



# **INDUSTRY RESEARCH EXCHANGE**

## **Manufacturing:**

**Forging a Growing Kansas Economy**

**What are the biggest manufacturing issues in 2023 (one or two-word responses)?**

# Agenda

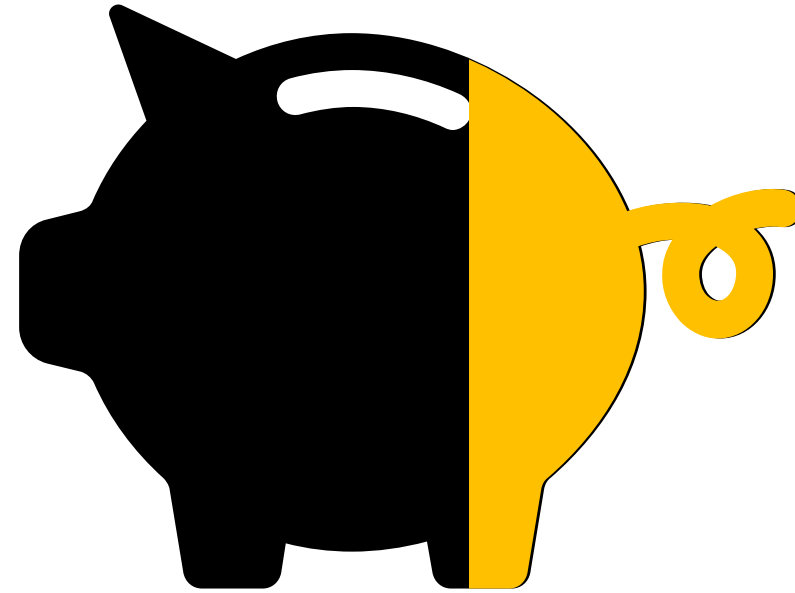


Beech Aircraft Corporation (1940-1945)  
Source: Kansas Historical Society

- Does manufacturing **drive** the Kansas economy?
- What **skills, knowledge, and abilities** are needed within manufacturing in 2030?
- How **globally connected** is the Kansas manufacturing economy?
- How **important** is manufacturing to the Kansas economy?

## Why Manufacturing?

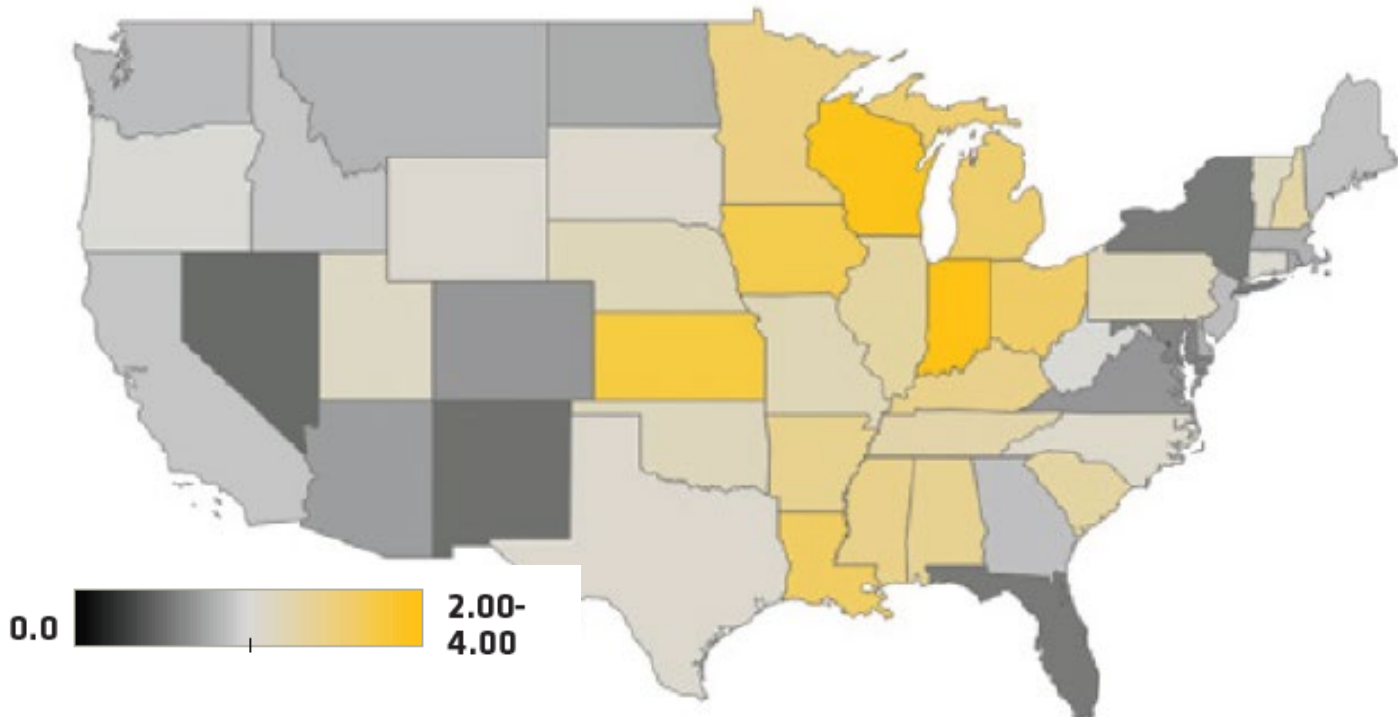
- Generates **new income** into a regional economy
- Creates **jobs** and **upward mobility**
- Supports **infrastructure** (transportation, energy, communications) that other industries benefit from
- Spurs **innovation**, which creates **wealth**



## Manufacturing Share

Employment 14.4%

Wages 17.0%



KS is **1.4X** more concentrated in Manufacturing than the nation.

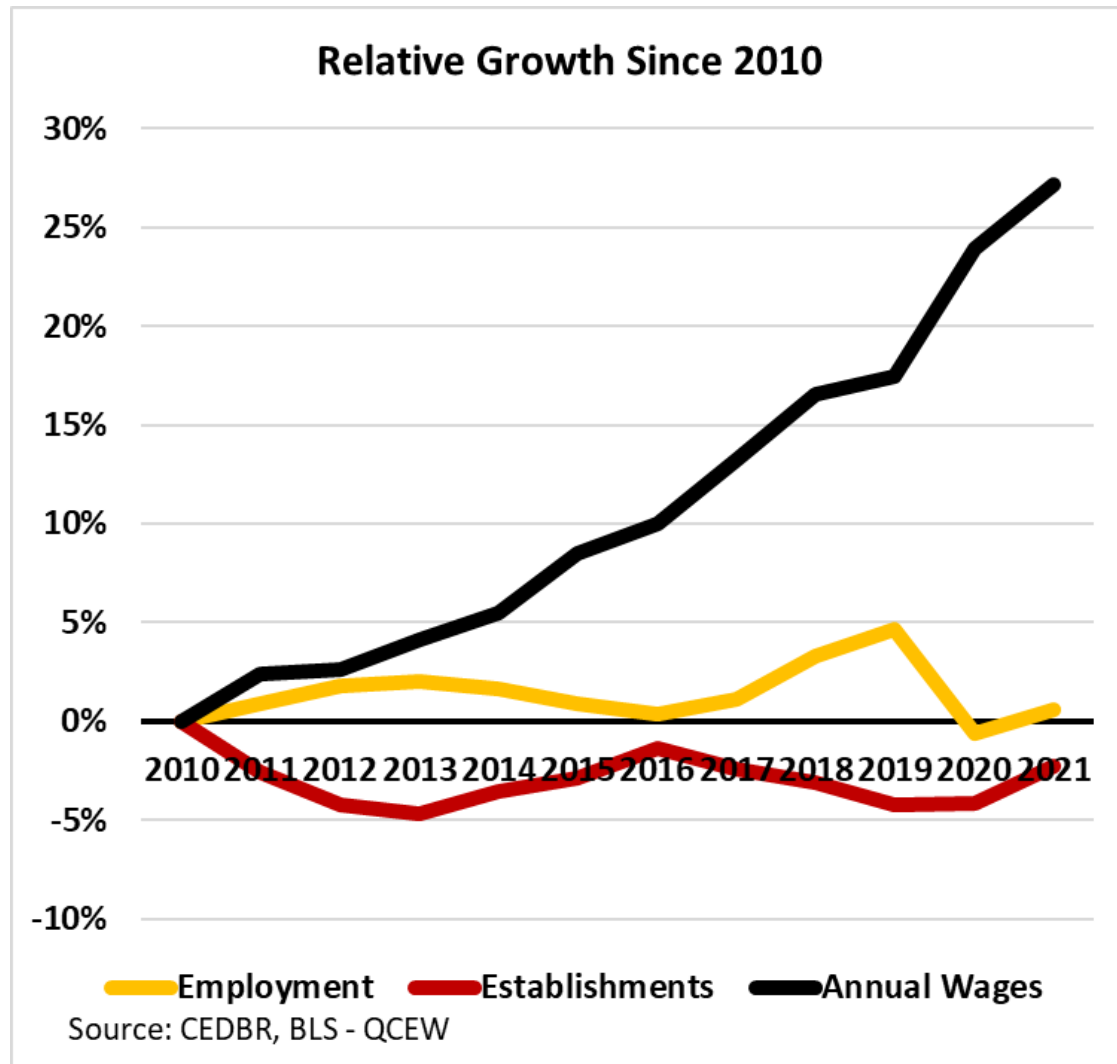
### REGIONAL CONCENTRATION

State	Employment	Employment LQ	Average Wages	Wage LQ
Colorado	148,649	0.64	\$80,779	0.65
Kansas	160,731	1.39	\$64,603	1.48
Missouri	270,834	1.15	\$63,452	1.15
Nebraska	99,519	1.2	\$59,991	1.18
Oklahoma	128,694	0.96	\$62,625	1.03

Source: CEDBR, BLS, QCEW

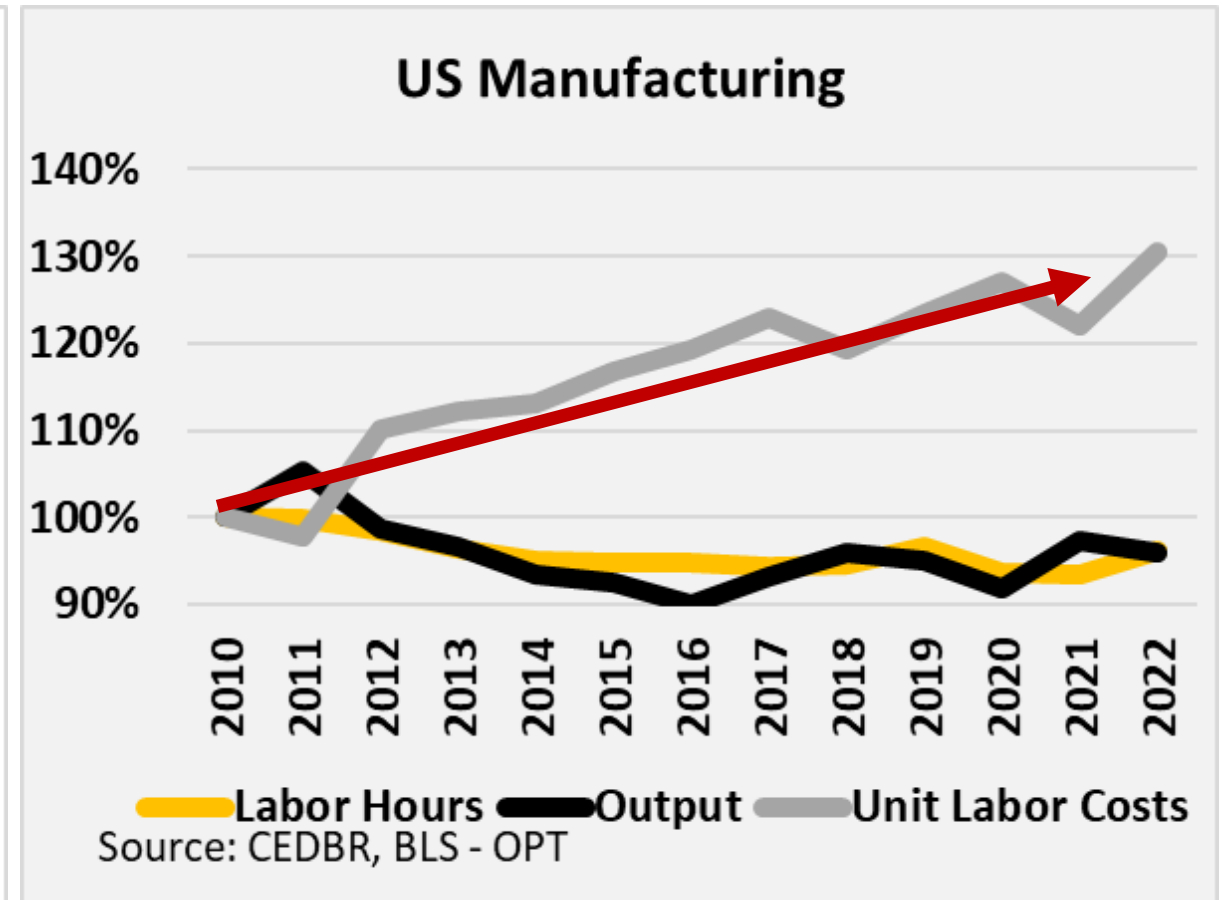
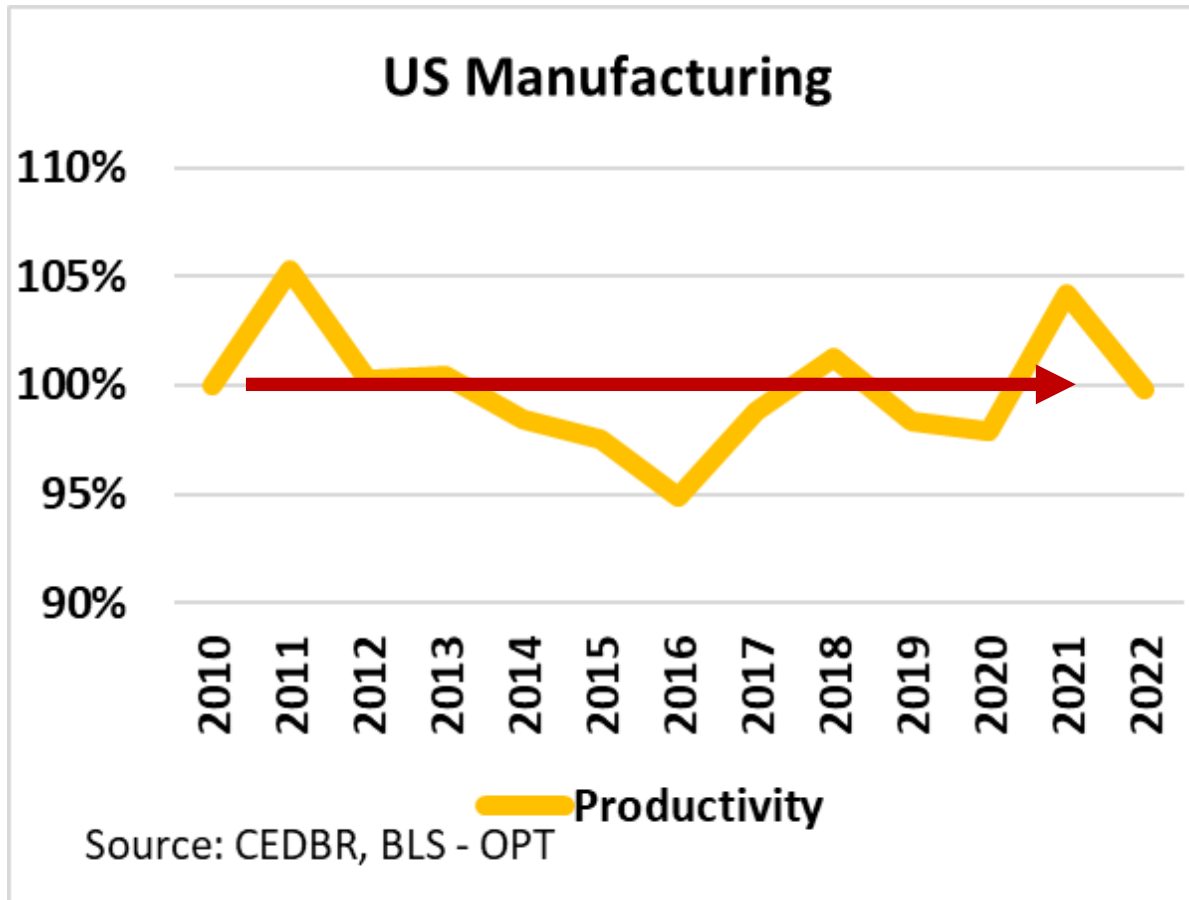


# Manufacturing was resilient during a turbulent decade

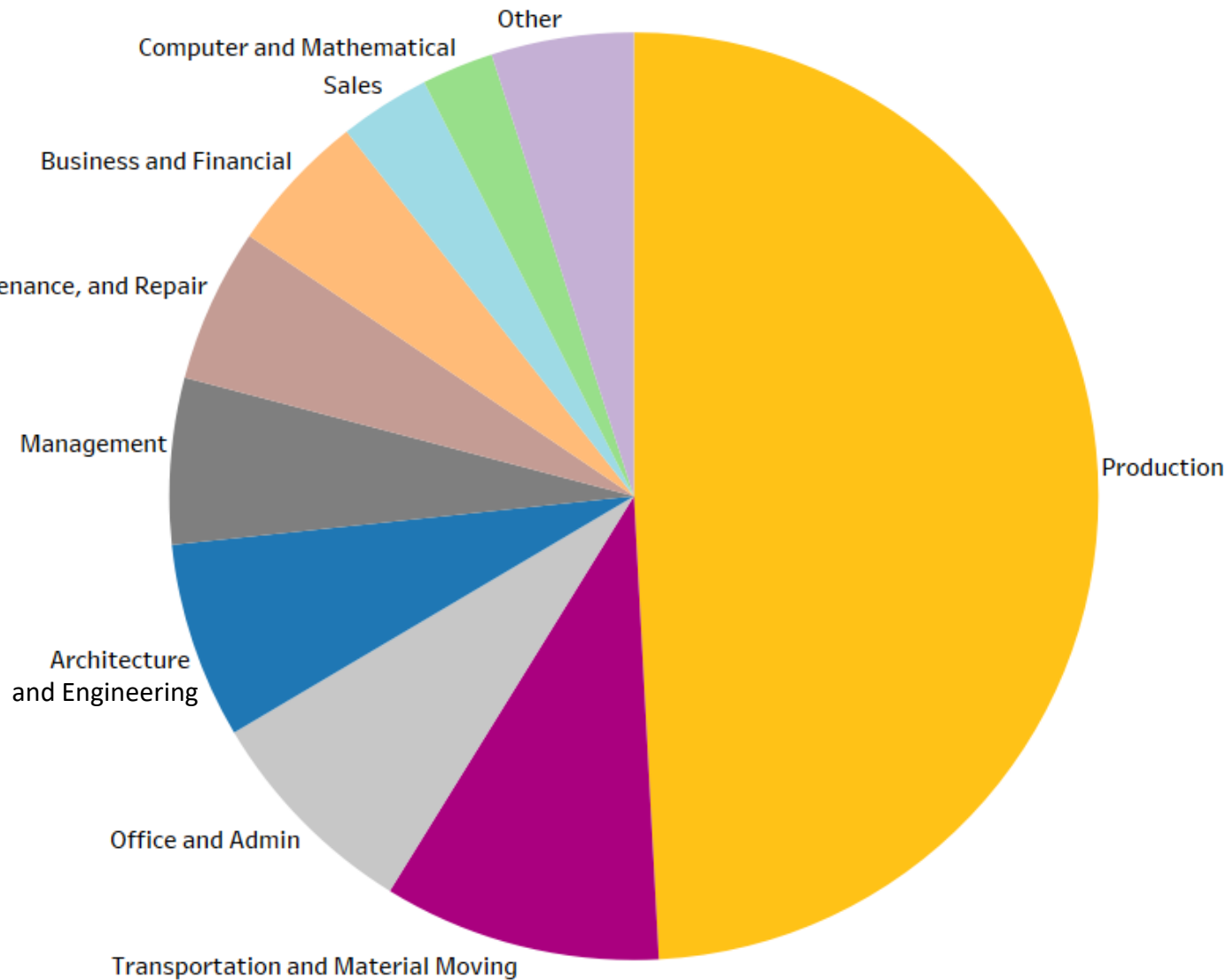


- **Employment** has grown by 0.6% since 2010, adding 960 jobs.
- Kansas **lost 73 manufacturing Establishments** over the eleven-year period.
- Kansas manufacturing **Wages grew by 27%**, ten percentage points slower than the overall state average.
  - **Manufacturing \$64,603**
  - **Total \$53,422**

# Productivity was flat, but labor costs skyrocketed



# Manufacturing Occupations



Occupation Type	Share of Employment
Production	49.2%
Transportation and Material Moving	9.6%
Office and Admin	7.7%
Architecture and Engineering	6.8%
Management	5.8%
Installation, Maintenance, and Repair	5.4%
Business and Financial	4.9%
Sales	3.2%
Computer and Mathematical	2.5%
Other	4.9%

- **Production occupations** are the primary driver
- Production, Transportation, Office, and Engineering account for **almost 75%** of employment
- Manufacturing industry is dependent upon a variety of occupations

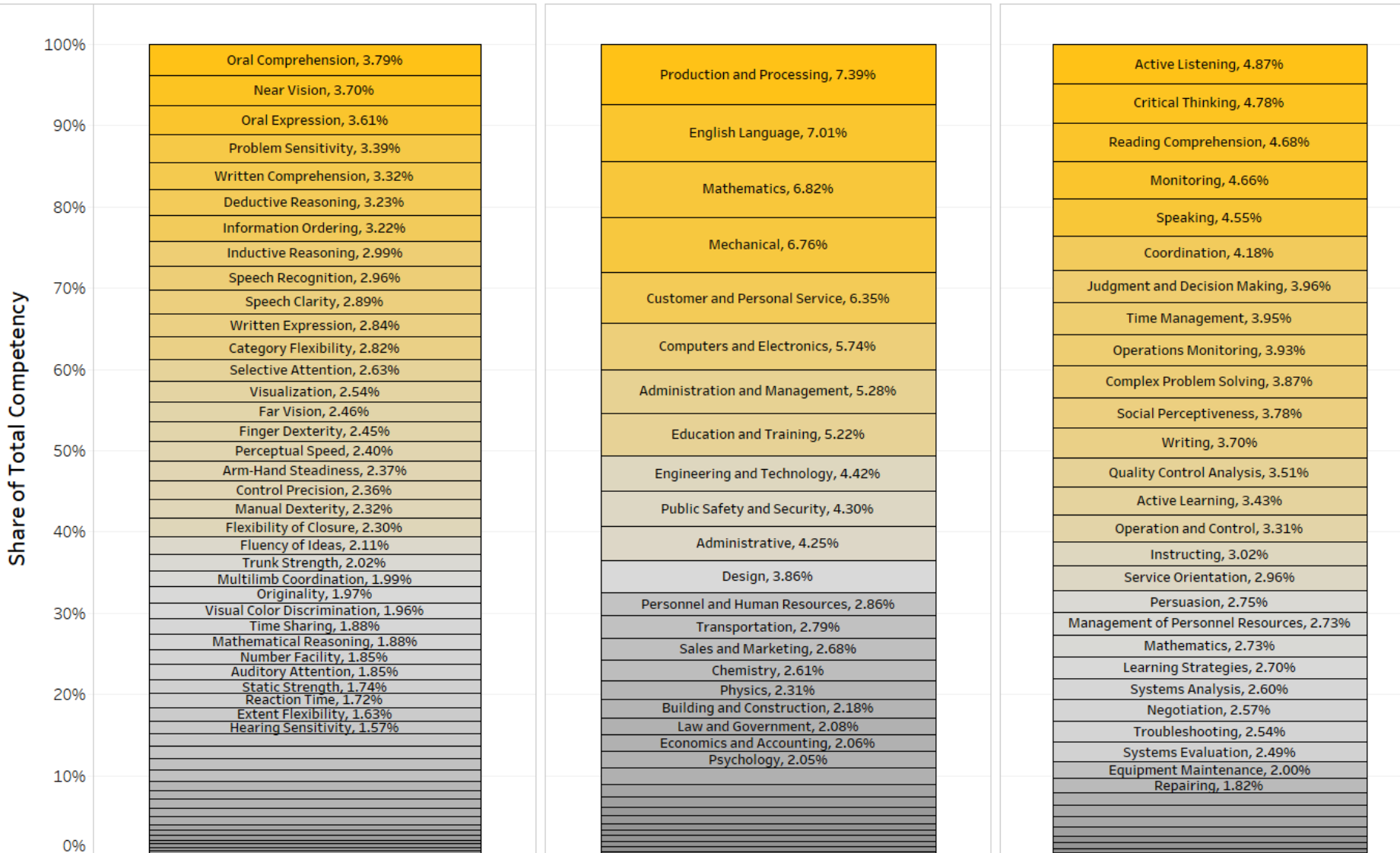


# Key Attributes - Manufacturing

## Abilities

## Knowledge

## Skills



## Abilities - Enduring Attributes

- Oral comprehension/ expression exceeds written
- Cognitive abilities dominate
  - Idea Generation and Reasoning
  - Verbal Abilities

