	-144
Maryland	568	150	-418
Illinois	520	388	-132
Florida	504	339	-165
Indiana	500	382	-118
All States	17,572	16,801	-771

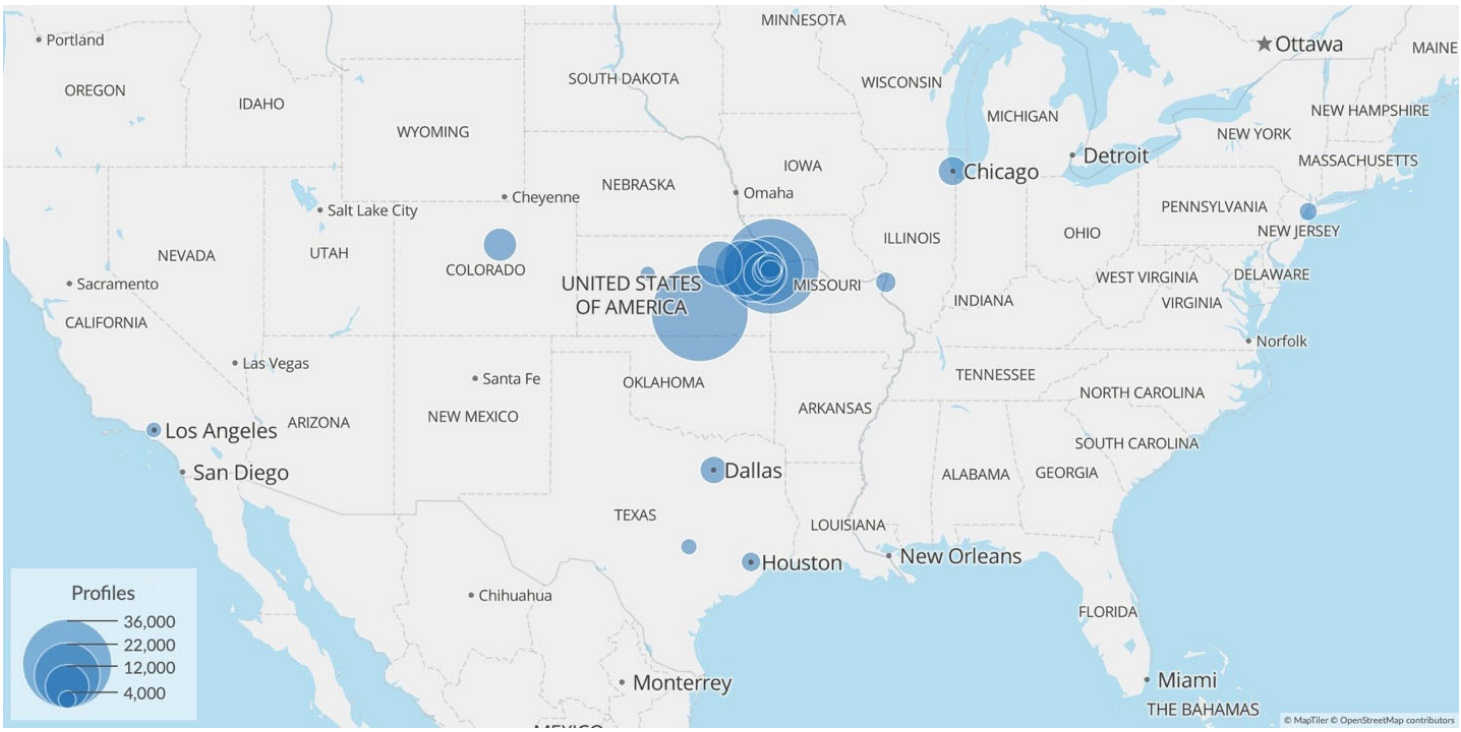
Table 7. Top States of Origin for Kansas In-Migrants, BA or Above, Ages 20-35

Annual Average 2017-2021

State	Domestic In-Migration to Kansas	Domestic Out-Migration from Kansas	Net Domestic In-Migration (in minus out)
Missouri-KC Area	4,116	3,603	513
Missouri-Non KC Area	1,291	1,318	-27
Texas	1,046	2,169	-1,123
California	869	1,104	-235
Nebraska	759	590	169
Iowa	733	215	518
Minnesota	522	139	383
Oklahoma	510	997	-487
All States	16,801	17,572	-771
International In-Migration	2,296		

Figure 7 shows *Lightcast* data on where graduates from KBOR four-year institutions are moving. Out-migration patterns for young, educated Kansans are similar to those found in the American Community Survey analysis above; KBOR graduates often move to the Missouri side of the Kansas City area, as well as Texas, Colorado, and Illinois.