## Knowledge - Domain Principles

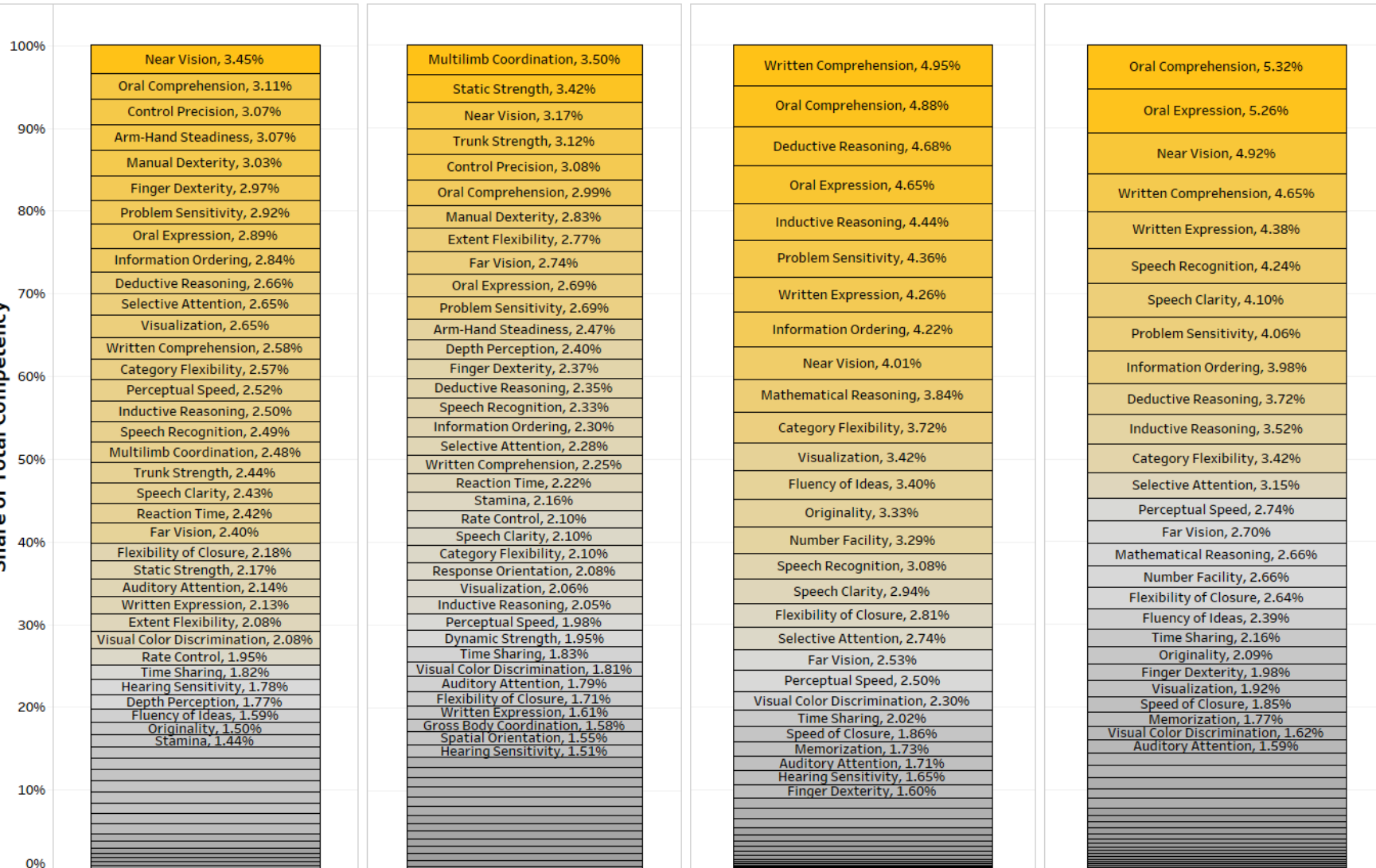
- Procedure knowledge occupies many of top competencies
  - Composition effect
- Customers Service
- Admin/Management
- English Language

## Skills - Developed Capacities

- Basic skills rank highest
- Cross-functional technical skills form mid-range

# Abilities: oral comprehension and near vision

Production      Transportation and Material Moving      Architecture and Engineering      Office and Administration



## Production workers

- Dexterous and precise
- Oral communicators

## Transportation/Material

- Physical strength and strong far vision

## Architecture/Engineering

- Communication
- Understanding of complex problems and information

## Office/Administration

- Communication
- Speaking ranks more highly than other occupation categories



# Knowledge: mathematics and English

Production      Transportation and Material Moving      Architecture and Engineering      Office and Administration

## Production

- Technical knowledge dominates
- Production, Mechanical, Mathematics, and Computers & electronics

## Transportation

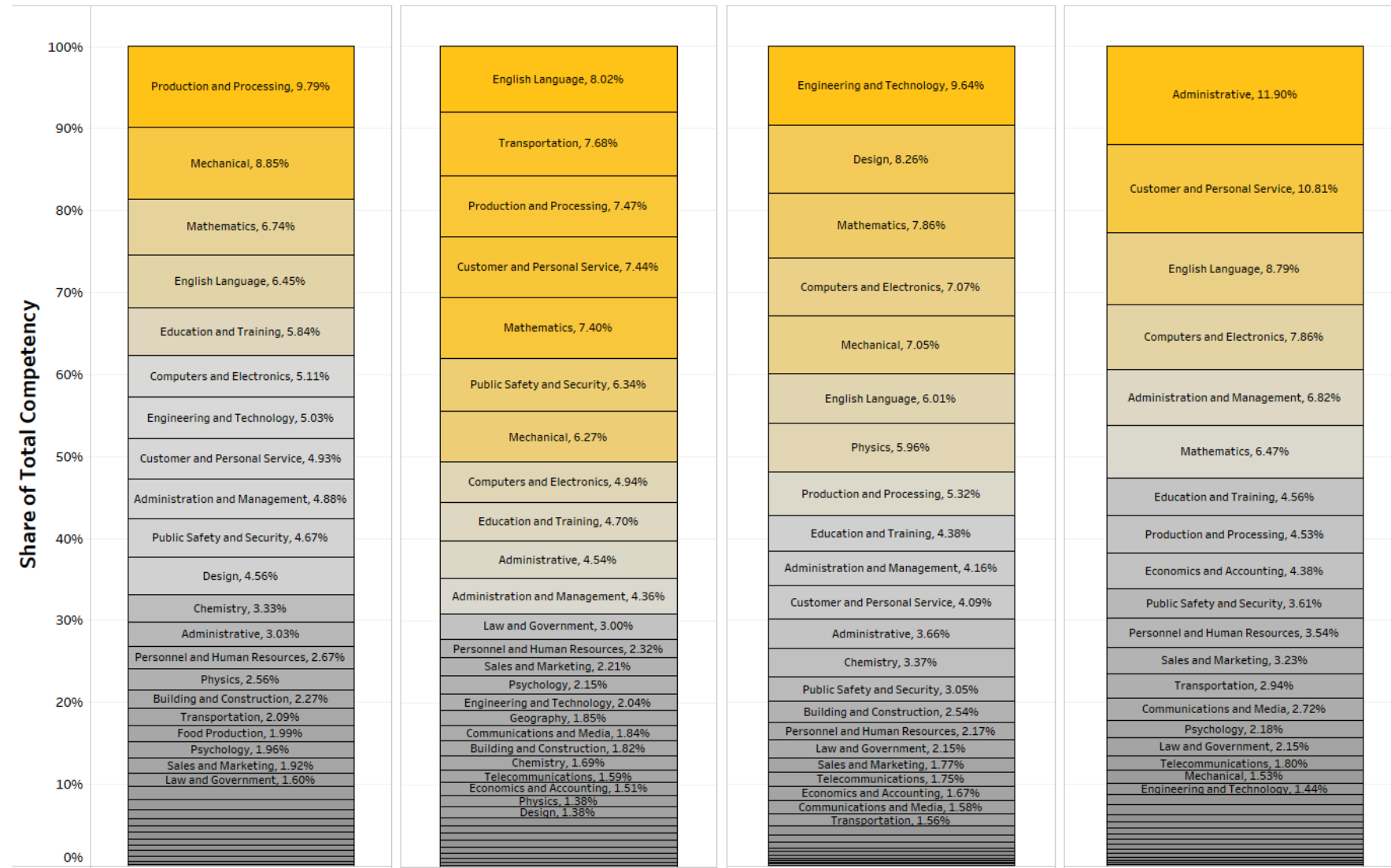
- Language knowledge and customer service
- Needs both business management and applied production knowledge

## Engineering

- Inventiveness and innovation
- Strong math skills, applied tech

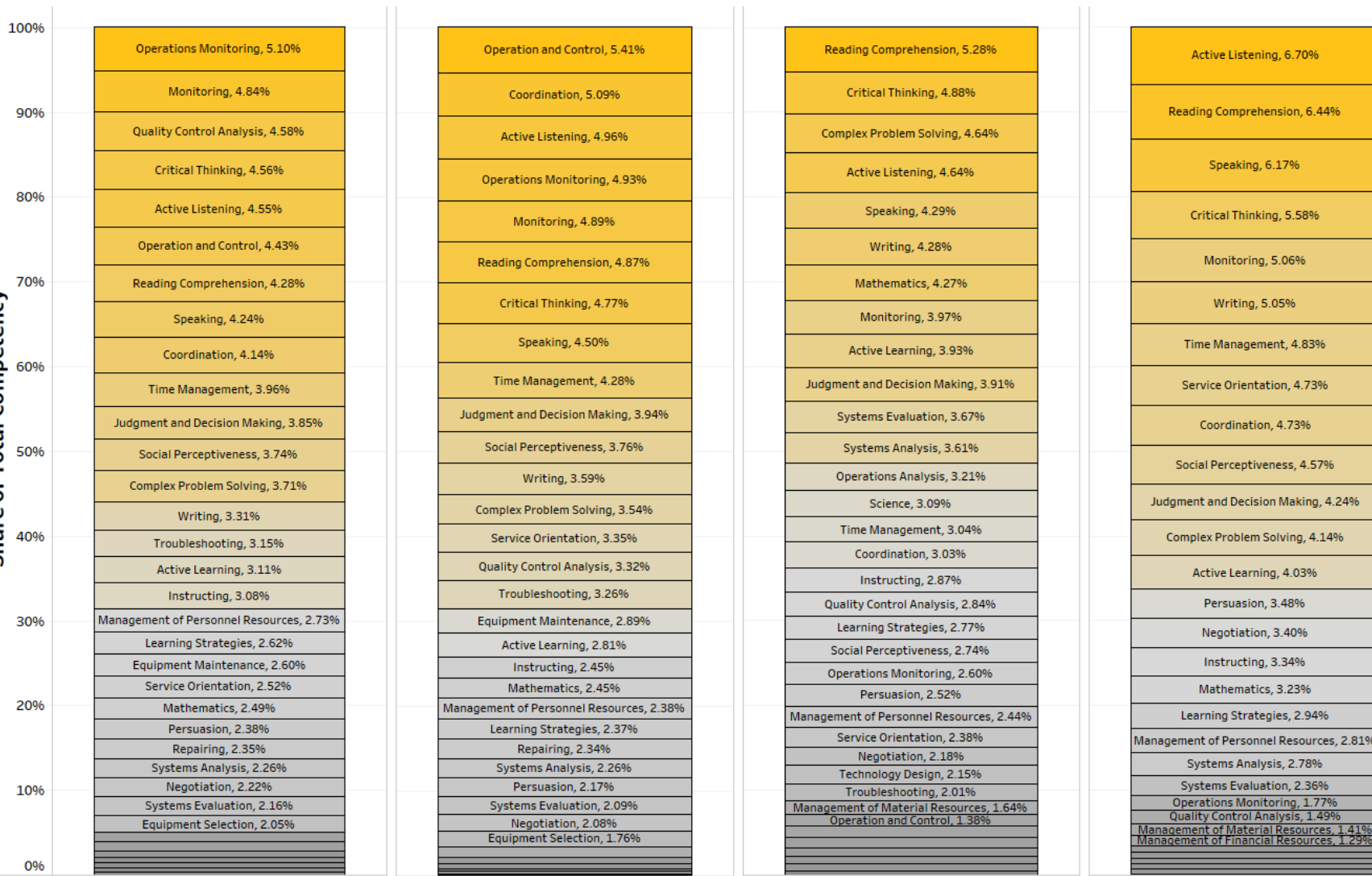
## Office

- Business management, communications, and enabling systems



# Skills: critical thinking and active listening

Production      Transportation and Material Moving      Architecture and Engineering      Office and Administration



## Production

- Less problem-solving, more procedural skills

## Transportation

- Less problem-solving, more procedural skills

## Engineering

- Reading and content/process skills

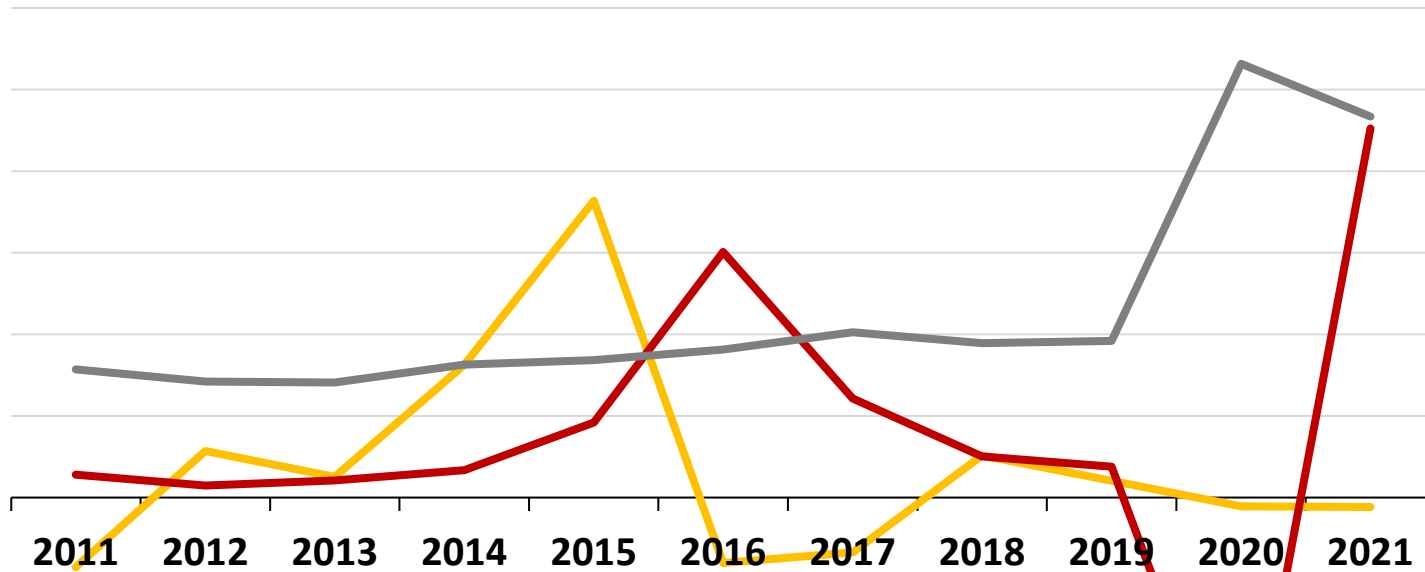
## Office

- Less problem solving, more writing and communication skills

Though KS manufacturing labor demand increased in 2021, **wages have not kept pace** compared to the nation.

## Labor Demand

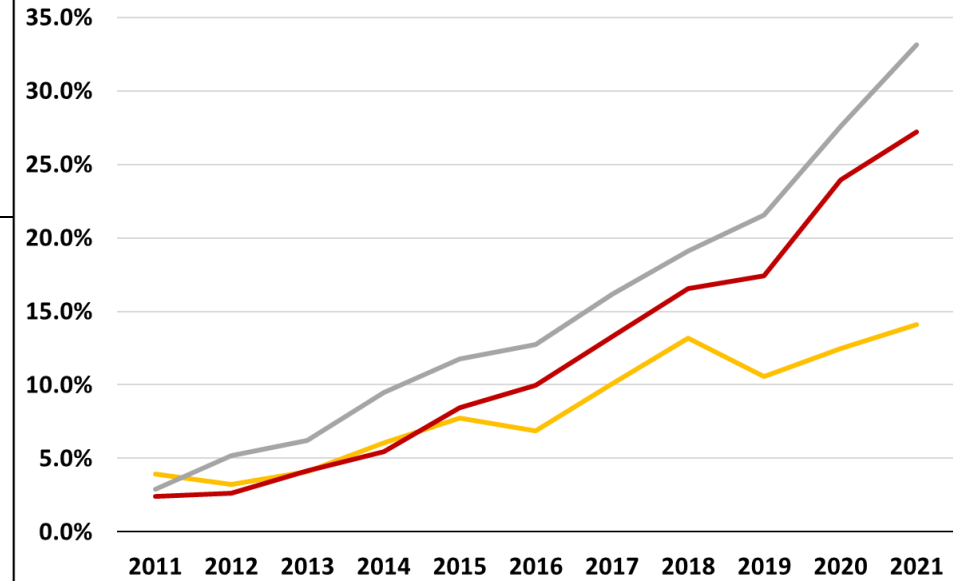
### Employment Growth Relative to Wage Growth



Source: CEDBR, BLS - QCEW

— Wichita — Kansas — US

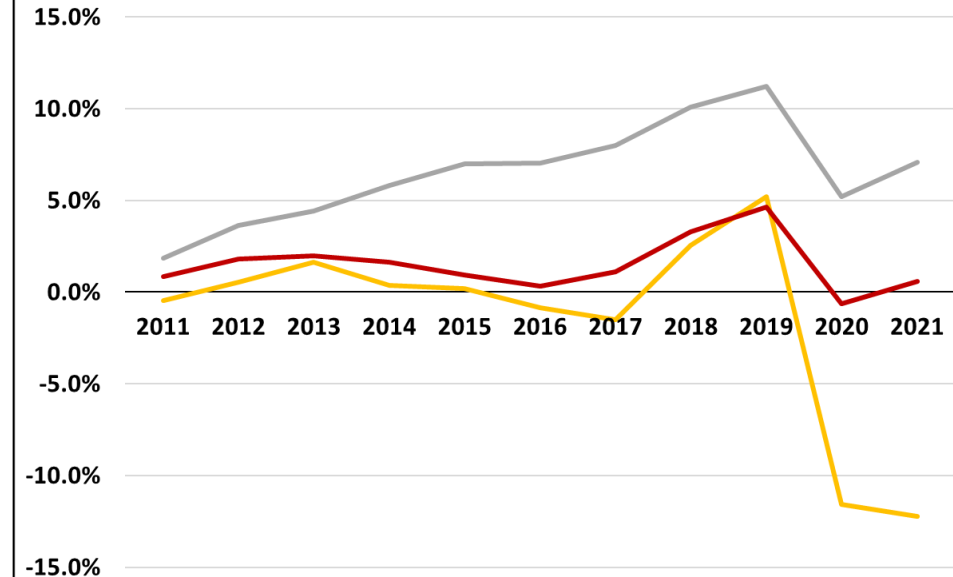
### Wage Growth Relative to 2010



Source: CEDBR, BLS - QCEW

— Wichita — Kansas — US

### Employment Growth Relative to 2010



Source: CEDBR, BLS - QCEW

— Wichita — Kansas — US

# Kansas will likely have an increased labor gap of **21,500** by 2030

Labor Gap - Manufacturing			
Occupation	2023	2025	2030
Management	817	1,167	1,656
Business and Financial Operations	598	844	1,165
Computer and Mathematical	363	545	851
Architecture and Engineering	864	1,254	1,842
Life, Physical, and Social Science	147	202	261
Legal	12	17	22
Arts, Design, Entertainment, Sports, and Media	86	118	152
Healthcare Practitioners and Technical	12	17	22
Protective Service	12	17	22
Food Preparation and Serving Related	133	205	338
Building and Grounds Cleaning and Maintenance	74	101	131
Sales and Related	417	571	740
Office and Administrative Support	751	863	613
Farming, Fishing, and Forestry	37	50	65
Construction and Extraction	231	340	512
Installation, Maintenance, and Repair	764	1,141	1,767
Production	5,736	7,600	9,054
Transportation and Material Moving	1,172	1,654	2,287
<b>Total</b>	<b>12,225</b>	<b>16,705</b>	<b>21,502</b>