Figure 7. Post-graduation destinations for graduates from four-year KBOR institutions



Does Kansas Pay Competitive Wages?

In addition to counts of jobs by occupation and minimum educational requirements, KDOL and the Bureau of Labor Statistics publish data on average wages for each occupation. Each state contributes employment counts and wages, as well as long-term projections of its workforce. We used that data for Kansas as well as surrounding states (Colorado, Iowa, Missouri, Nebraska, Oklahoma, and Texas) to compare salaries for select occupations.

To make a more fair comparison, we accounted for differences in the cost of living. To do this, we used Regional Price Parities (RPP)[4] to adjust the salaries in other states to Kansas prices. RPPs are average price indices for each state, constructed so that the index is 100 for the US

[4] For more details on how these price parities are estimated by the BLS see https://www.bea.gov/system/files/methodologies/Methodology-for-Regional-Price-Parities_0.pdf

each year. For instance, if a state has an RPP of 110, it means that its prices were 10% higher than the US average for that year. We note that, while we use 2022 salaries, the 2022 RPP is not available, so we use 2021 RPPs. If regional price differences do not vary significantly from year to year, it is safe to use the 2021 RPP for this adjustment.

To give an example of how we adjusted salaries, the average (weighted) salary of engineers in Texas was $113,295 in 2022. The average price index in 2021 was 98.502 in Texas and 91.157 in Kansas. On average, both states were less expensive than the US, but Texas was still more expensive than Kansas.

We adjust Texas salaries to Kansas prices as follows:

$$TX_{adj} = 113{,}295 * \left(\frac{91.157}{98.502}\right) = 104{,}847$$

Hence, earning $113,295 in Texas was equivalent to earning $104,847 in Kansas in 2022 and maintains a similar lifestyle.

We hypothesized that workers may be leaving Kansas to earn higher wages in other states. We examined this hypothesis by first reviewing average salaries in 2022 for occupations that require a Bachelor's degree. We used data from the Occupation Employment and Wage Statistics from the BLS. We aggregate cccupations into a broader set of categories, similar to the aggregation of degrees and fields that we used in our retention analysis, and weight salaries by the number of people.

As you can see from the series of graphs below, salaries are lower in Kansas than most nearby states for several occupations. For example, after adjusting state salaries to the Kansas price level, salaries for Engineering and Computer Science occupations are lowest in Kansas. Salaries for Business and Related occupations, Humanities and Arts, Life Science, and Social

Science occupations are second lowest in Kansas compared to nearby states. Education and physical and earth science occupations have the third-lowest salaries.

Figure 8. Salaries in Kansas and nearby states for different occupations

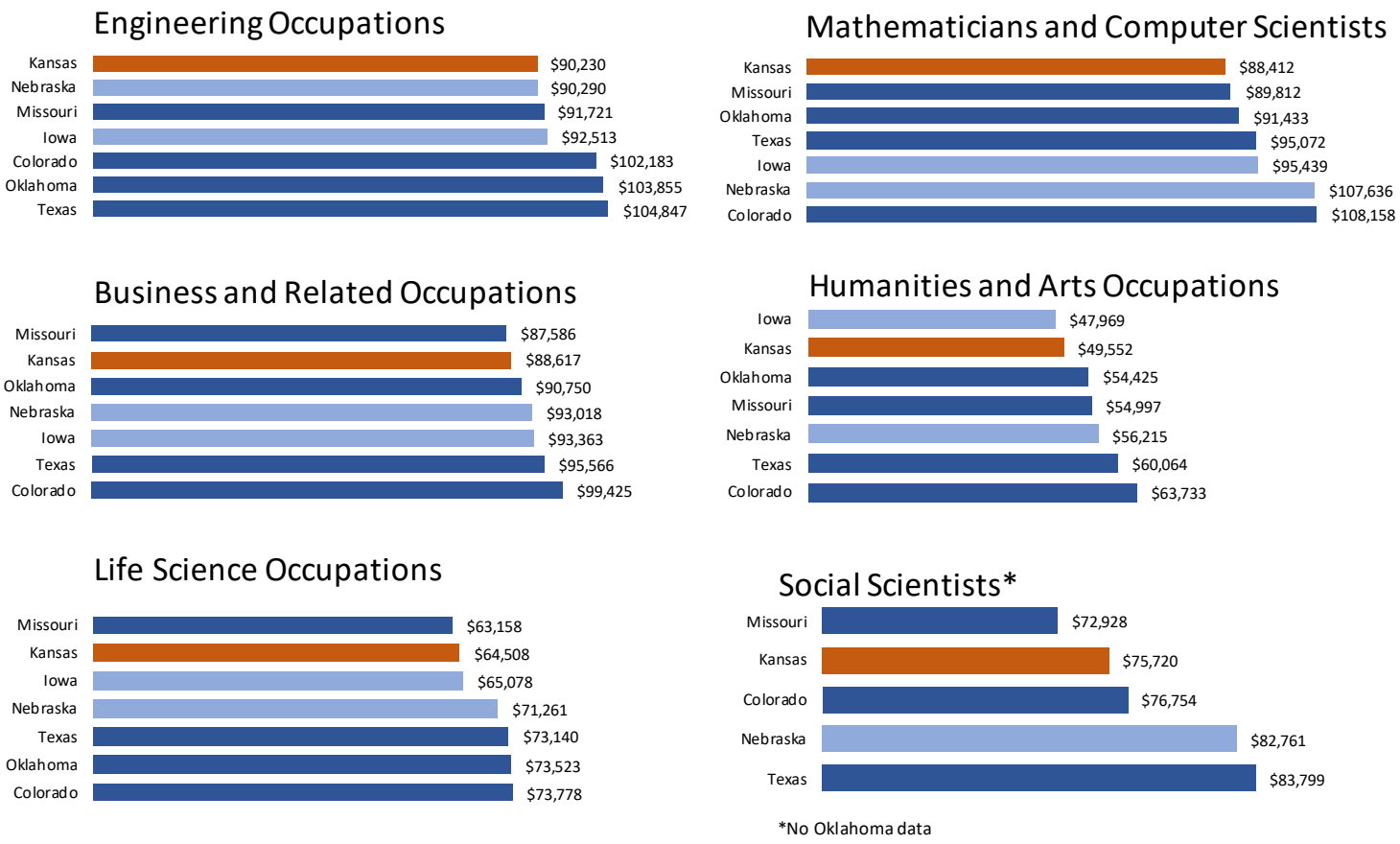