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC

## Solutions to the KS labor gap

- Internal training
- Labor attraction
- Increased wages

# Rank the following supply chain strategies for 2023 (top= most important).

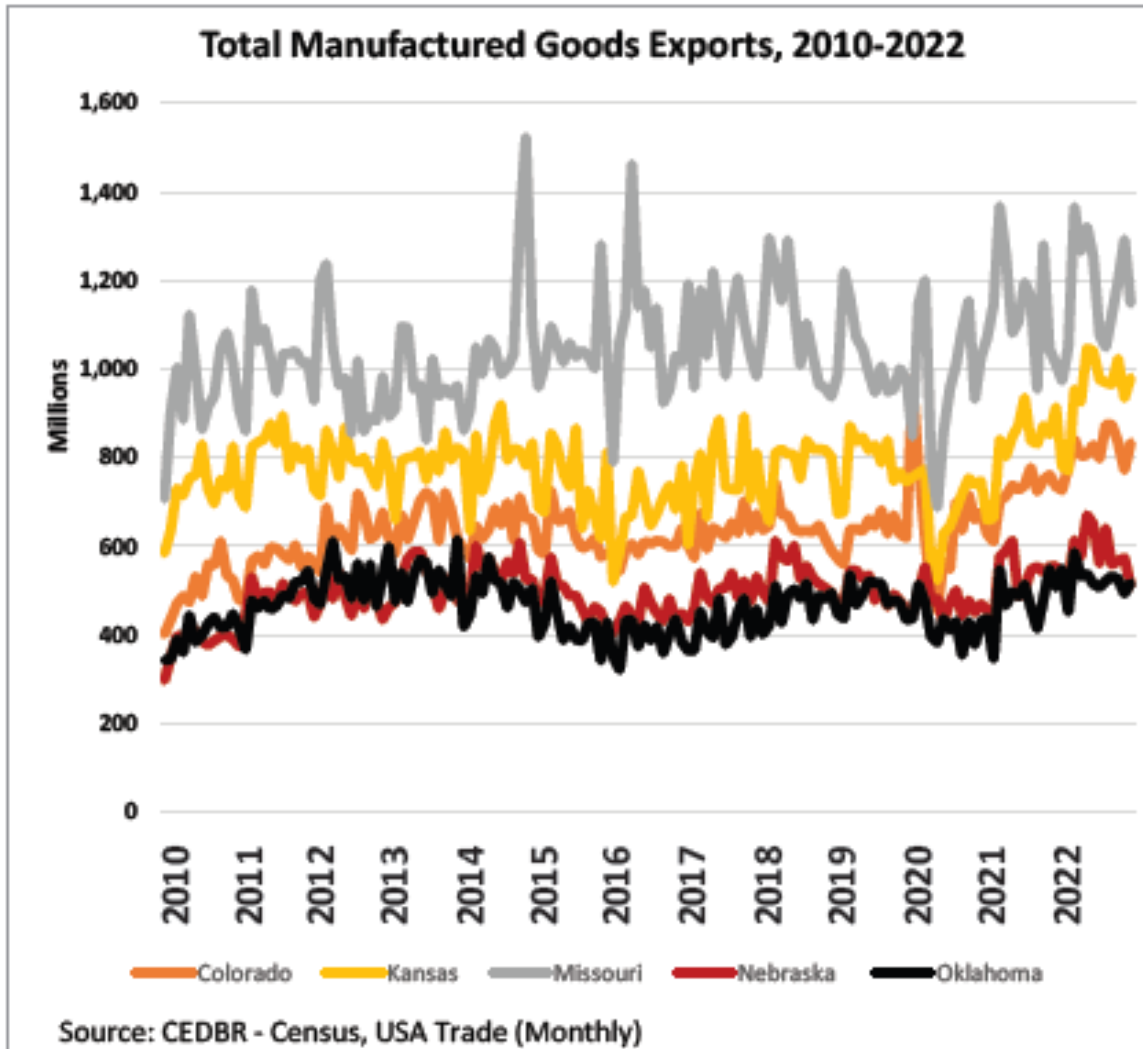
Relationship management

Building redundancy

Increasing alternatives or  
domestic options

Implementing digital  
solution

KS had **1.7 X** more manufacturing exports per capita than MO



## Manufacturing Exports per Capita

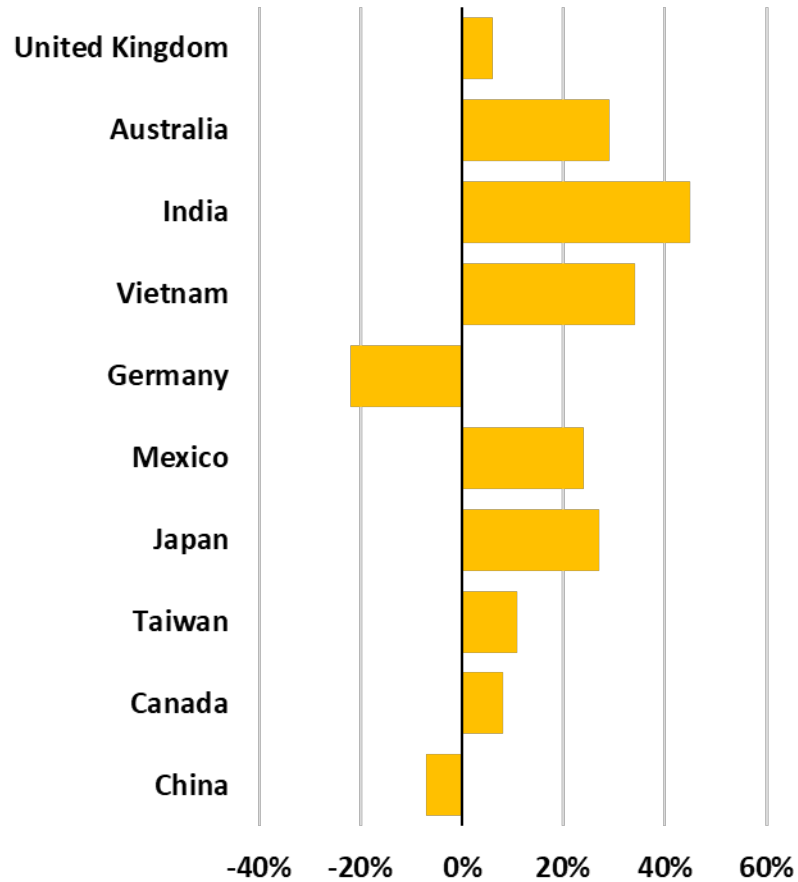
State	2021	2022
Colorado	\$1,490	\$1,693
<b>Kansas</b>	<b>\$3,381</b>	<b>\$3,869</b>
Missouri	\$2,223	\$2,294
Nebraska	\$3,266	\$3,552
Oklahoma	\$1,442	\$1,584

Source: CEDBR, USA Trade



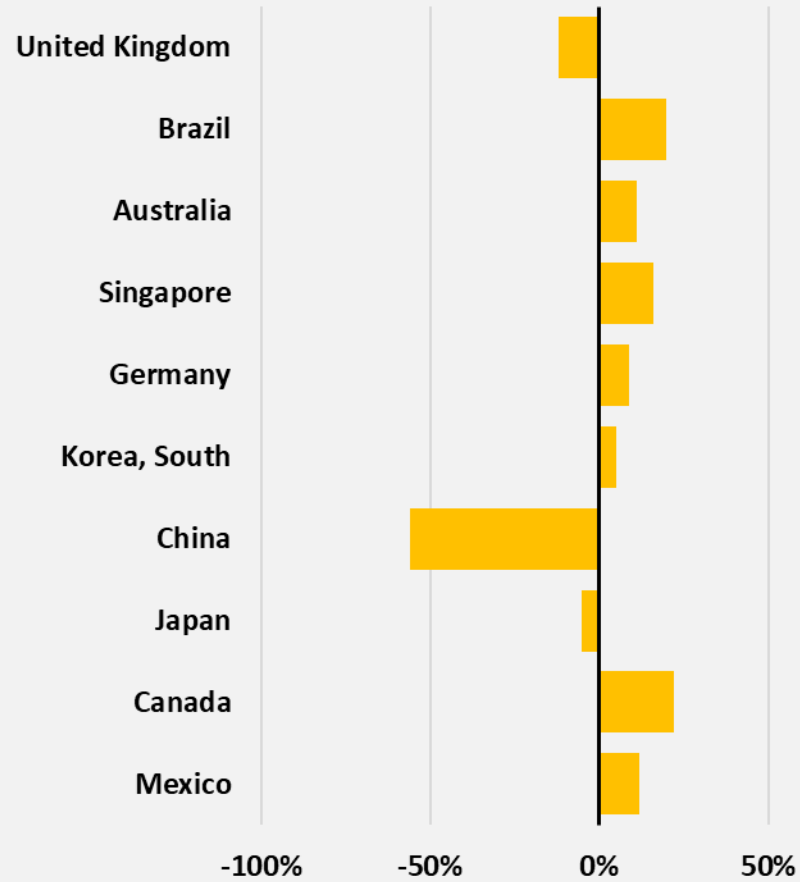
# Who are we trading with?

Imports Yr/Yr % 2020-2021



Source: CEDBR - USA Trade

Exports Yr/Yr % 2020-2021



Source: CEDBR - USA Trade

## Imports

- Germany vs. India
  - Agricultural Machinery
  - Chemicals

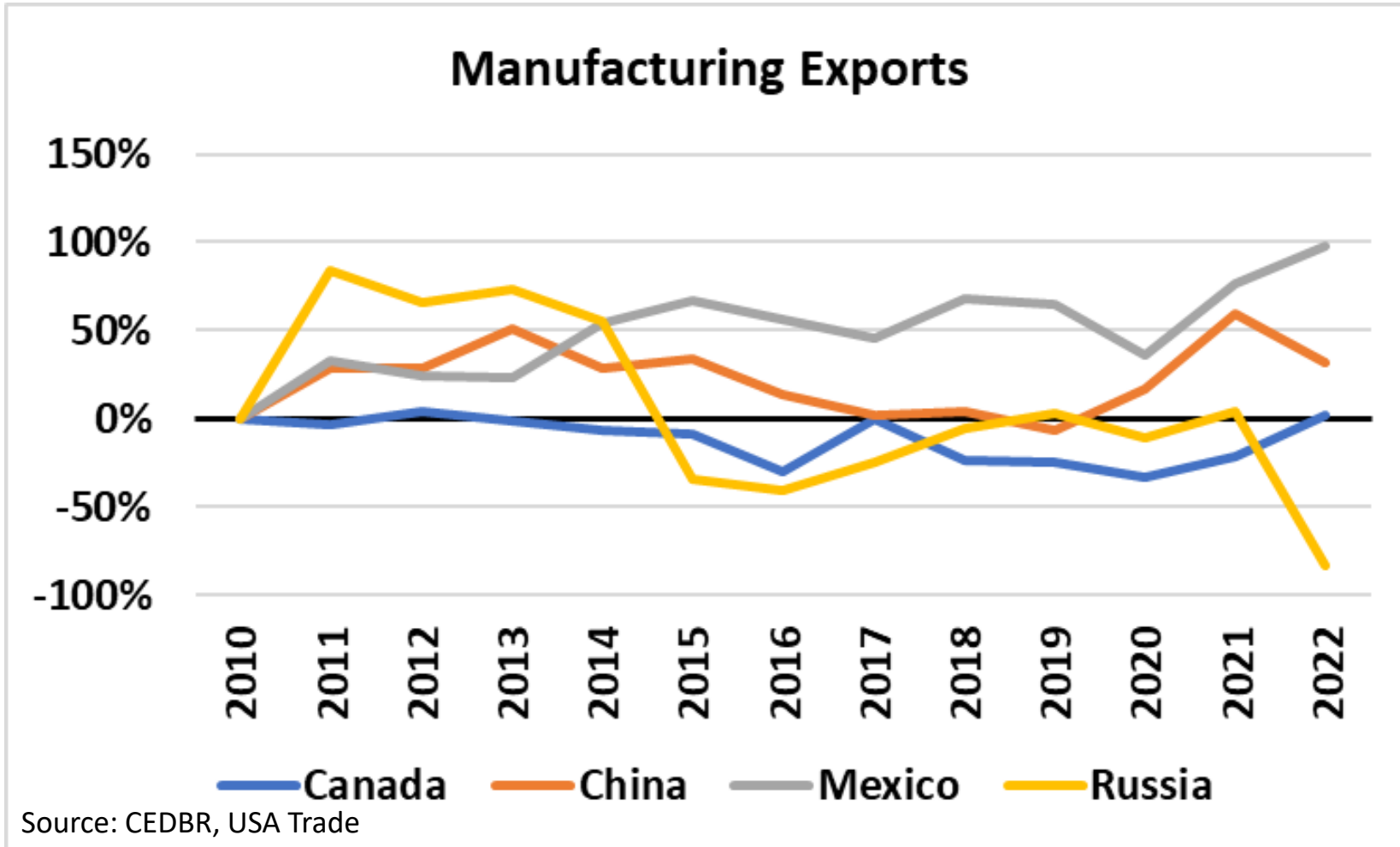
## Exports

- China
  - Food
  - Transportation Equipment



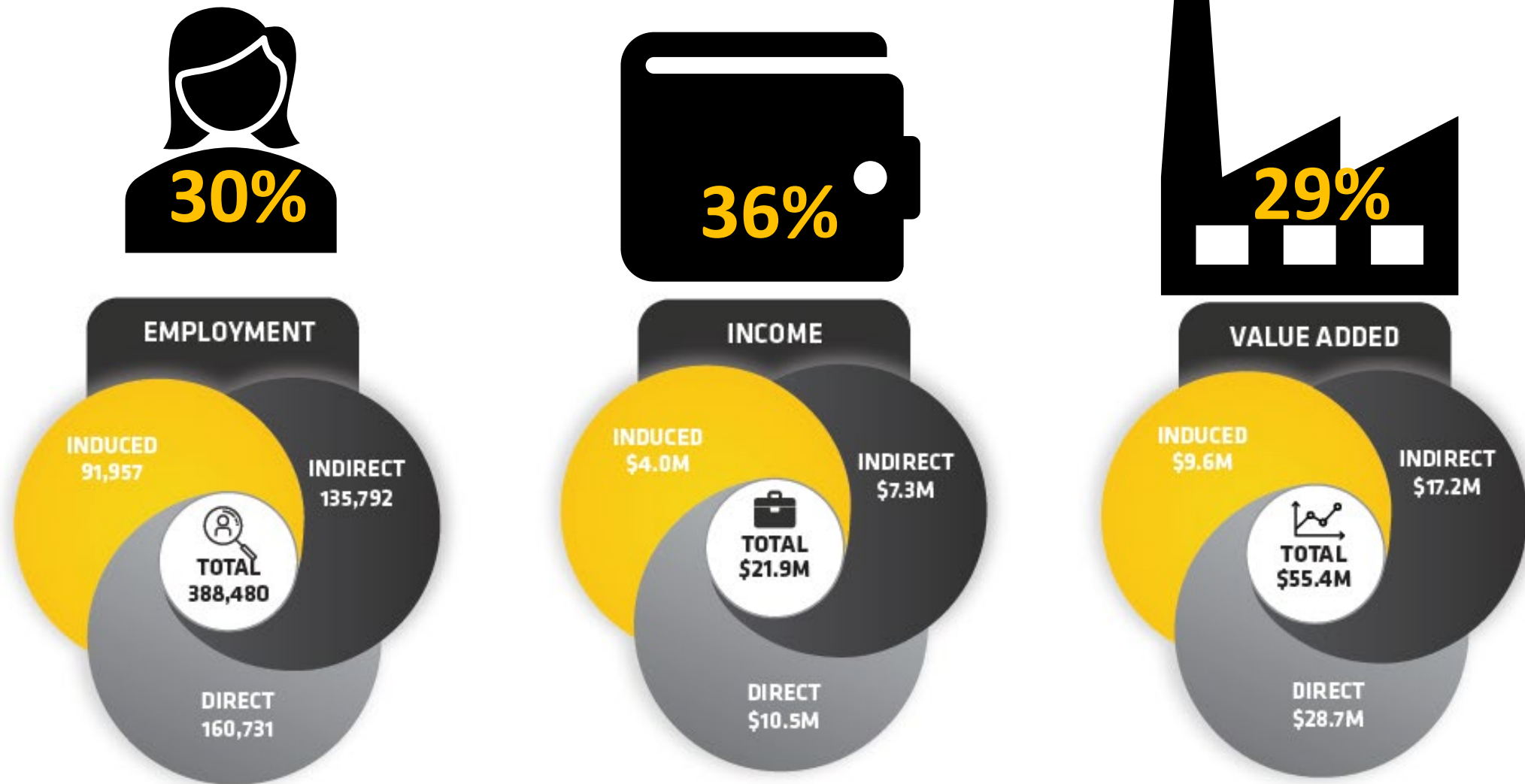
Source: CEDBR, Census - USA Trade

# Trade relations and activity



- **Russia**
  - Decreasing overall
    - Internal sanctions
    - External factors
- **China**
  - Increased political tensions
  - Volatile market demand
  - Supply chain issues
- **USMCA**
  - Canada recovery to 2010 standard
  - Improving export relations with Mexico

# Manufacturing Supports Over 1/3 of the Kansas Economy.



Manufacturing directly supports 160,000 jobs with \$10.5B in annual wages. Those jobs support over 388,000 workers, representing 30% of the Kansas Economy.

## Summary



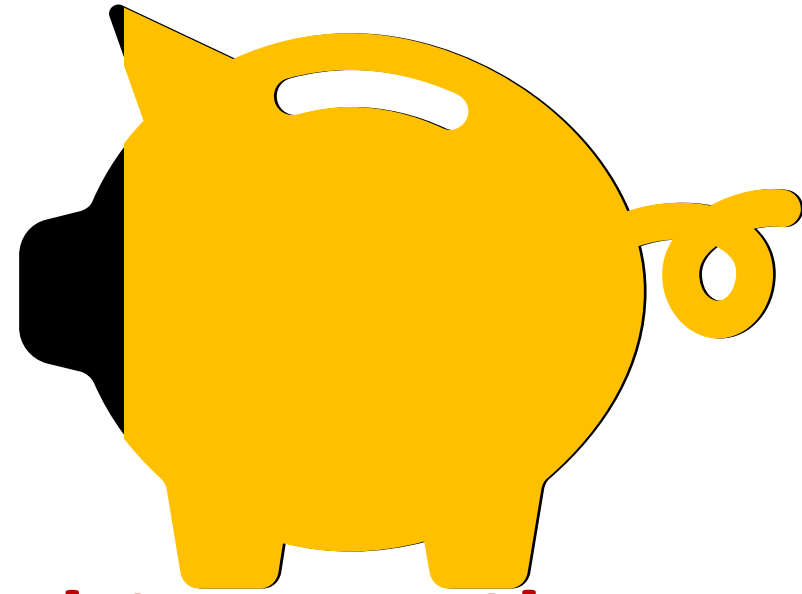
Kansas City's Garment District Christmas Party

Source: KCUR.org

- Kansas was **resilient** during a turbulent decade.
- Skilled-**labor gap is increasing**, necessitating higher wages and education investment to meet demand
- Kansas **eclipses** surrounding states in manufacturing **exports per capita**.
- KS manufacturing **supports** over **1/3** of the Kansas Economy annually.

## Why the top ten?

- ...because 21 sectors are too many.
- Kansas has a **comparative advantage**
- The sectors **drive** the economy, and impact booms and busts the most.
- The sectors **uniquely capitalize** on our resources (land, labor, and capital).



## Selected Sectors Share of Total Manufacturing

Employment 88.3%

Wages 90.1%

# Top Ten-Defining Manufacturing Segments



**Petroleum**



**Food**



**Transportation**



**Printing**



**Machinery**



**Plastic**



**Nonmetallic mineral**



**Fabricated Metal**



**Chemical**



**Computer**

# Selected companies by the top 10



Petroleum



Food



Transportation



Printing



Machinery



Plastic



Nonmetallic mineral



Fabricated Metal

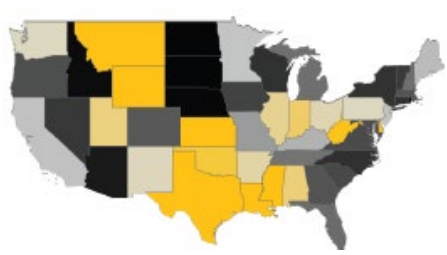


Chemical

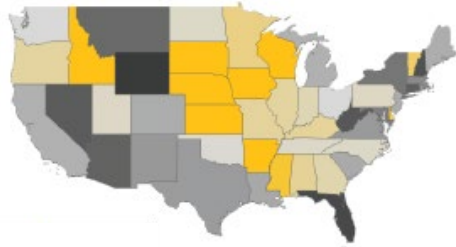


Computer

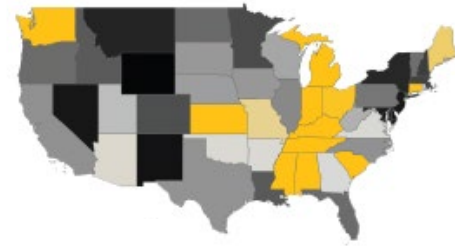
# Kansas Tops the Nation in 7 of our Top 10 Segments