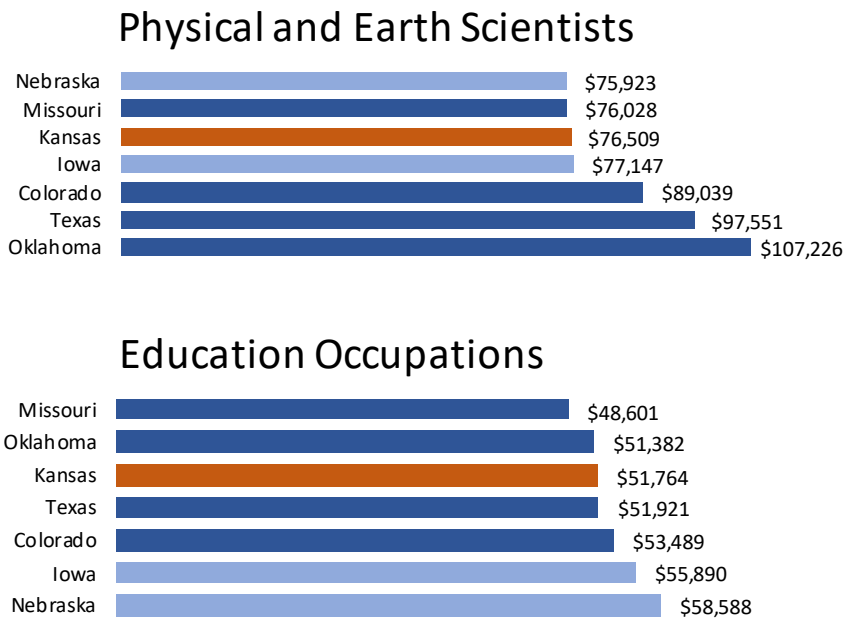
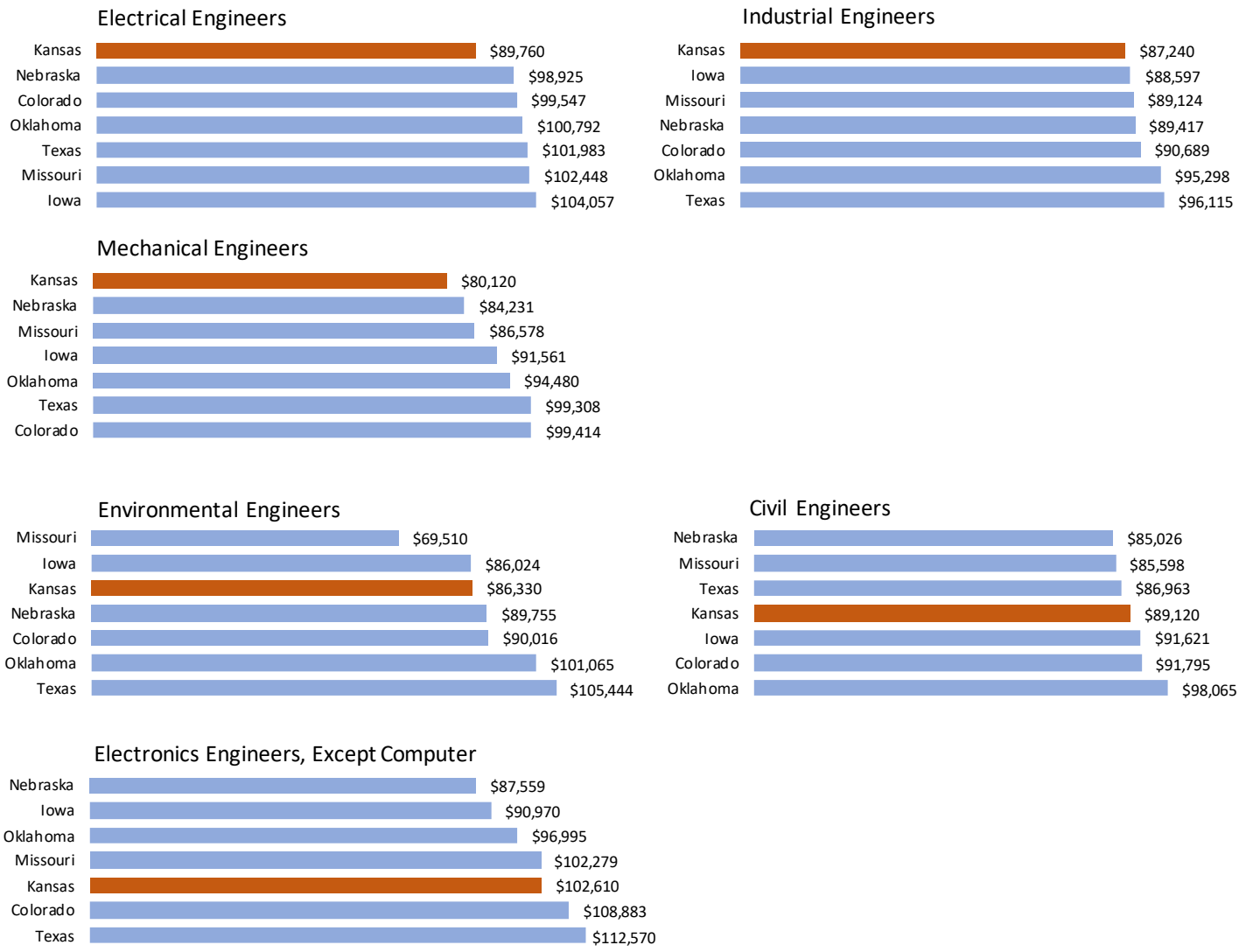