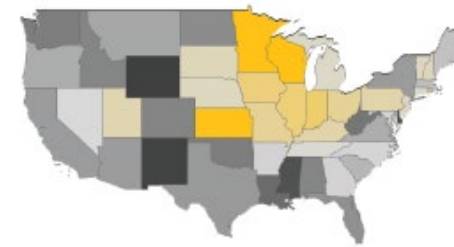
Petroleum ✓



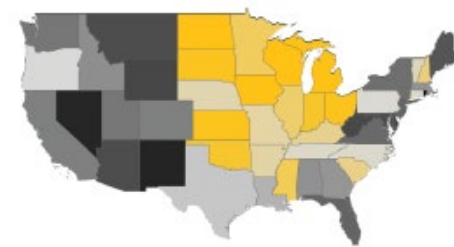
Food ✓



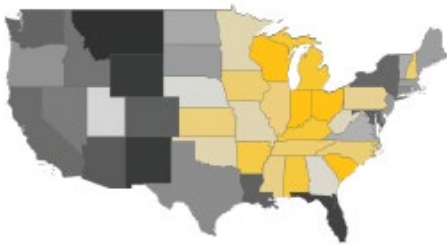
Transportation ✓



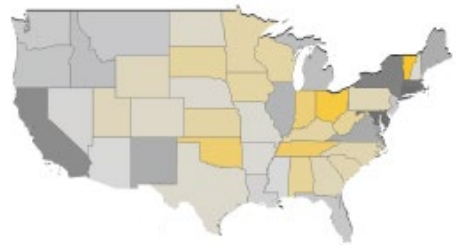
Printing ✓



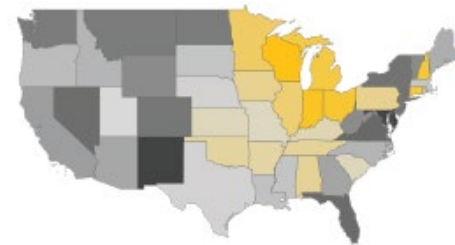
Machinery ✓



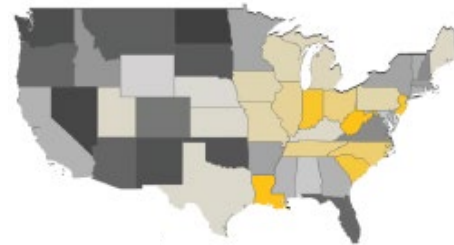
Plastic ✓



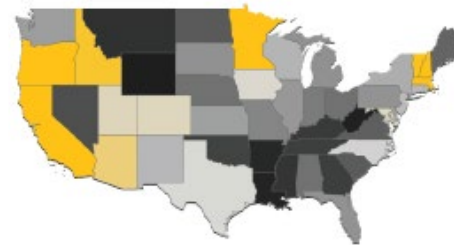
Nonmetallic mineral ✓



Fabricated Metal



Chemical



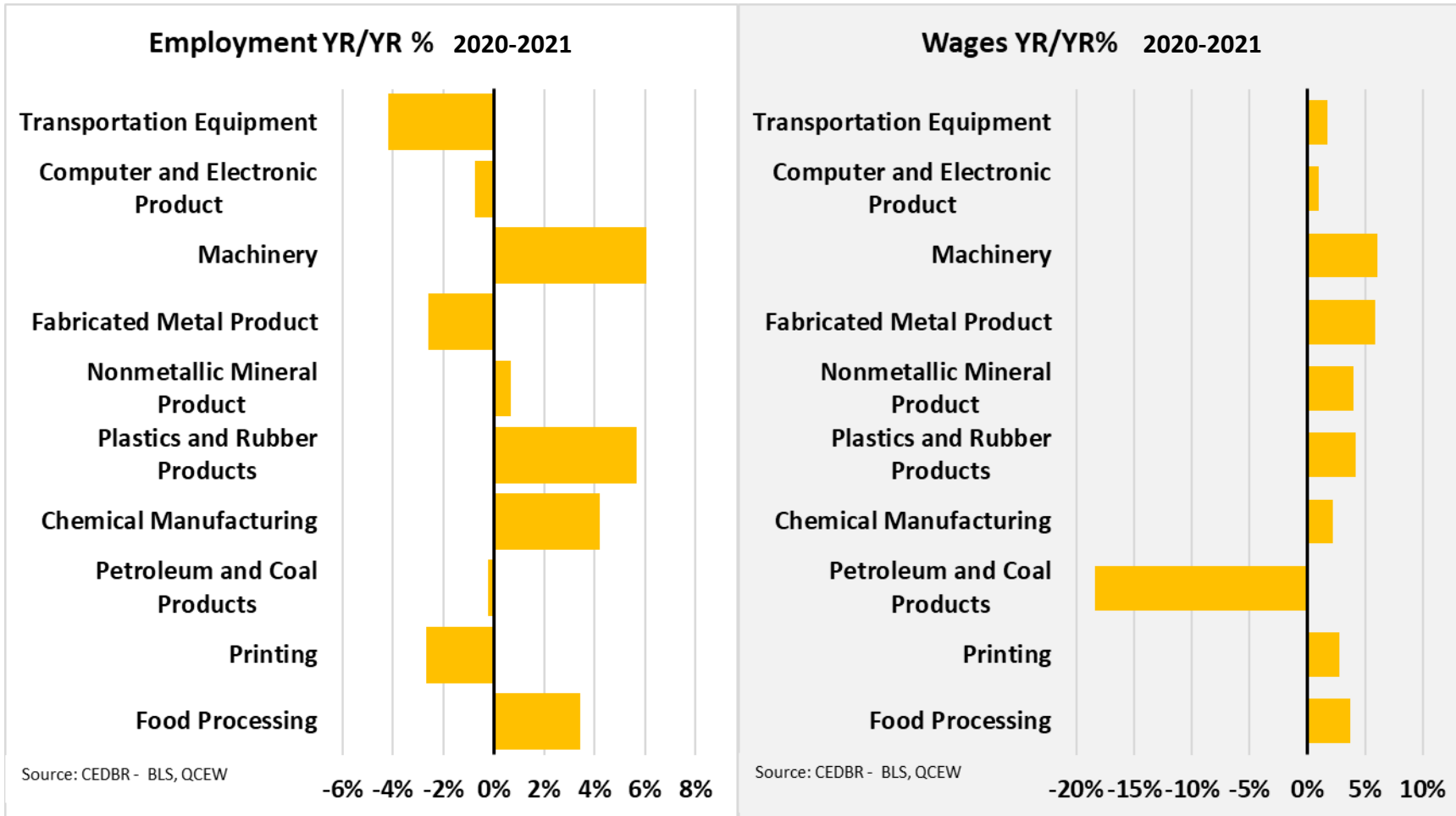
Computer

0.00 2.00

Source: CEDBR, BLS - QCEW



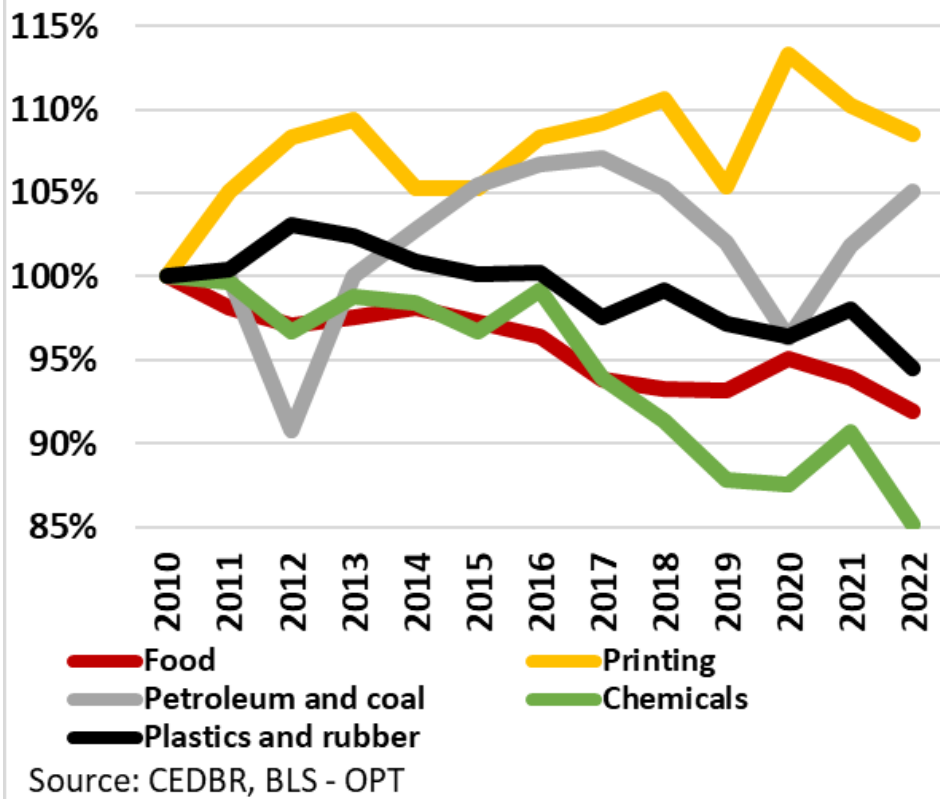
# KS machinery and plastics are expanding



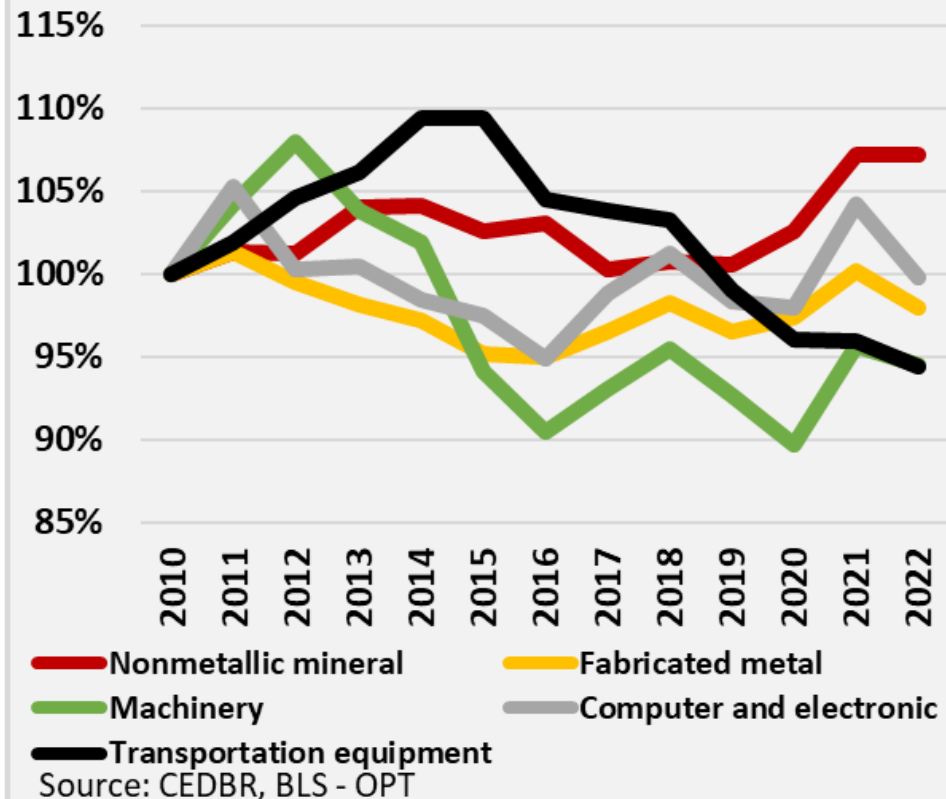
- **Transportation Equipment** employment **declined by 4%** over the last year while **wages increased**.
- **Machinery Manufacturing** had the **strongest growth** of all sectors.
- **Plastics and Rubber** employment **grew by 5.4%**
- **Food processing** is at an **all-time high**

# US firms are finding it difficult to squeeze value out of the labor market

US Productivity

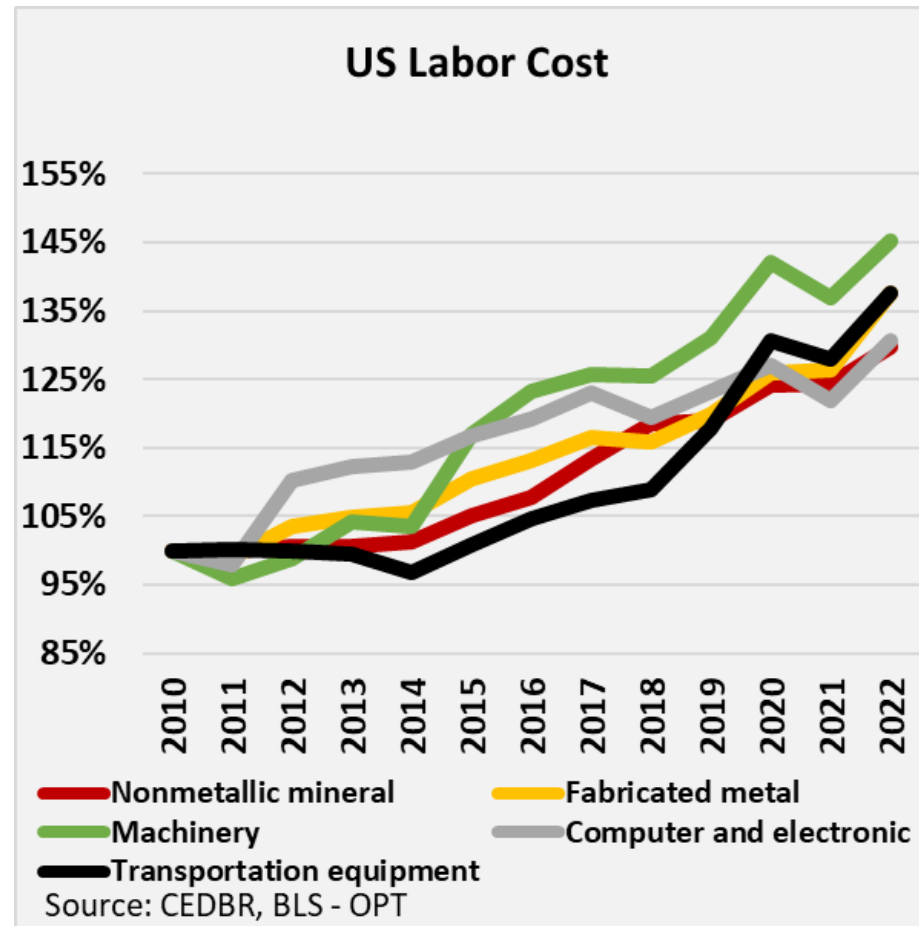
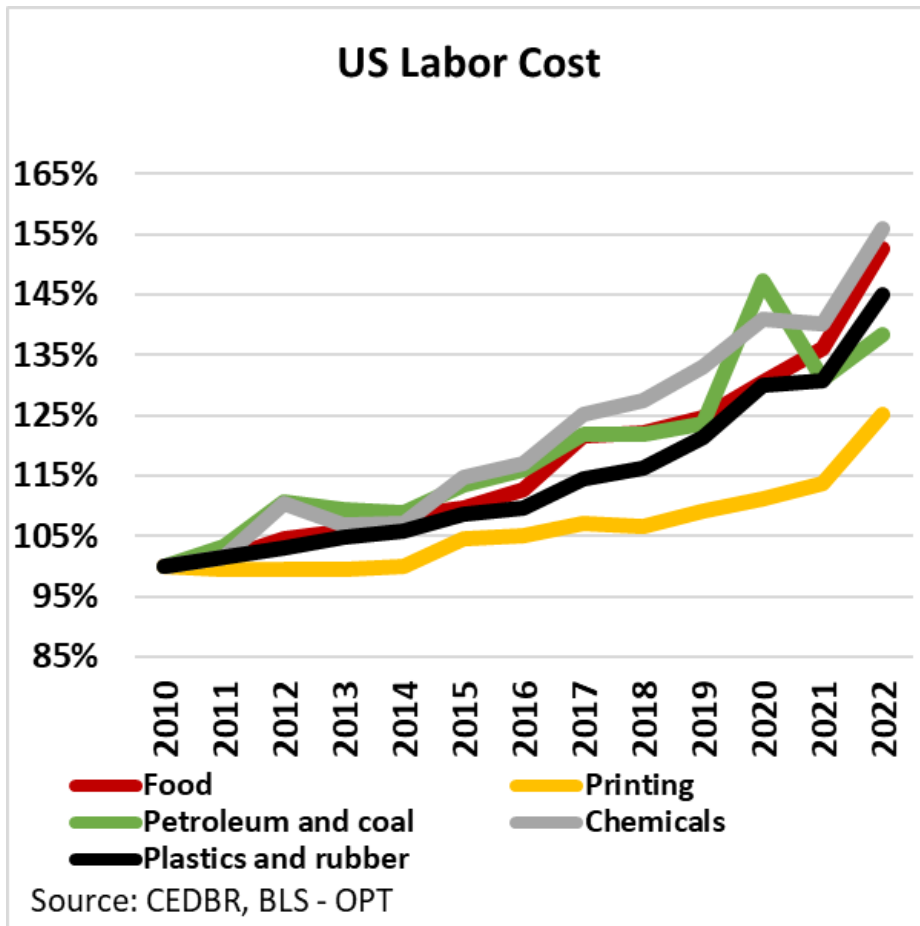


US Productivity



- **Printing** grew by almost **9%**, the fastest among selected sectors
- **Chemicals** had the **biggest decline** from increasing input costs
- **Transportation** productivity **dropped 6%** as labor became more difficult to find

# Total unit labor costs soar, as firms fight over talent



- **Chemicals** and **food** manufacturing had the **highest increase** in labor costs.
- **Printing** was the **laggard** in labor costs, a sign of **decreasing labor demand**.

# Rank the following talent management strategies for 2023(top=most important).

Upskilling and reskilling  
(increased training dollars)

DEI (diversity, equity, and  
inclusion) strategy

Pay or bonus increases

Flexible work arrangements

# Mathematics, critical thinking, and oral comprehension are in high demand across industries

Knowledge			
Attribute	Chemical Products	Computer Products	Transportation Equipment
Mathematics	6.66%	7.11%	7.06%
Mechanical	5.76%	5.24%	6.98%
English Language	7.00%	7.46%	6.87%
Computers and Electronics	5.98%	8.33%	6.72%
Production and Processing	6.88%	5.93%	6.65%
Engineering and Technology	4.02%	5.62%	5.88%
Customer and Personal Service	6.07%	6.39%	5.72%
Education and Training	5.14%	5.07%	5.40%
Administration and Management	5.28%	5.35%	5.17%
Design	2.97%	4.77%	5.17%

Skills			
Attribute	Chemical Products	Computer Products	Transportation Equipment
Critical Thinking	4.70%	4.95%	4.77%
Reading Comprehension	4.87%	5.05%	4.70%
Active Listening	4.80%	4.99%	4.64%
Monitoring	4.55%	4.37%	4.37%
Speaking	4.42%	4.67%	4.37%
Complex Problem Solving	3.85%	4.11%	4.08%
Judgment and Decision Making	3.92%	4.06%	3.95%
Writing	4.02%	4.11%	3.87%
Coordination	3.98%	3.85%	3.81%
Time Management	3.78%	3.81%	3.68%

Abilities			
Attribute	Chemical Products	Computer Products	Transportation Equipment
Oral Comprehension	4.07%	4.63%	4.09%
Oral Expression	3.94%	4.40%	3.86%
Written Comprehension	3.71%	4.35%	3.86%
Near Vision	3.67%	4.19%	3.78%
Problem Sensitivity	3.63%	4.04%	3.72%
Deductive Reasoning	3.44%	4.08%	3.71%
Information Ordering	3.33%	3.90%	3.58%
Inductive Reasoning	3.23%	3.82%	3.45%
Written Expression	3.27%	3.81%	3.32%
Speech Recognition	3.03%	3.43%	3.05%

Source: CEDBR, Census - ONET

**Knowledge** shows the greatest variance by subsector.

- Specialized manufacturing processes create unique requirements of knowledge.

Large **skill and ability overlap** among chemical products, computer products, and transportation equipment

• Most key:

- Oral/verbal comprehension and expression,
- Critical thinking
- Process monitoring



# Food and Transportation have the largest expected gap in 2030

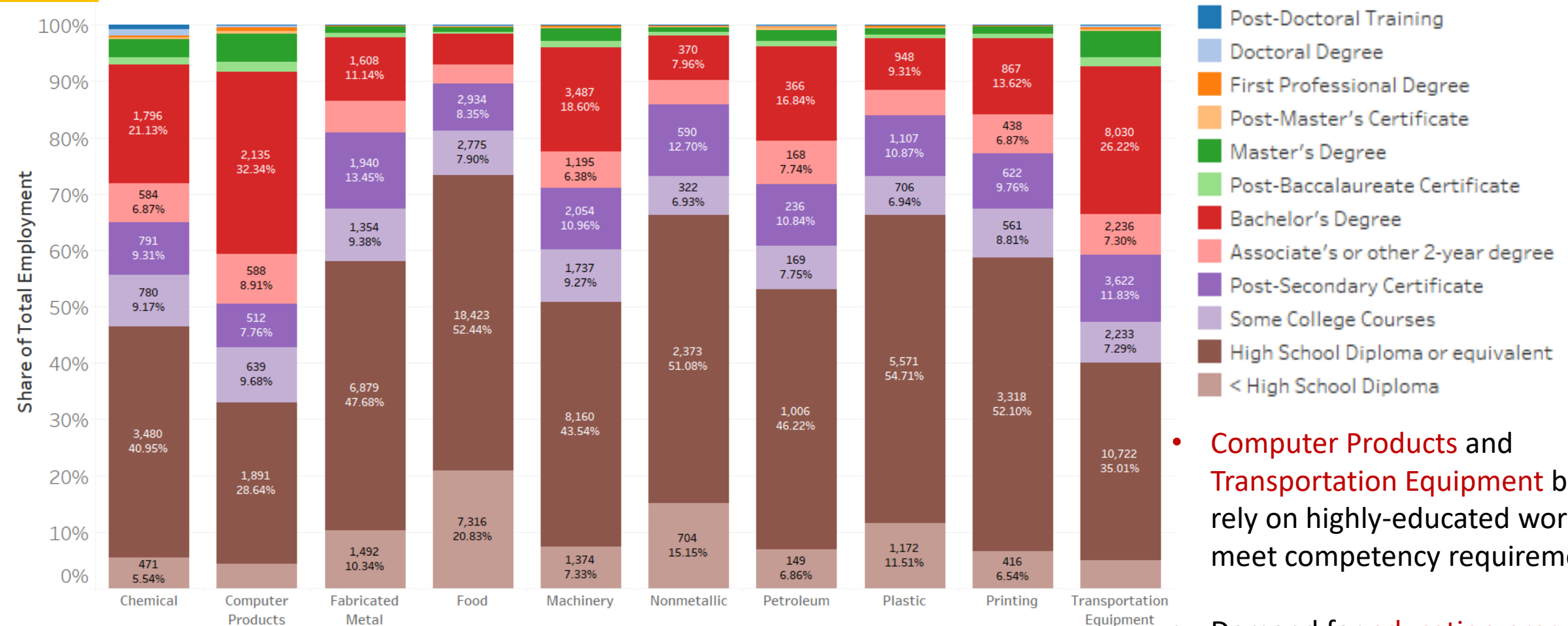
## Labor Gap in 2030, By Manufacturing Subsector

Occupation	Food	Printing	Petrol.	Chemical	Plastic	Nonmetal	Fab. Metal	Machinery	Comp. & Elect.	Transp. Eq.
Management	176	15	18	262	64	3	89	157	347	325
Business and Financial Operations	122	8	17	183	39	2	47	111	294	380
Computer and Mathematical	44	6	2	57	8	0	6	74	505	256
Architecture and Engineering	25	0	16	180	48	1	50	329	612	752
Life, Physical, and Social Science	53	0	9	282	4	0	3	5	22	25
Legal	0		0	3	0		0	2	15	0
Arts, Design, Entertainment, Sports, and Media	4	14	1	11	2	0	1	7	22	18
Healthcare Practitioners and Technical	4		0	8	0		0	0	3	0
Healthcare Support	0			3						
Protective Service	4	0	0	3	0	0	1	0	3	12
Food Preparation and Serving Related	107							0	0	0
Building and Grounds Cleaning and Maintenance	110	0	0	25	4	0	4	22	9	12
Sales and Related	116	20	5	86	28	2	36	81	135	91
Office and Administrative Support	89	-56	2	165	28	-31	4	32	178	219
Farming, Fishing, and Forestry	41			5				0		
Construction and Extraction	8	0	17	13	4	13	65	15	6	154
Installation, Maintenance, and Repair	407	1	41	224	124	16	70	162	90	518
Production	2,050	29	74	962	485	36	399	588	827	3,065
Transportation and Material Moving	831	15	22	195	139	17	76	86	69	349
<b>Total</b>	<b>4,192</b>	<b>52</b>	<b>224</b>	<b>2,665</b>	<b>976</b>	<b>60</b>	<b>851</b>	<b>1,672</b>	<b>3,137</b>	<b>6,177</b>

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC

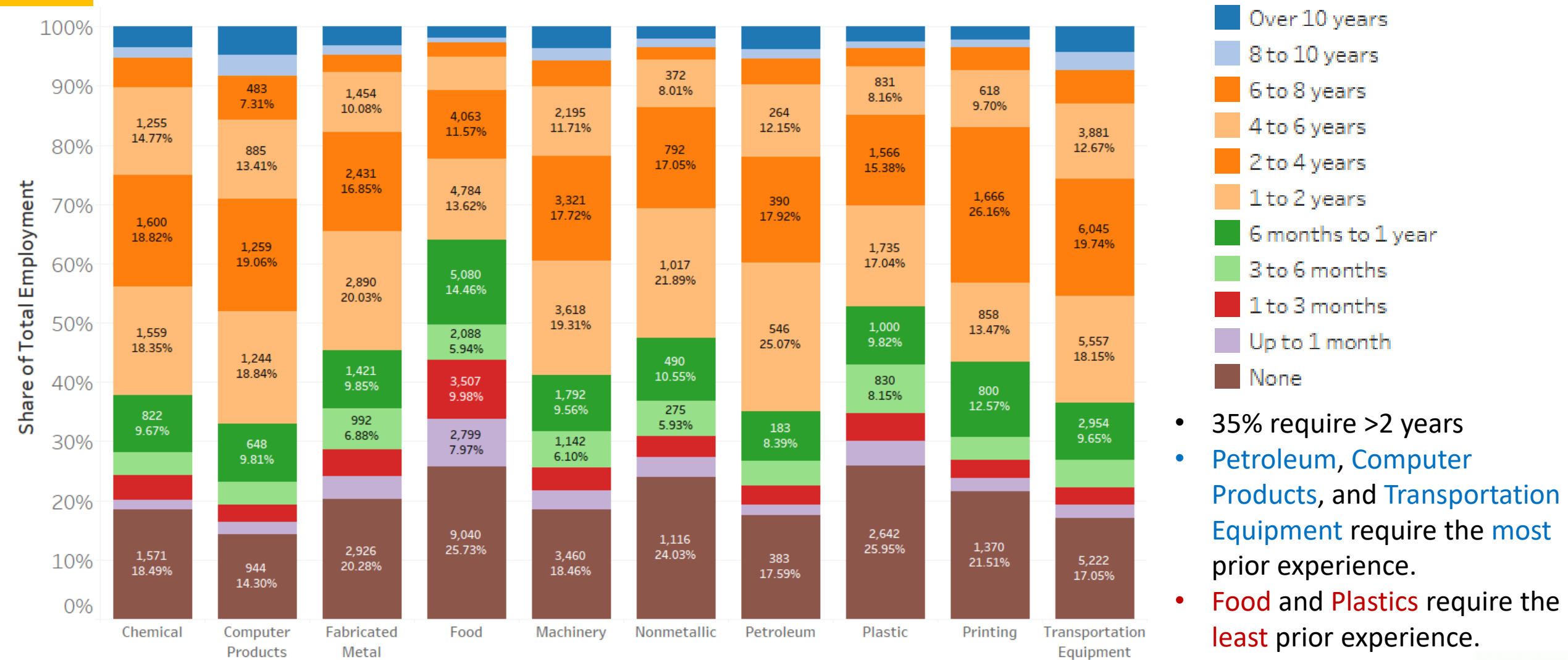


# 43% of all manufacturing workers require more than HS



- **Computer Products** and **Transportation Equipment** both rely on highly-educated workers to meet competency requirements.
- Demand for **education programs** that raise student interest.