Figure 8. Salaries in Kansas and nearby states for different occupations (continued)



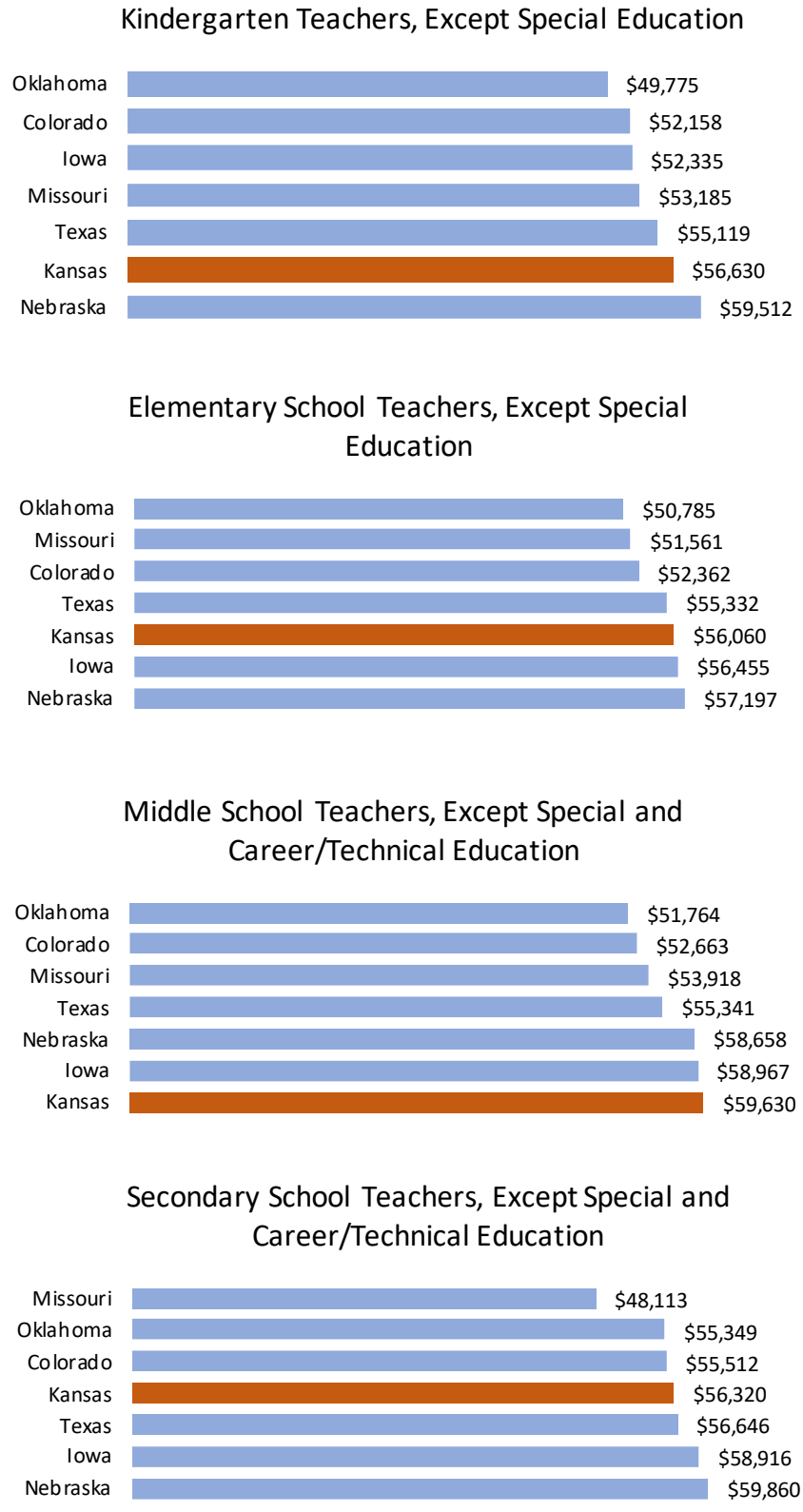
We also provide salaries for selected occupations of particular interest, including engineering, education, nursing, and other professional occupations. The next series of graphs reports salaries for engineering occupations. As we saw before, engineering specialties have some of the lowest retention rates, and salaries for engineering occupations are lower in Kansas compared to other states. Salaries in Kansas are the lowest in the region for Electrical, Industrial, and Mechanical Engineers.

Figure 9. Salaries in Kansas and nearby states for engineering occupations



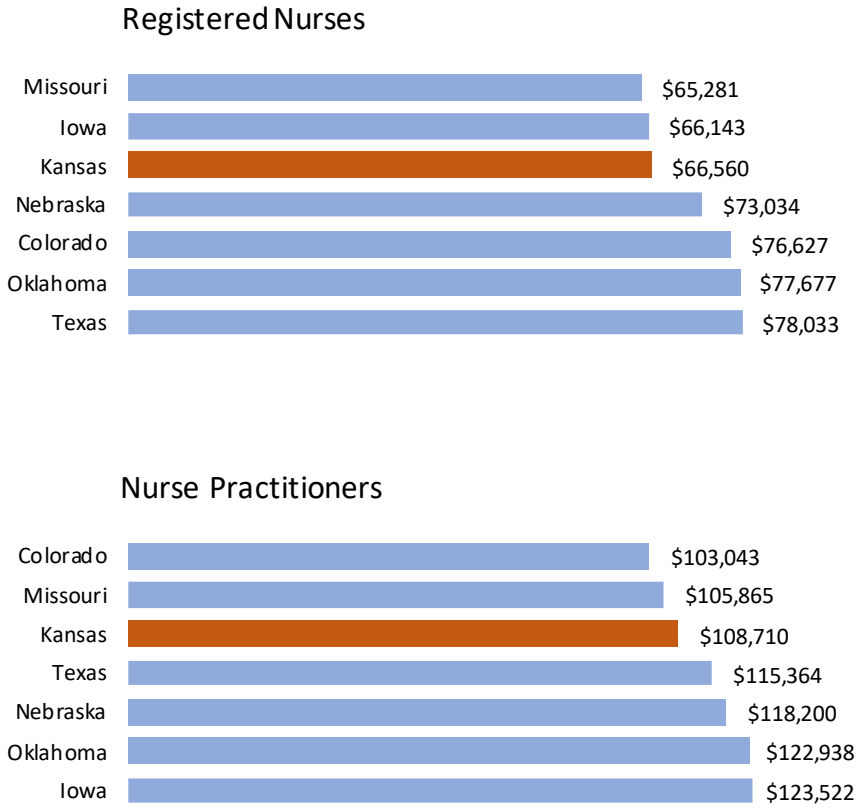
The next series of graphs reports salaries for K-12 teachers. As we saw before, education specialties have one of the highest retention rates, and salaries for K-12 teachers are among the highest compared to nearby states.