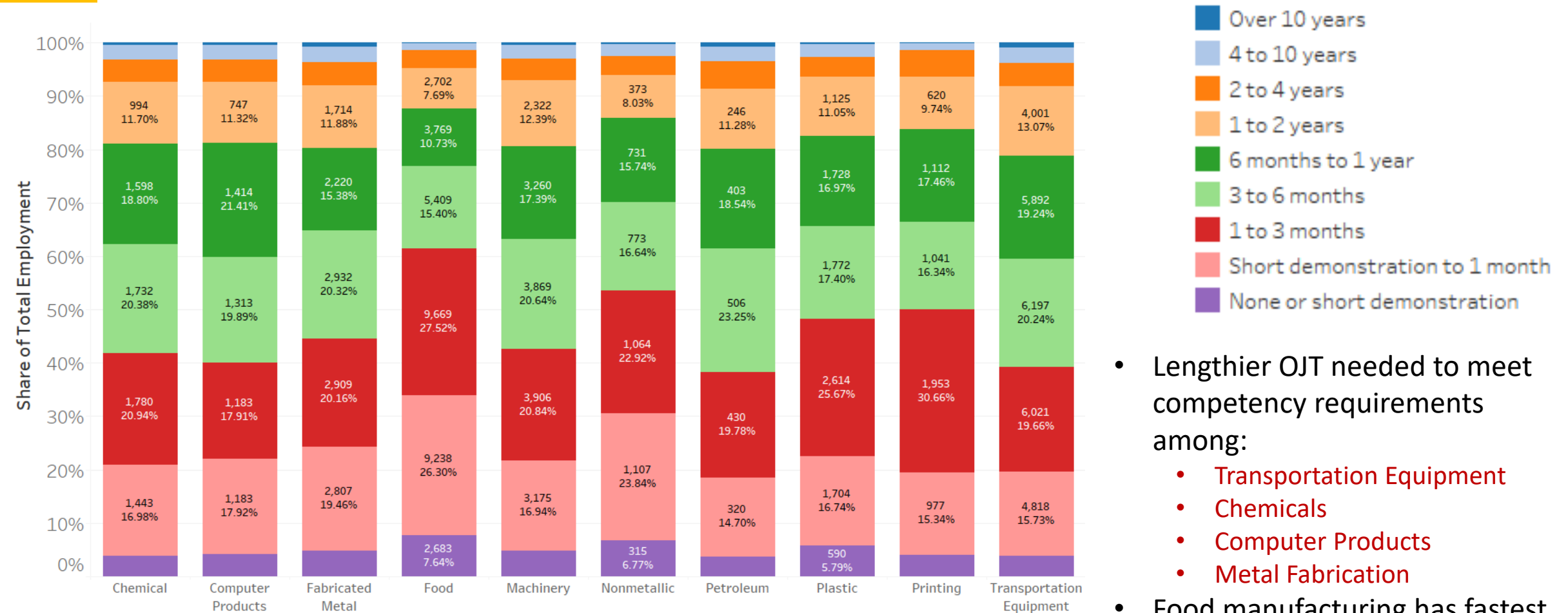
# Required prior experience is critical in KS manufacturing



- 35% require >2 years
- Petroleum, Computer Products, and Transportation Equipment require the most prior experience.
- Food and Plastics require the least prior experience.

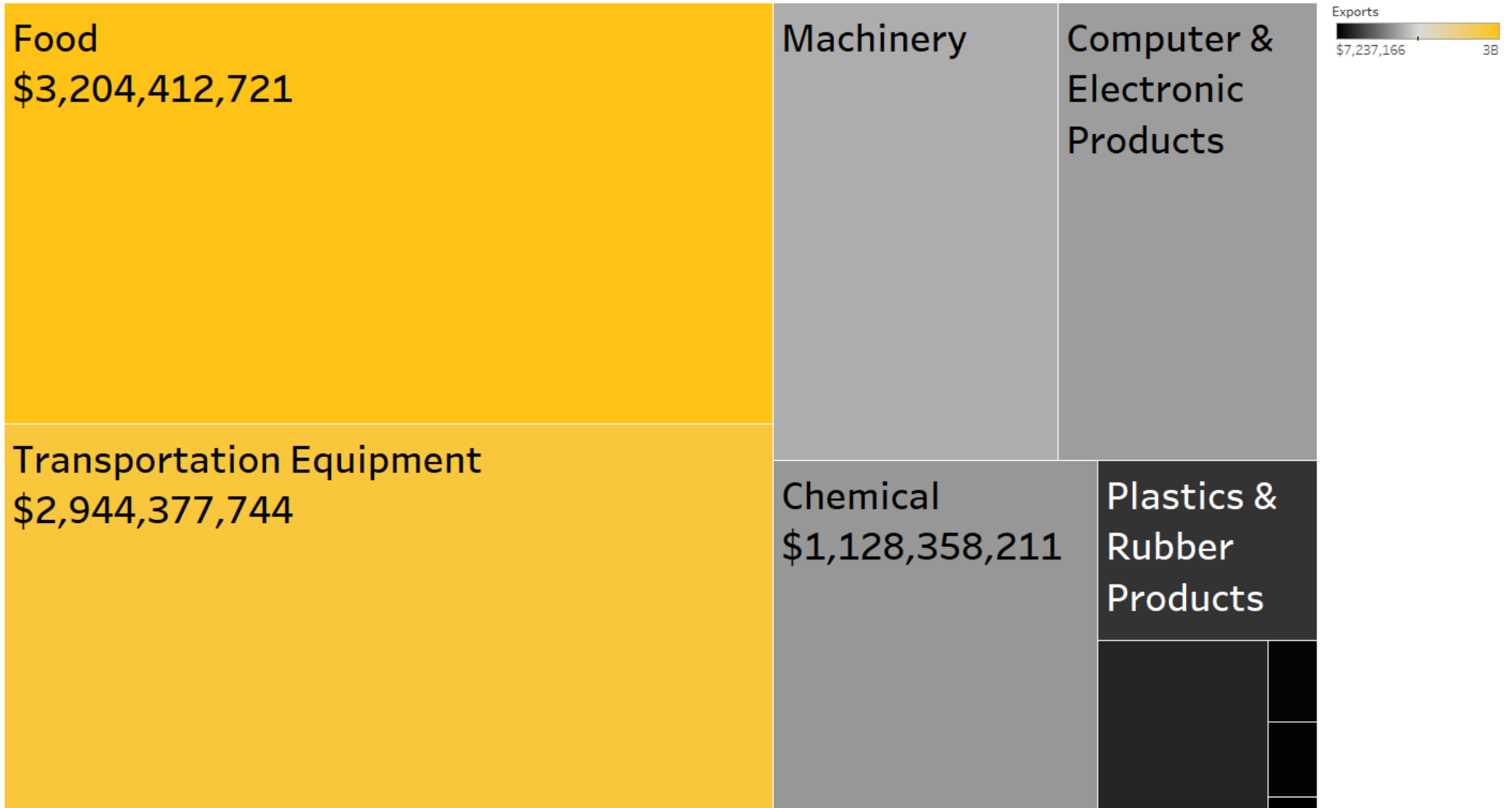


# 33% of KS manufacturing jobs require >6 months On-The-Job Training

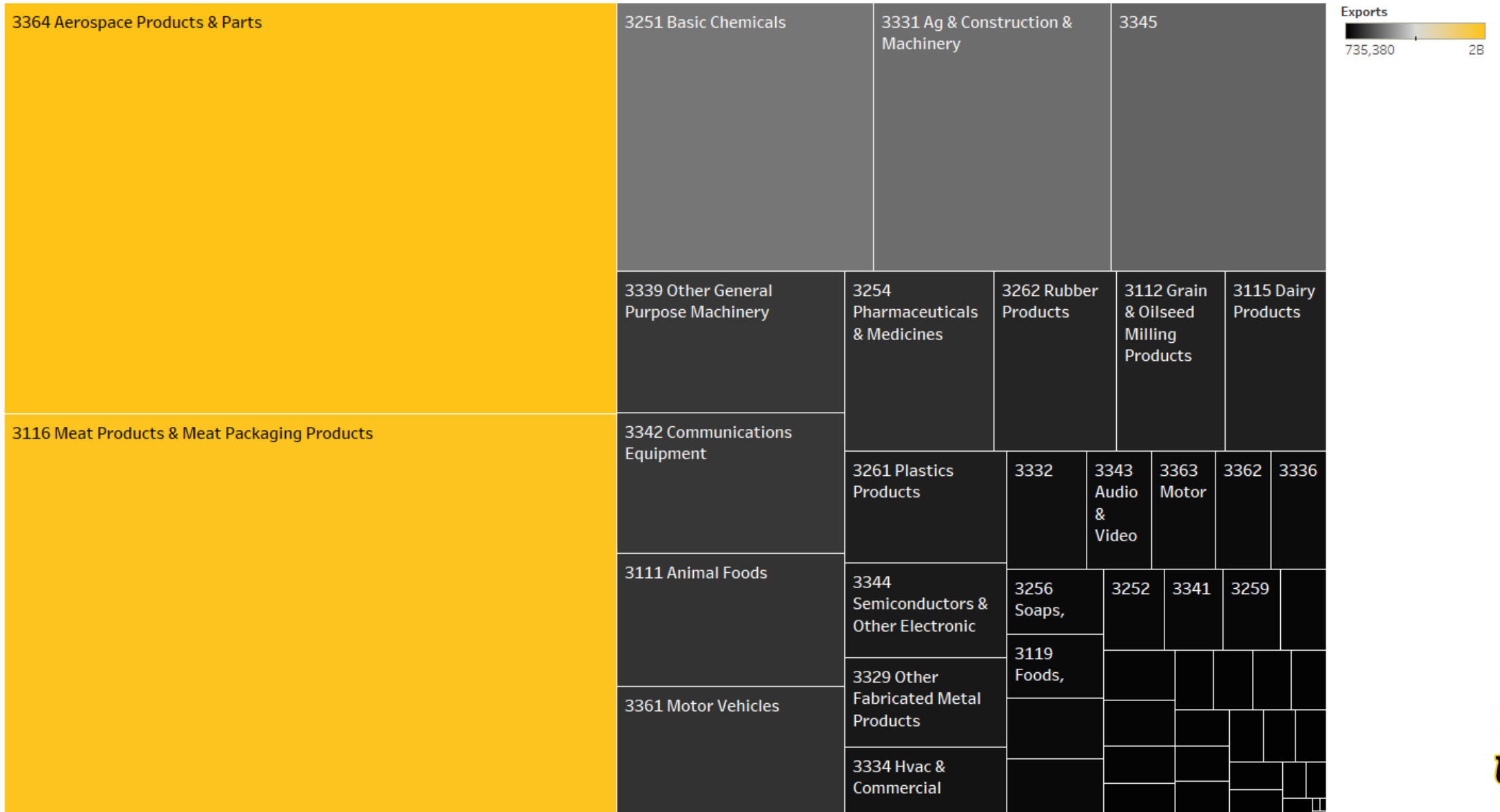


- Lengthier OJT needed to meet competency requirements among:
  - **Transportation Equipment**
  - **Chemicals**
  - **Computer Products**
  - **Metal Fabrication**
- Food manufacturing has fastest on-the-job training process to meet competencies

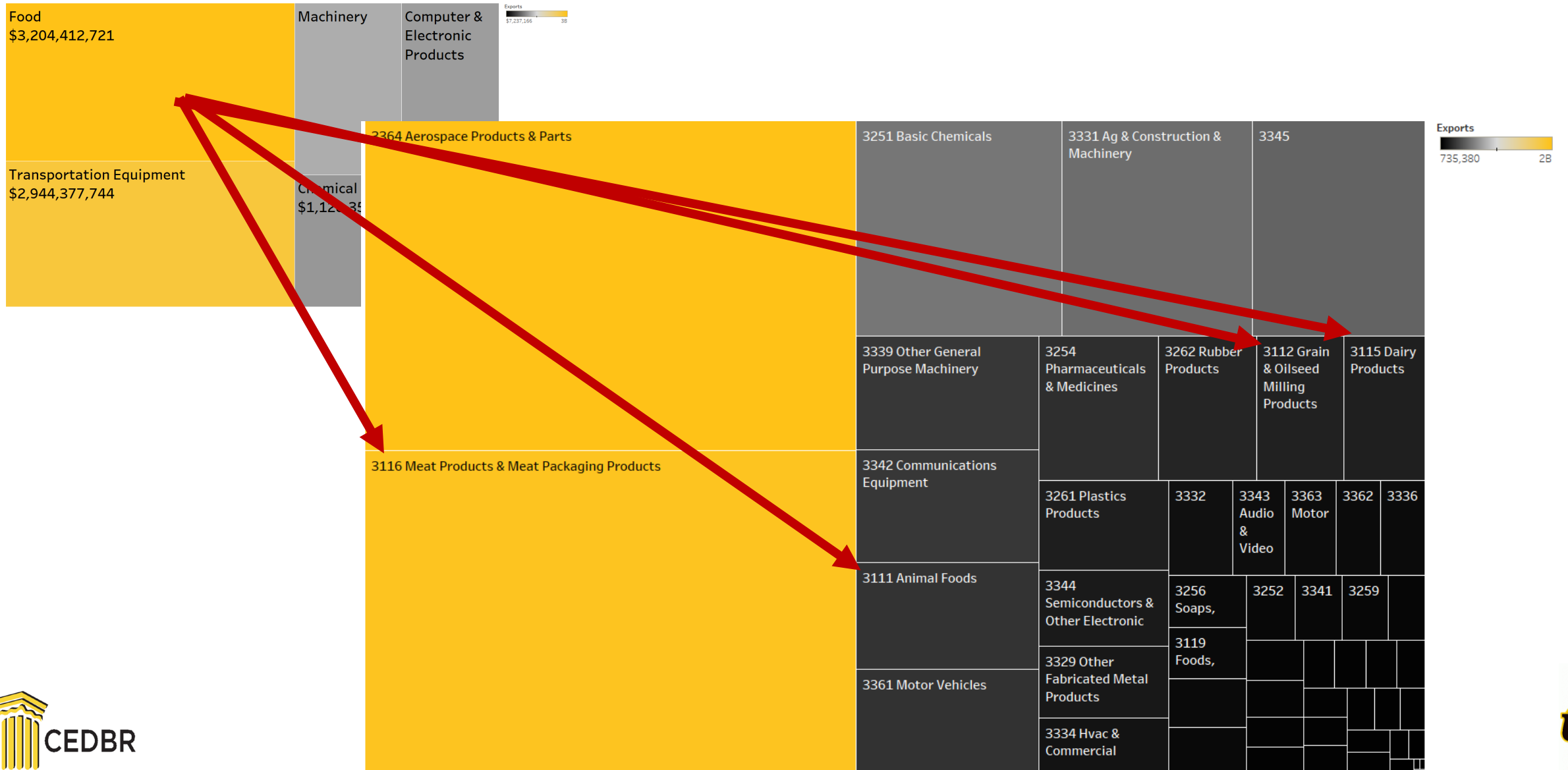
# Food and Transportation Share Top Spot



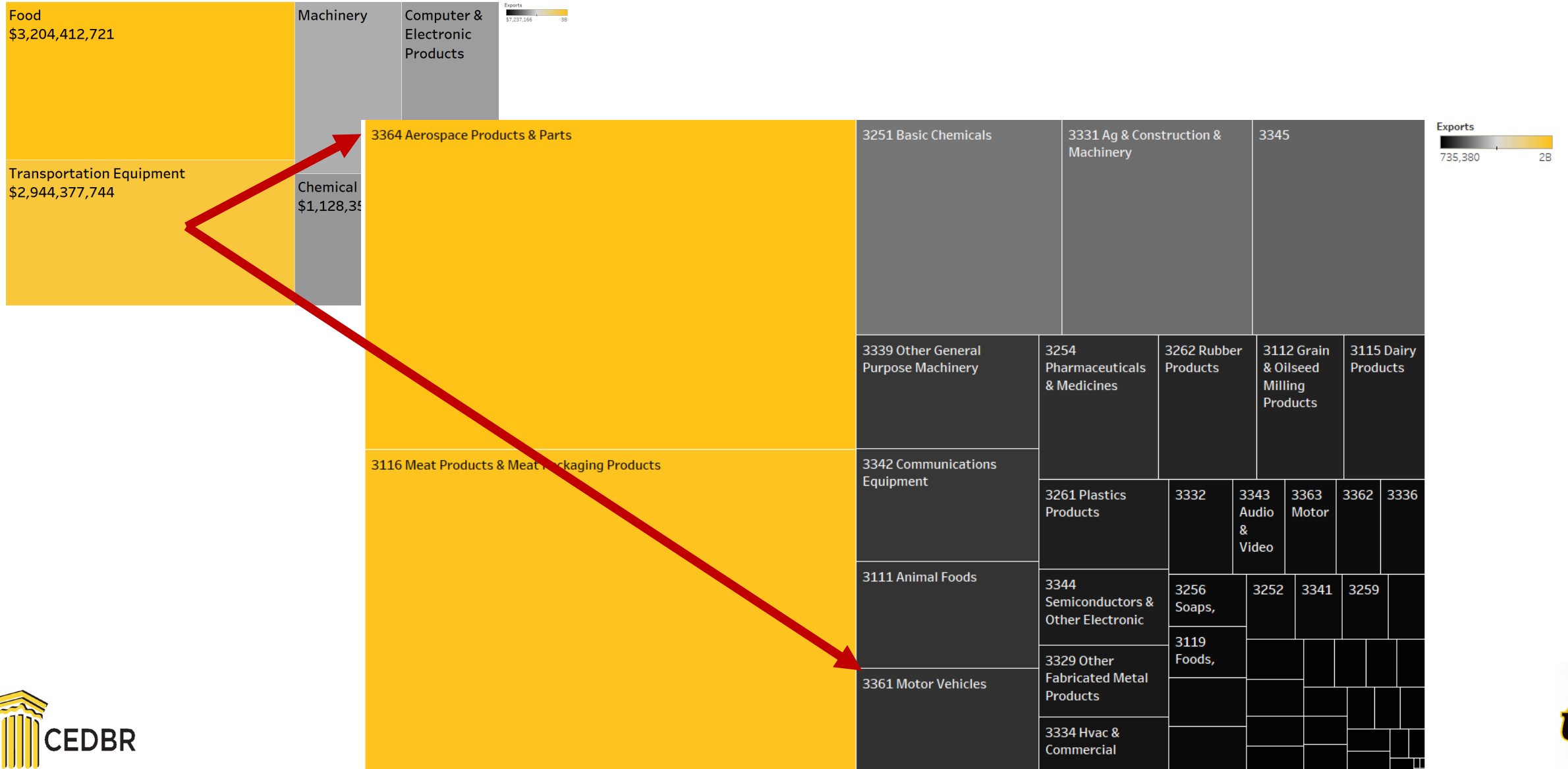
# Aerospace still dominates Kansas manufacturing exports



# MEAT!

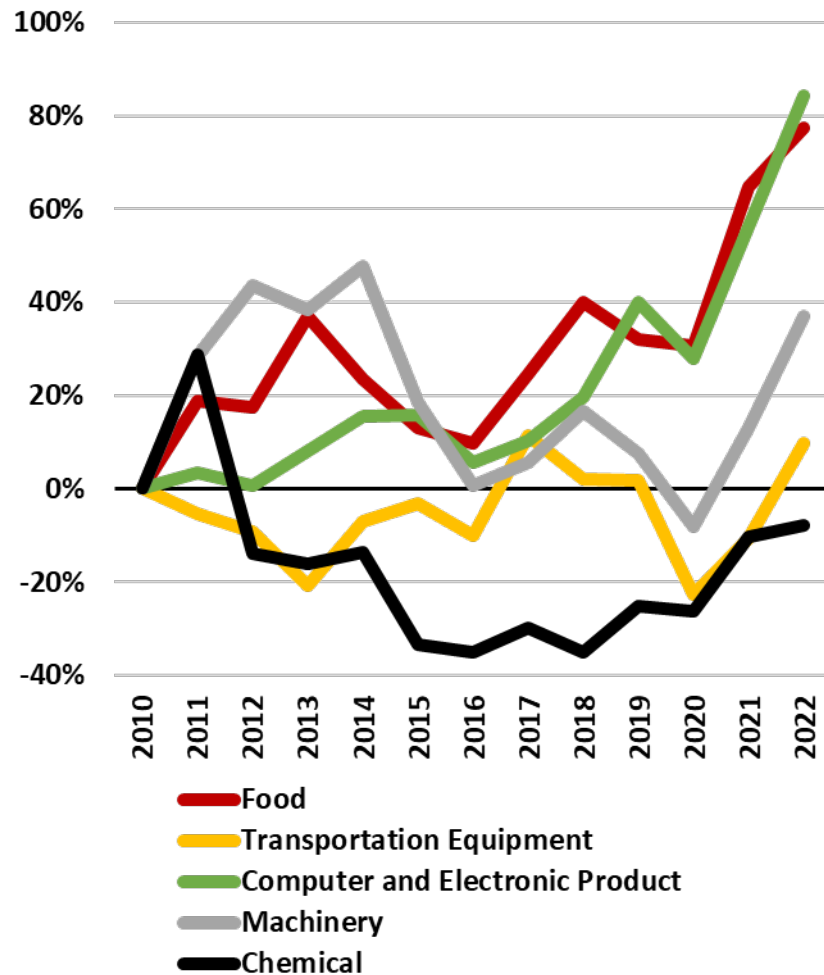


# Aerospace Products = \$2.45B

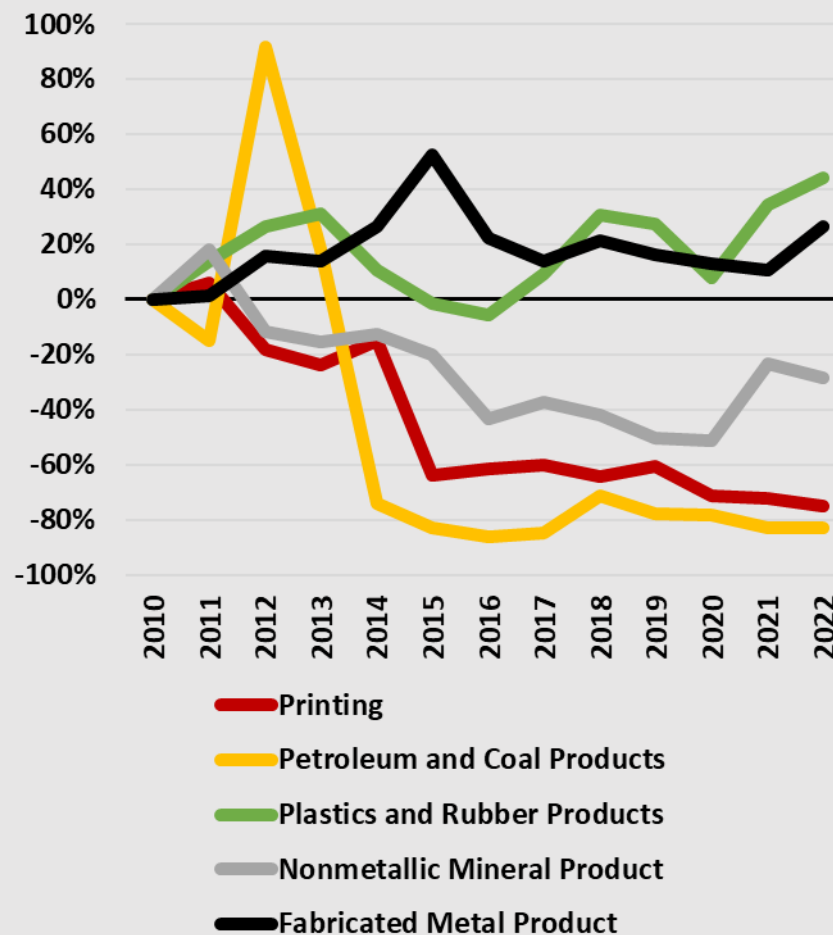


# Food and computer accelerate

Export Volume Growth

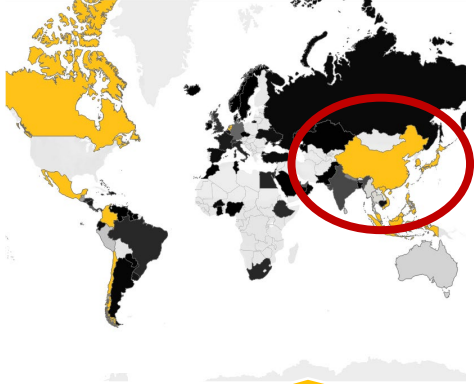


Export Volume Growth

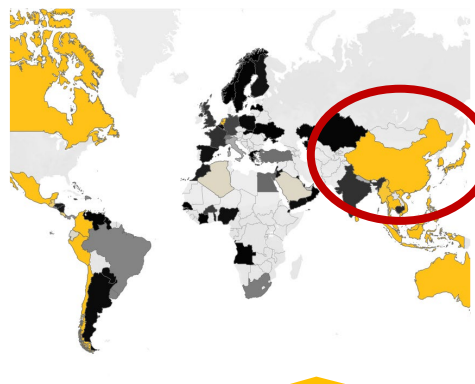


- Not a 1:1 with overall production – Goods are traded domestically
- Varying composition effects (food vs. petroleum)
- Important to consider business cycles

# Exports by Country



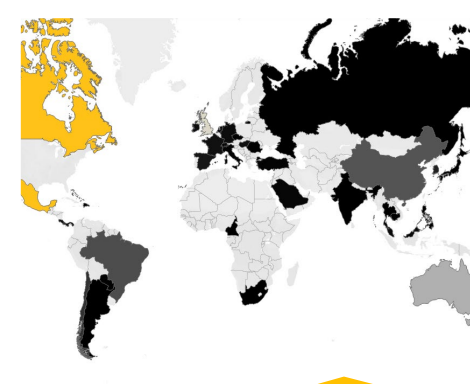
Petroleum



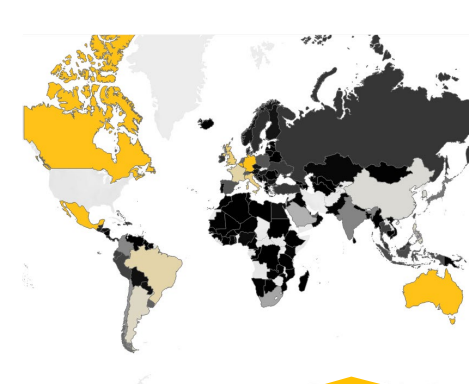
Food



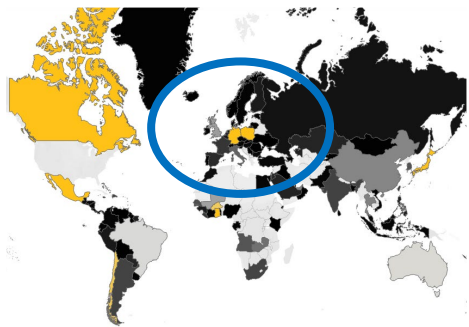
Transportation



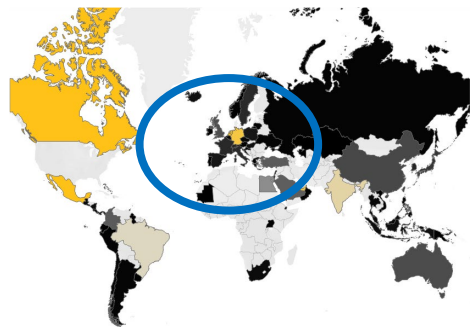
Printing



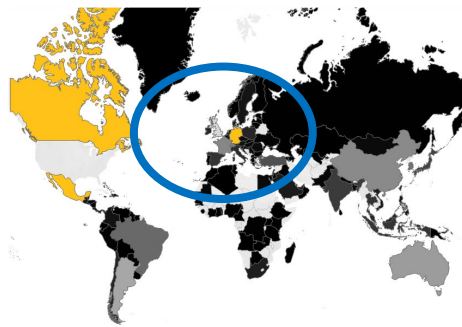
Machinery



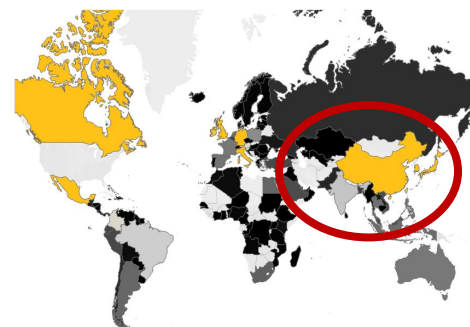
Plastic



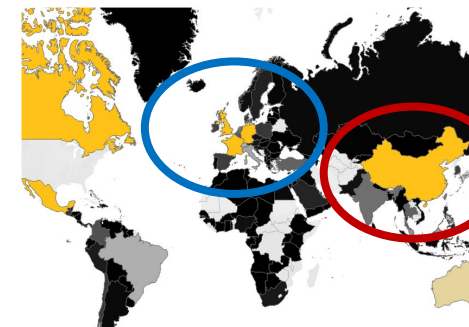
Nonmetallic mineral



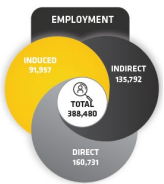
Fabricated Metal



Chemical



Computer



# Total Employment Contribution by Segment

**9,157**

**66,779**

**57,228**

**10,953**

**19,345**



**Petroleum**



**Food**



**Transportation**



**Printing**



**Machinery**



**Plastic**



**Nonmetallic mineral**



**Fabricated Metal**



**Chemical**



**Computer**

**18,743**

**10,038**

**25,150**

**16,887**

**16,326**



## Summary



Coleman Demonstration Car (1920)

Source: Kansas Historical Society

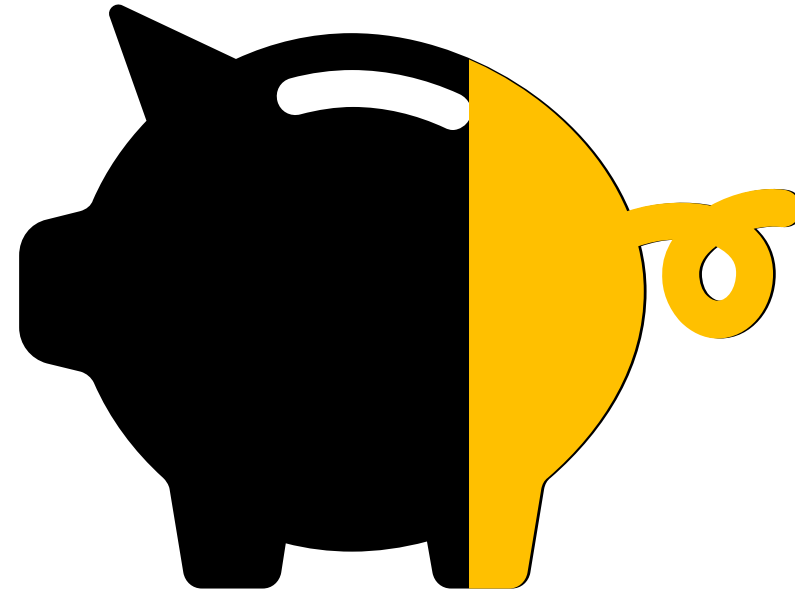
- KS **machinery** and **plastics** both had strong recent growth.
- KS top subsectors need **high-education, experienced workers** to meet competency requirements
- For **7/10** top manufacturing sectors, exports continue to increase.
- **Food** and **Transportation** manufacturing **support the most jobs** across the state annually.

## Manufacturing by Region



Dairy Industry in Ottawa, Kansas (1930-1950)

Source: Kansas Historical Society



## South Central Kansas

- The region represents 29% of all Manufacturing Employment in the state.

# Rank the following potential State/Local policies based on what would be more beneficial to your company in 2023 (top= most important).

Workforce development

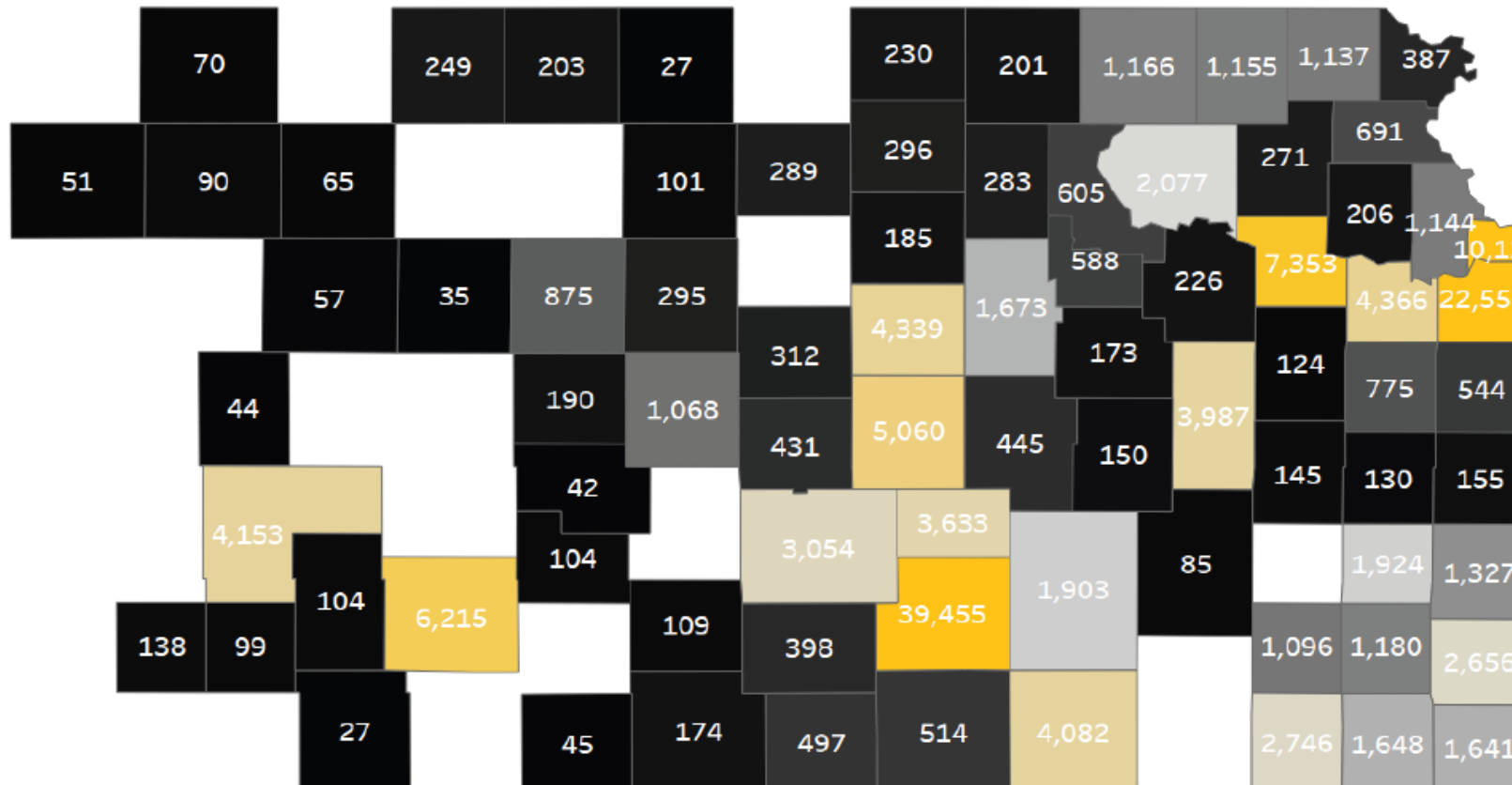
Infrastructure investment

Energy Cost reduction

Export promotion/assistance

Reducing taxes

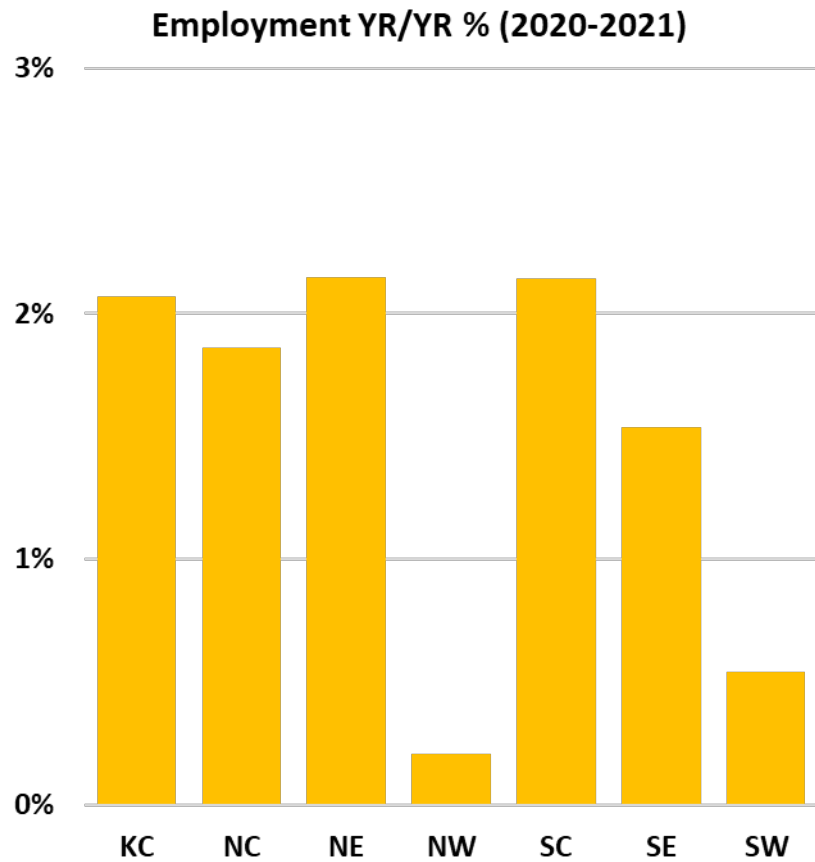
# South Central Kansas has the highest share of manufacturing jobs



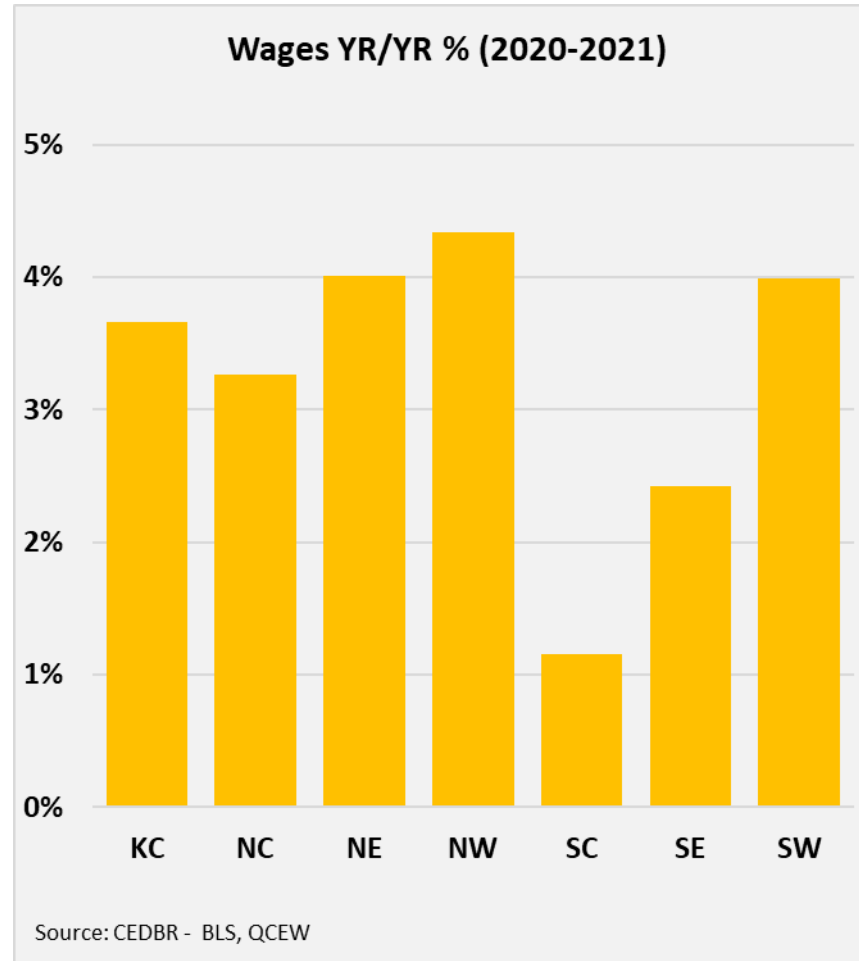
- **Sedgwick County** accounted for 25% of all manufacturing employment....
- **Johnson County** was the second largest manufacturing community, with 22,551 employees.
- **Ford County** had the highest concentration of manufacturing employment, with 4.25.



# Regional employment and wage



Source: CEDBR - BLS, QCEW



Source: CEDBR - BLS, QCEW

- **South Central**

- Although SC led the state in employment growth, it was a laggard in wage growth.

- **Northwest**

- The NW region has the smallest share of total employment, but had the strongest wage growth

# Top sectors by region



**Fabricated Metal –  
Northwest**



**Machinery –  
North Central**



**Food –  
Northeast**



**Computer –  
Kansas City**



**Food-  
Southwest**



**Transportation-  
South Central**



**Food –  
Southeast**

**NOTE – Detailed industry employment does not add to the total due to nondisclosure issues, which can underrepresent an industry cluster.**

# Selected companies by region



Northwest



North Central



Northeast



Kansas City



Southwest



South Central



Southeast

# Expansion discussion



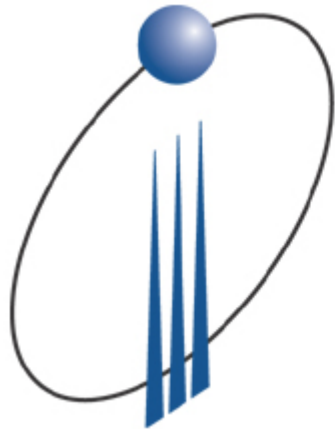
**Panasonic**

- **Panasonic**

- Will bring in teams for several years to help train and establish
- Core labor pool already exists in Missouri
- Access to skilled labor was a strategic advantage
- Proximity to markets (geography and industries)

- **Integra**

- The 2,000 jobs needed are less than the 3,800 lost since 2019.
- The skills, abilities, and knowledge is a related to aerospace, providing some additional training
- The industry will be in a long growth cycle
- The new industry will be a compliment to the aerospace market, providing upward mobility

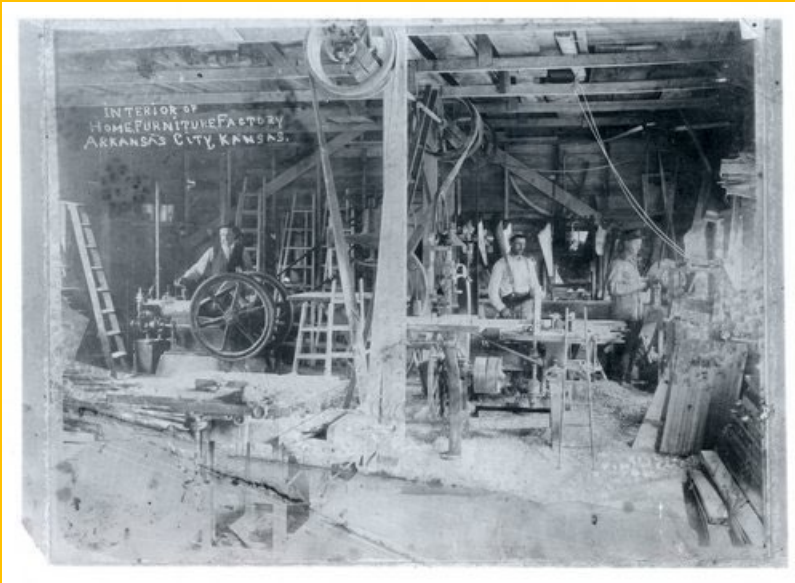


**I N T E G R A**  
**T E C H N O L O G I E S**  
*An Employee Owned Company*



# Summary

- South Central Kansas is the dominant manufacturing provider in the state.