Figure 10. Salaries in Kansas and nearby states for K-12 teachers



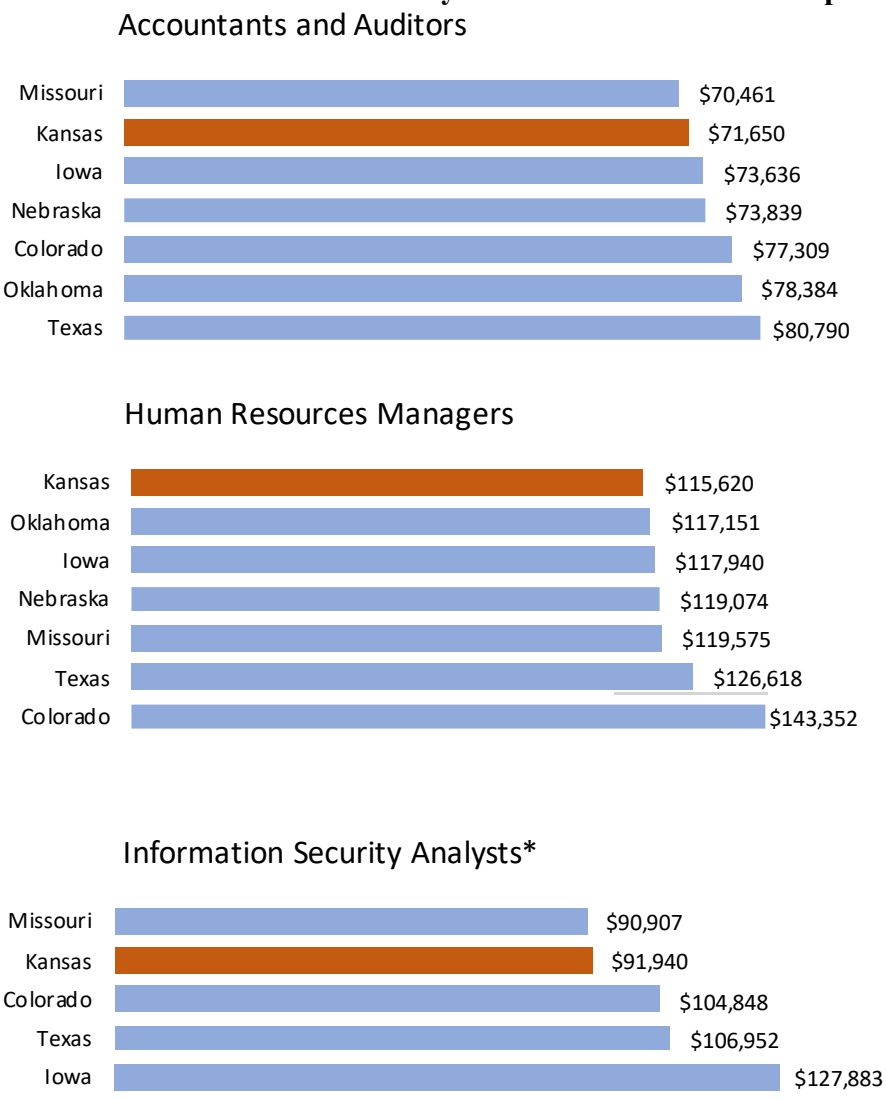
Next, we report salaries for nurses. Salaries for both Registered Nurses and Nurse Practitioners are lower than in most other nearby states.

Figure 11. Salaries in Kansas and nearby states for nurses



Finally, we present salaries for other select professional occupations such as Accountants and Auditors, Human Resource Managers, and Information Security Specialists. Salaries for all three occupations are relatively low, and salaries for Human Resource Managers are the lowest among all nearby states.

Figure 10. Salaries in Kansas and nearby states for other select occupations



*No Nebraska and Oklahoma data

Conclusion

Our analysis shows that Kansas produces enough credentialed workers to meet labor force demands, but does not retain a sufficient number of degree-holders. We estimate that from 2020 to 2031 Kansas will produce roughly 370,000 post-secondary graduates and 234,000 available jobs. However, by 2030 only 186,000 of those new graduates will remain in Kansas. Increasing the retention rate by 26% will close the gap between new graduates who stay in Kansas and new job openings.

Migration data on educated young adults as well as graduates from Kansas state universities show that Kansas exports a lot of educated workers to the Missouri side of Kansas City, while there is also significant in-migration to Kansas from that area. This is an important opportunity for retention.

In contrast to many other occupations that have low retention rates and low salaries compared to nearby states, Kansas is not losing as many teachers to other states. K-12 teacher salaries were the only ones that were consistently higher or even the highest compared to nearby states. This suggests that higher teacher salaries boost retention rates.

It is important to keep in mind that forecasts are not always accurate. Our forecast does not include increased demand from the new Panasonic plant and other proposed business ventures and infrastructure development initiatives. It cannot account for the ways generative artificial intelligence may alter the demand for certain credentials. Generative AI may destroy jobs in some sectors but make other sectors more productive. Thus the net effect is difficult to disentangle.