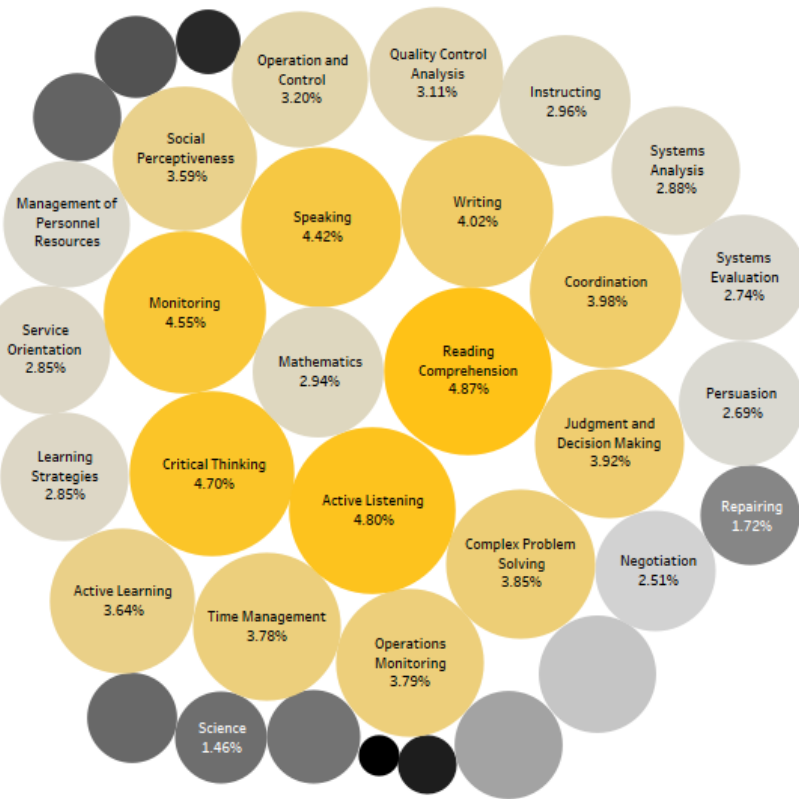


Furniture Factory, Arkansas City (1880-1890)

Source: Kansas Historical Society

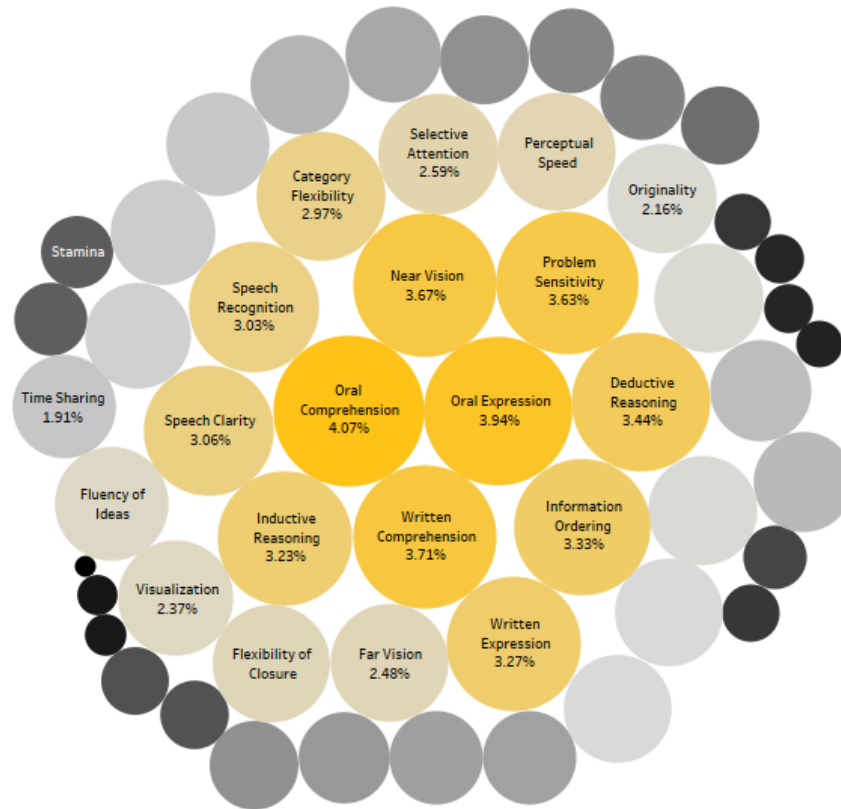
# Key Attributes – Chemical Products Manufacturing

## Skills



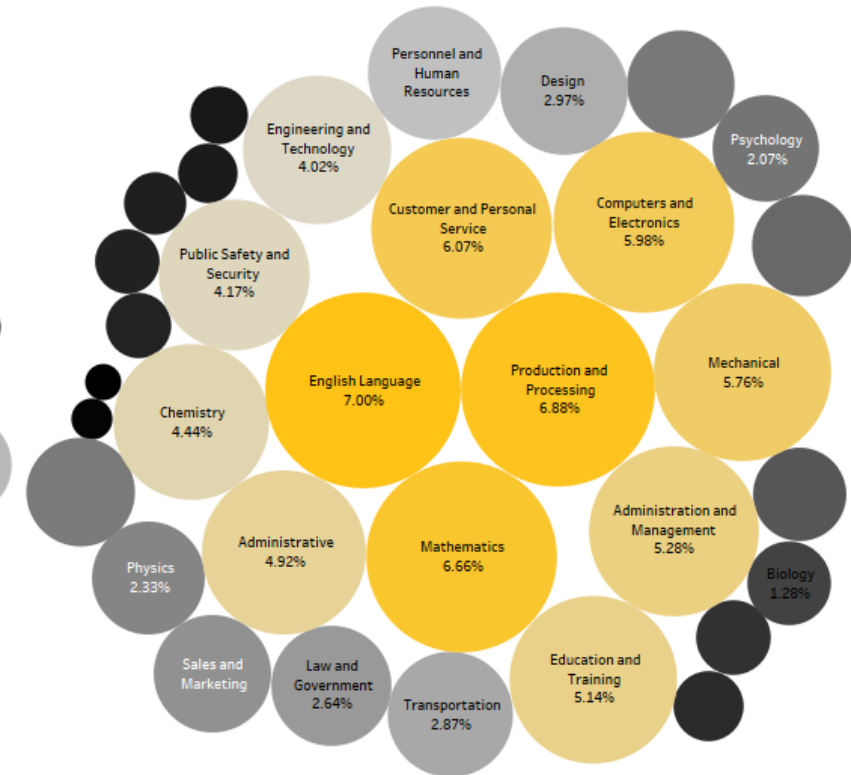
Share of Total Competency

## Abilities



Share of Total Competency

## Knowledge



Share of Total Competency

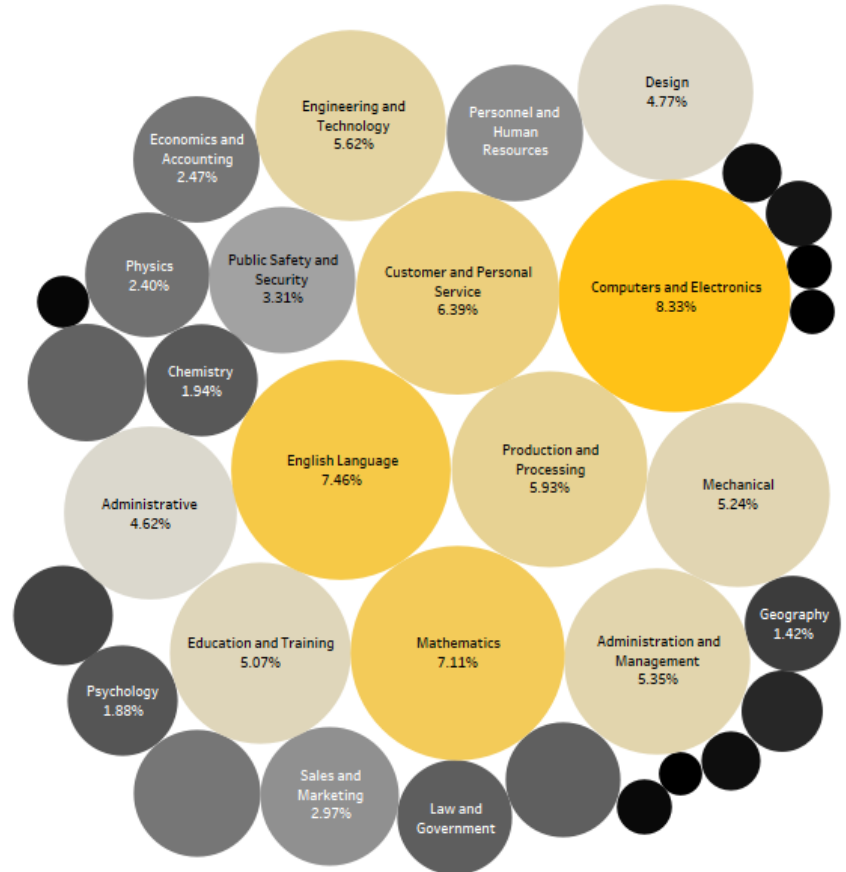
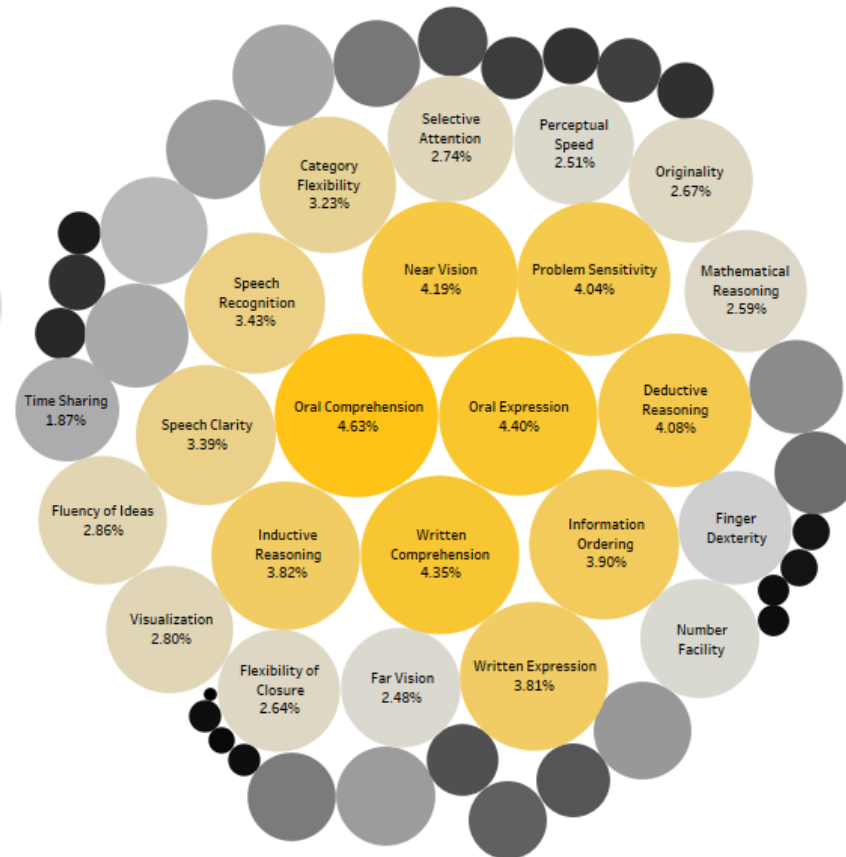
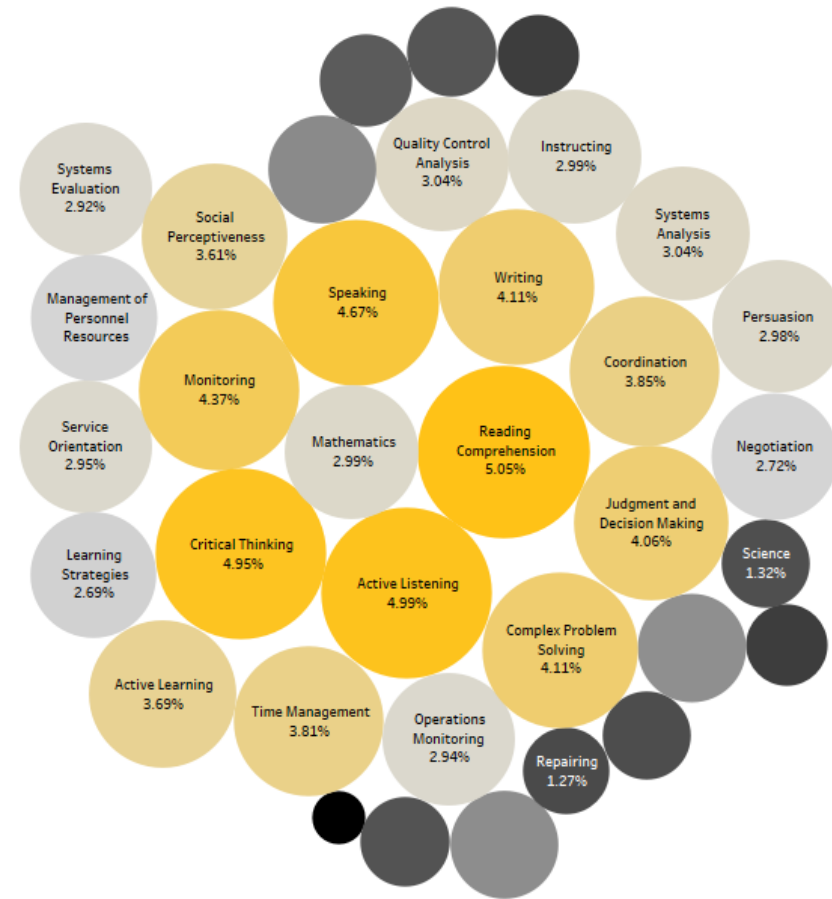


# Key Attributes – Computer Products

Skills

Abilities

Knowledge



Share of Total Competency

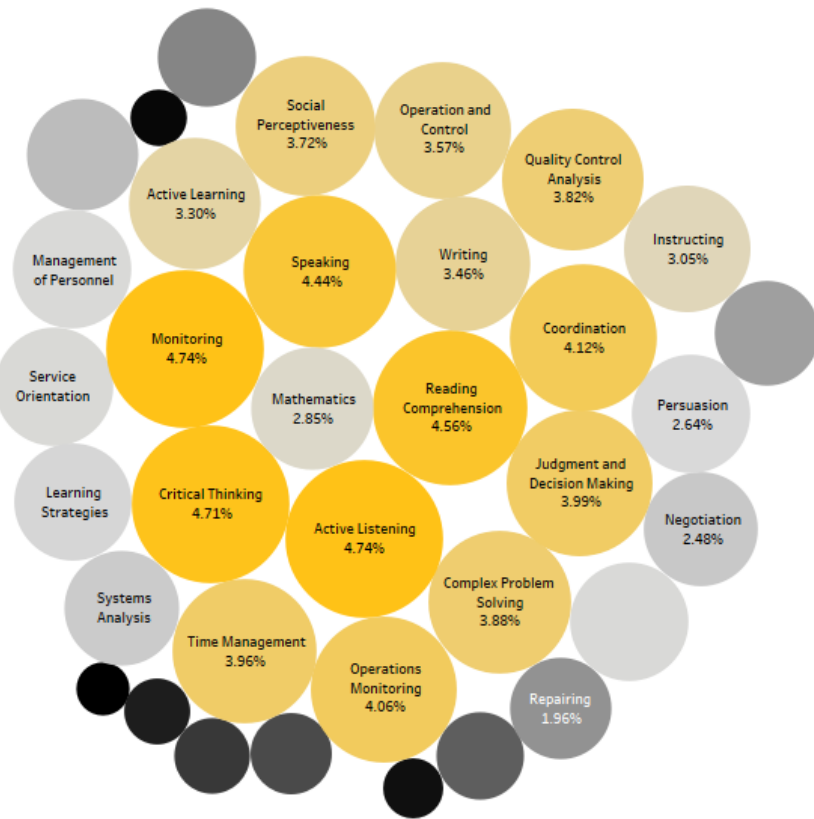
Share of Total Competency

Share of Total Competency



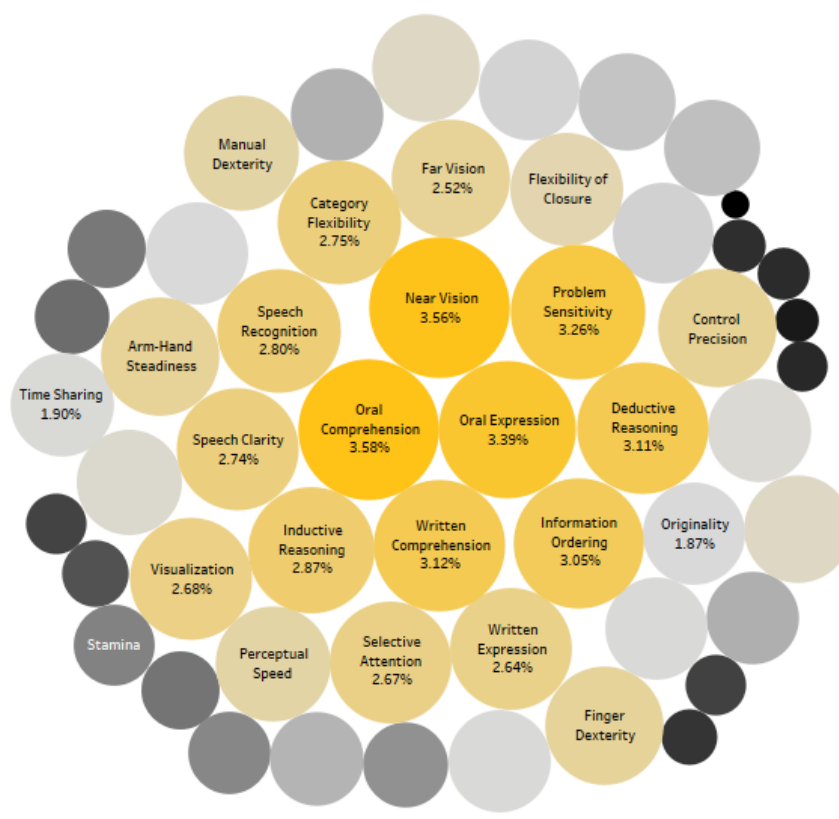
# Key Attributes – Fabricated Metals

Skills



Share of Total Competency

Abilities



Share of Total Competency

Knowledge



Share of Total Competency

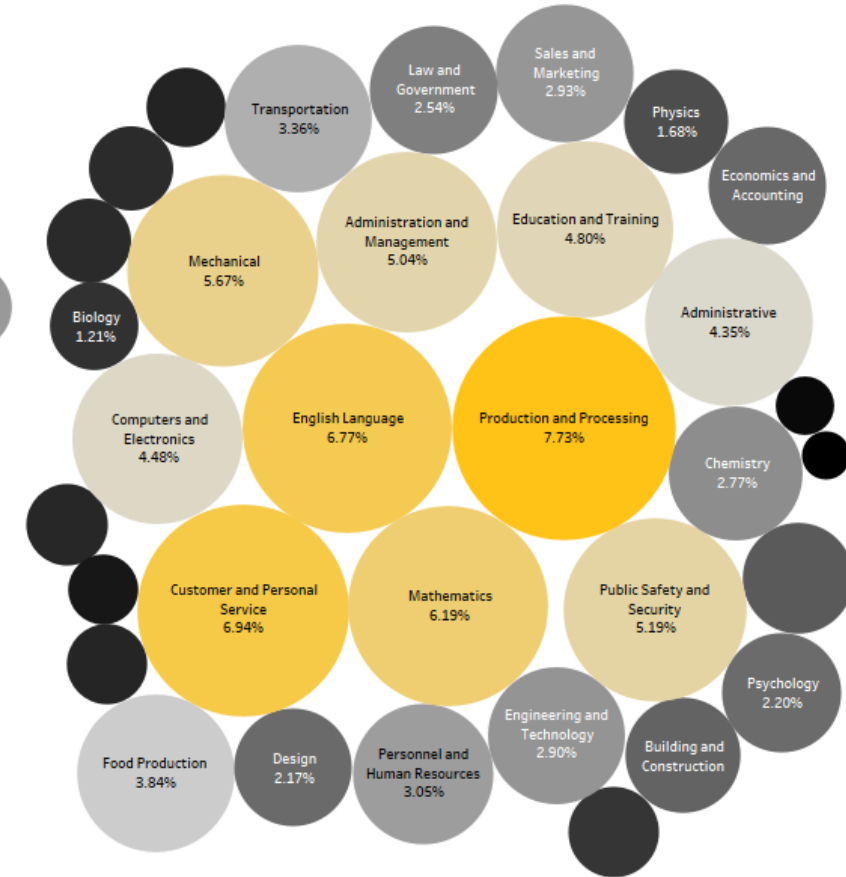
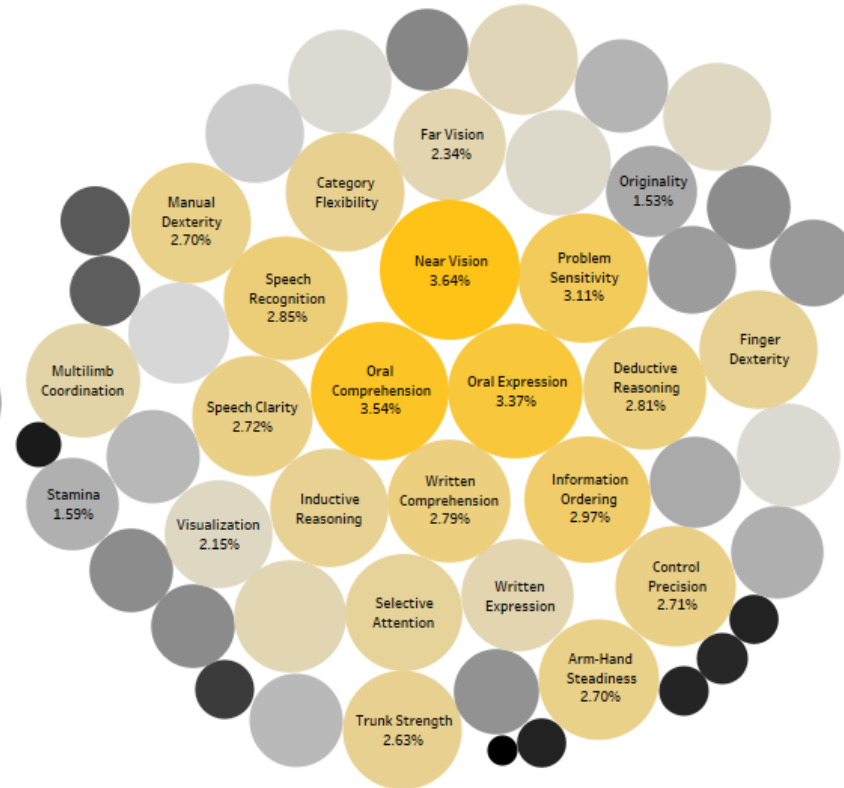


# Key Attributes – Food Manufacturing

## Skills

## Abilities

## Knowledge



Share of Total Competency

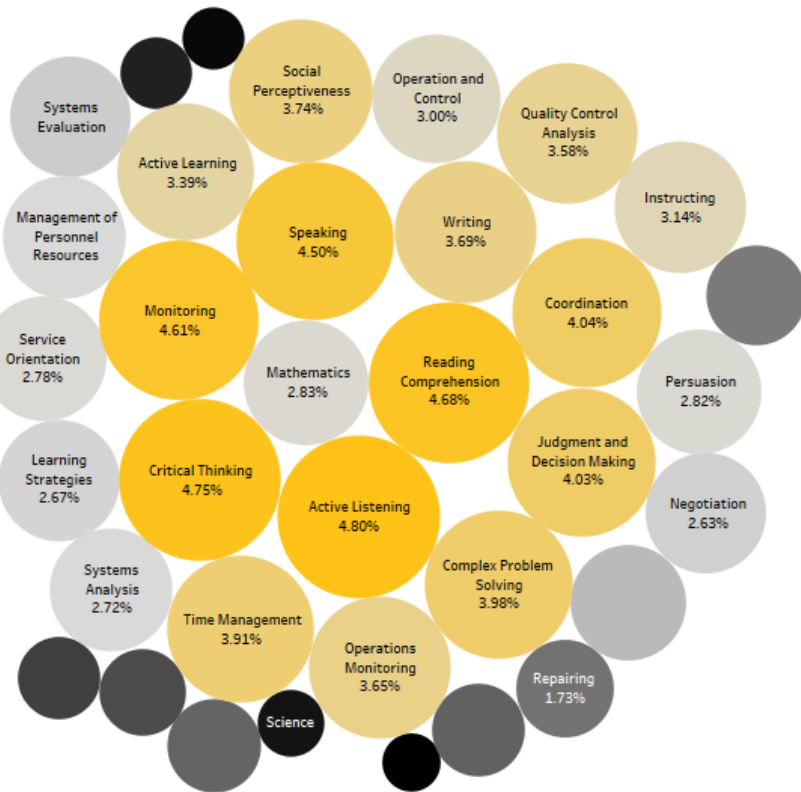
Share of Total Competency

Share of Total Competency

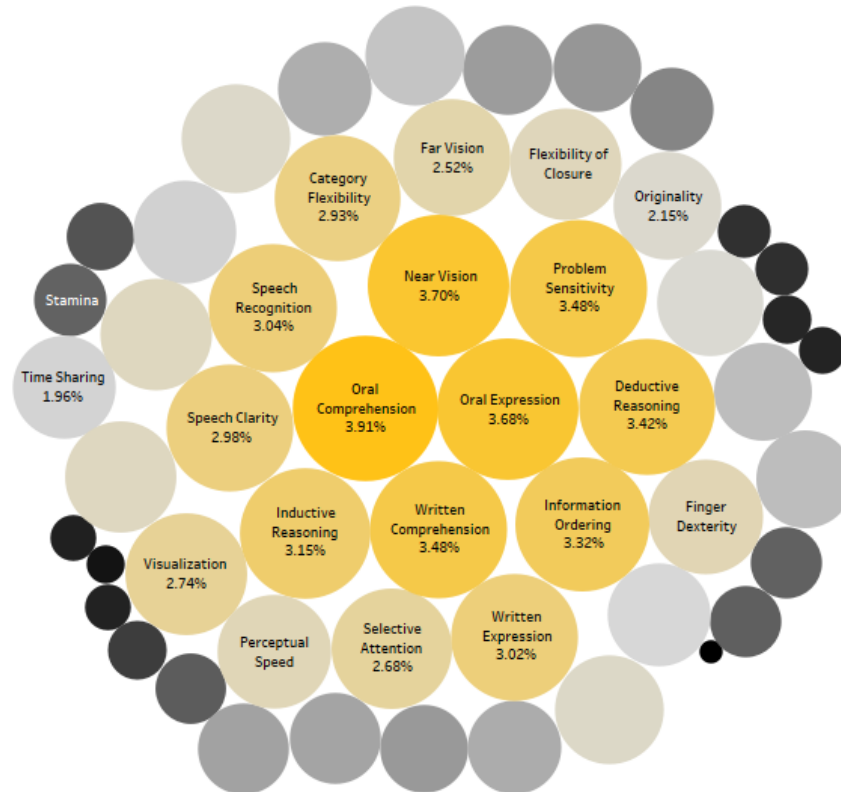


# Key Attributes – Machinery Manufacturing

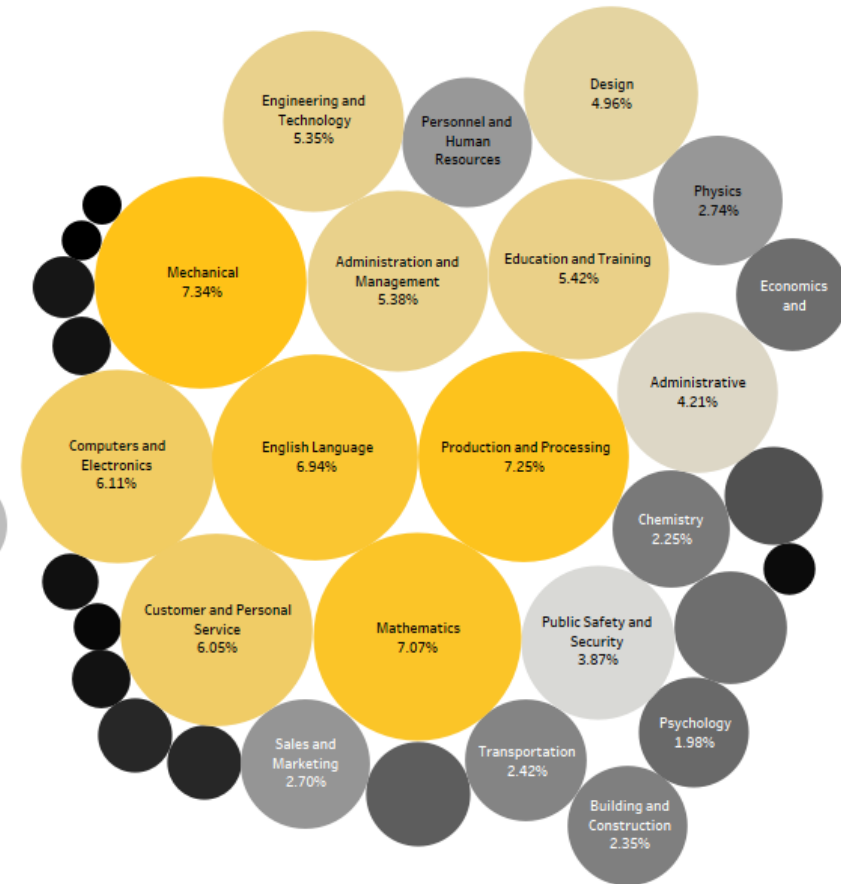
## Skills



## Abilities



## Knowledge



Share of Total Competency

Share of Total Competency

Share of Total Competency

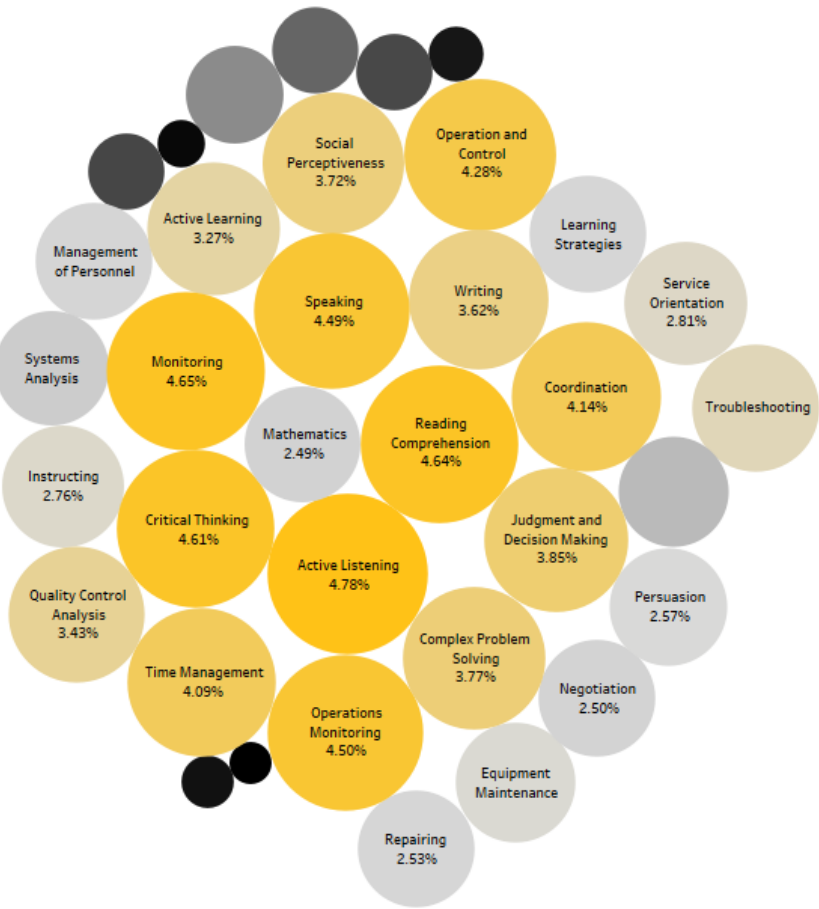
0.62% 4.80%

0.10% 3.91%

0.25% 7.34%

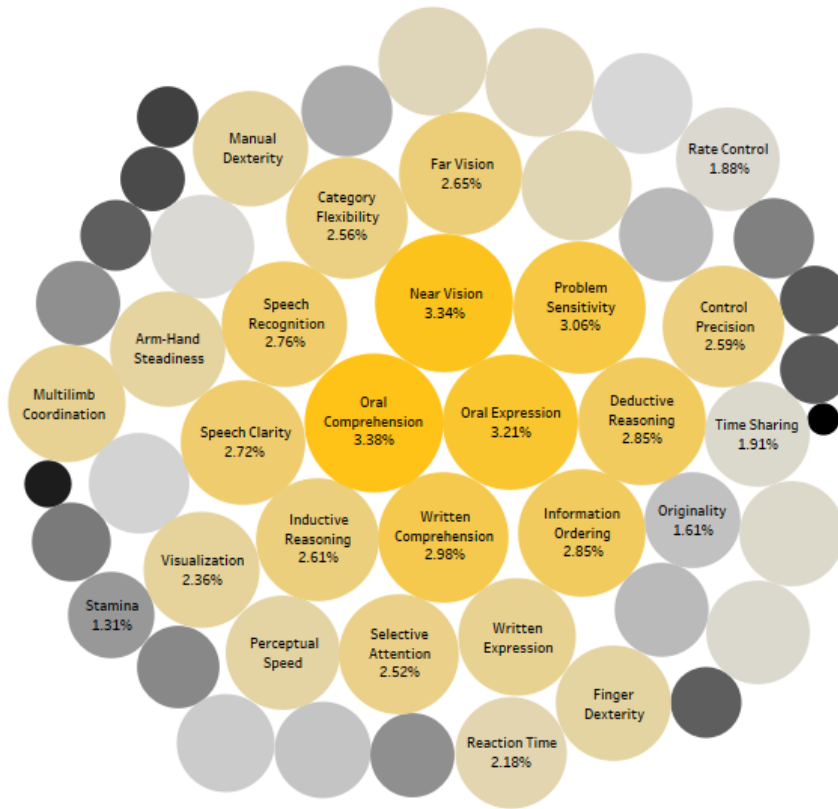
# Key Attributes – Non-Metallic Goods

## Skills



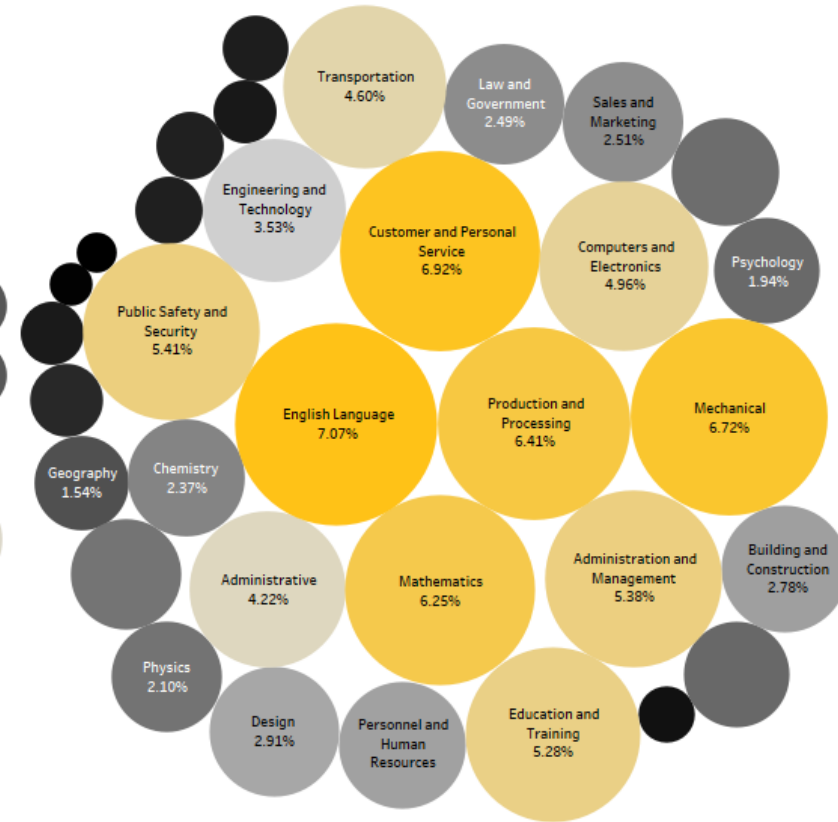
Share of Total Competency

## Abilities



Share of Total Competency

## Knowledge

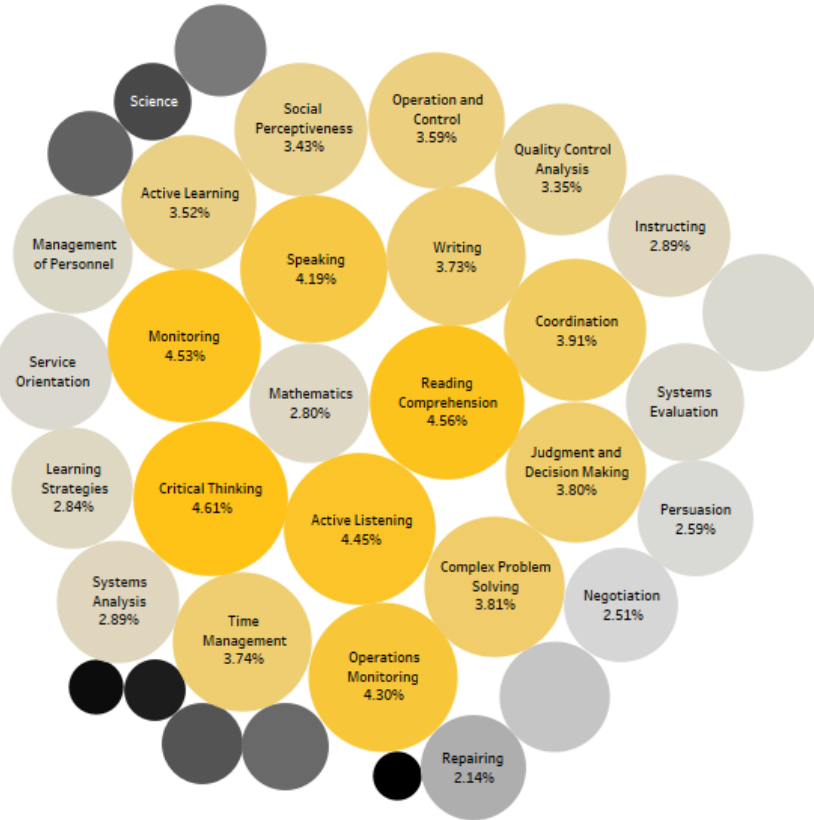


Share of Total Competency



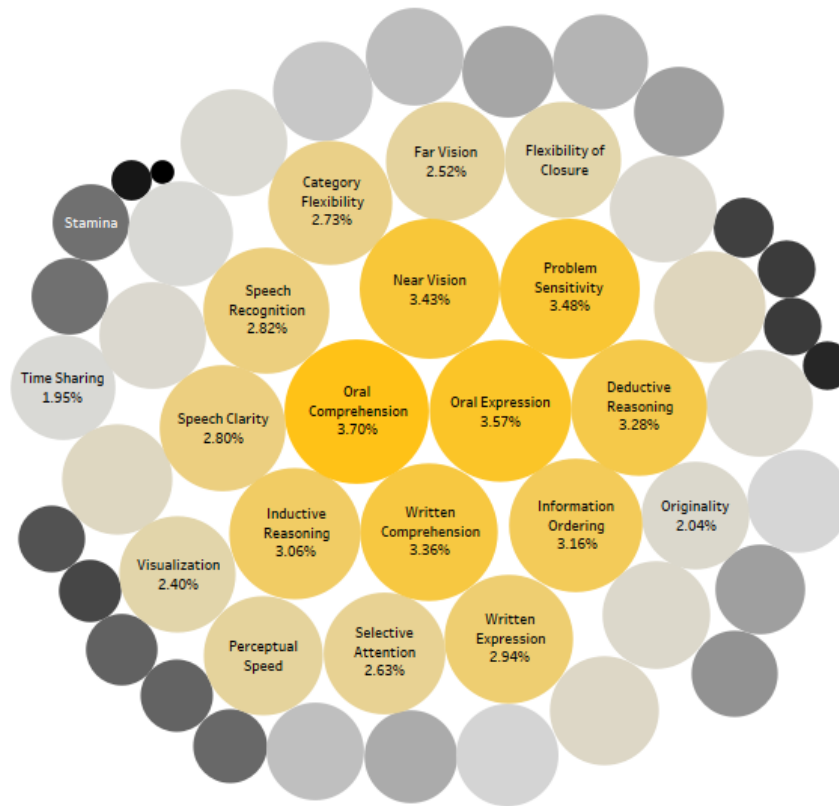
# Key Attributes – Petroleum and Oil Processing

## Skills



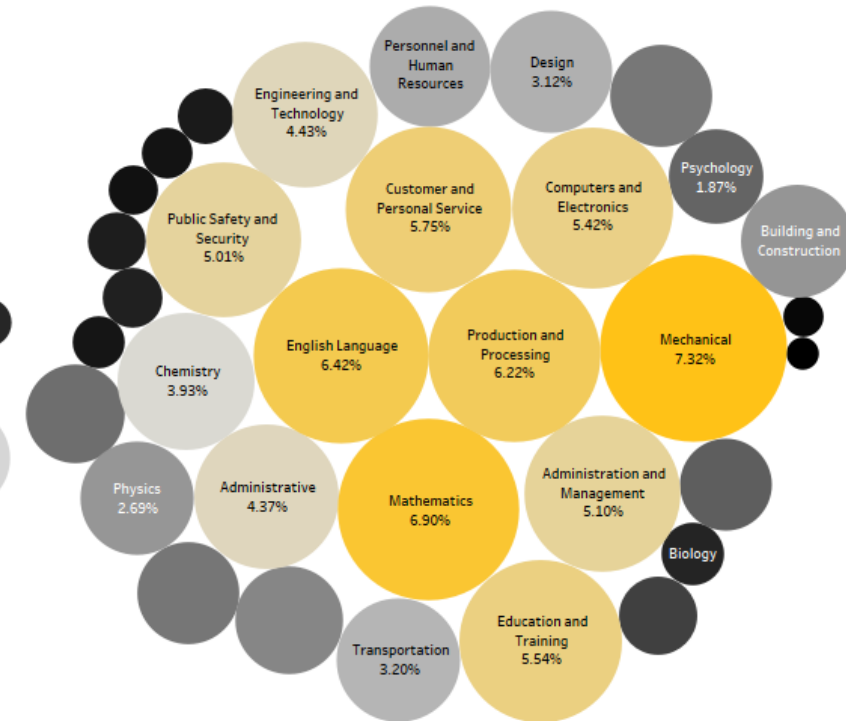
Share of Total Competency

## Abilities



Share of Total Competency

## Knowledge



Share of Total Competency





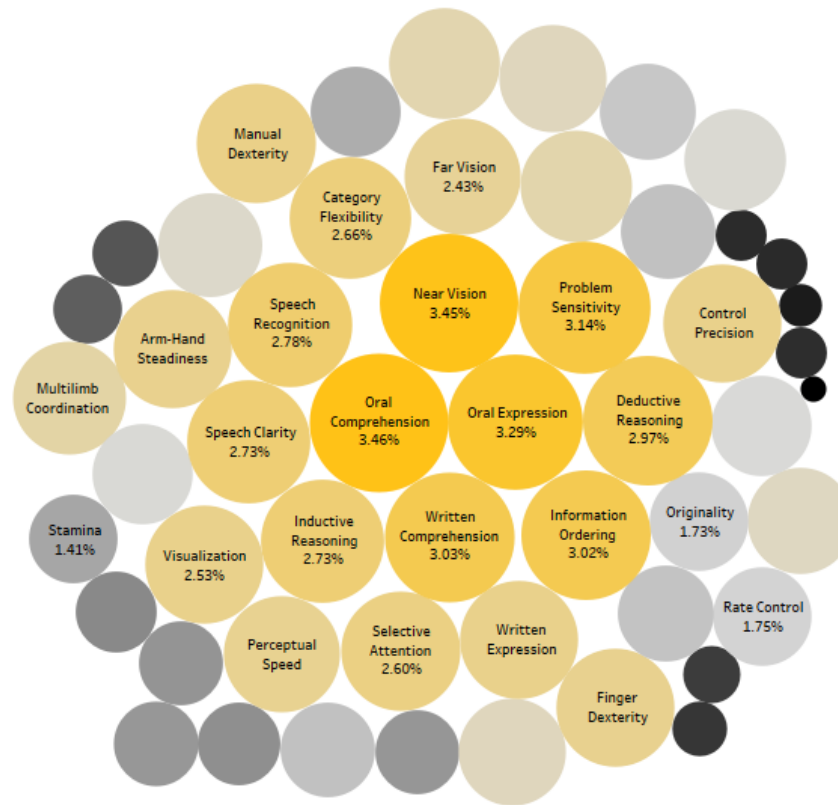
# Key Attributes – Plastics Manufacturing

## Skills



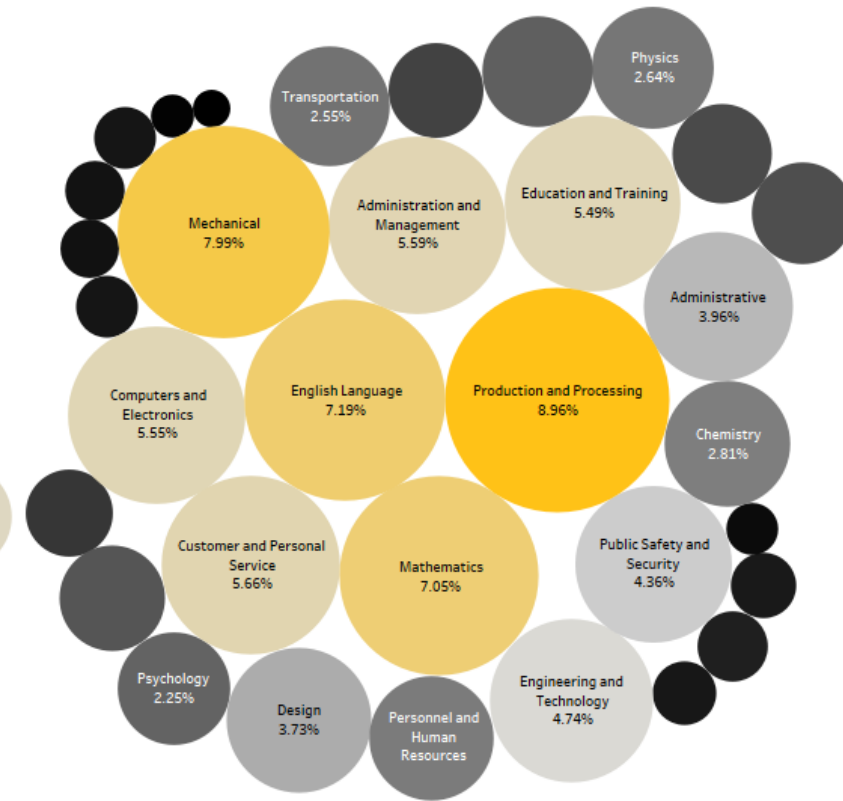
Share of Total Competency

## Abilities



Share of Total Competency

## Knowledge



Share of Total Competency

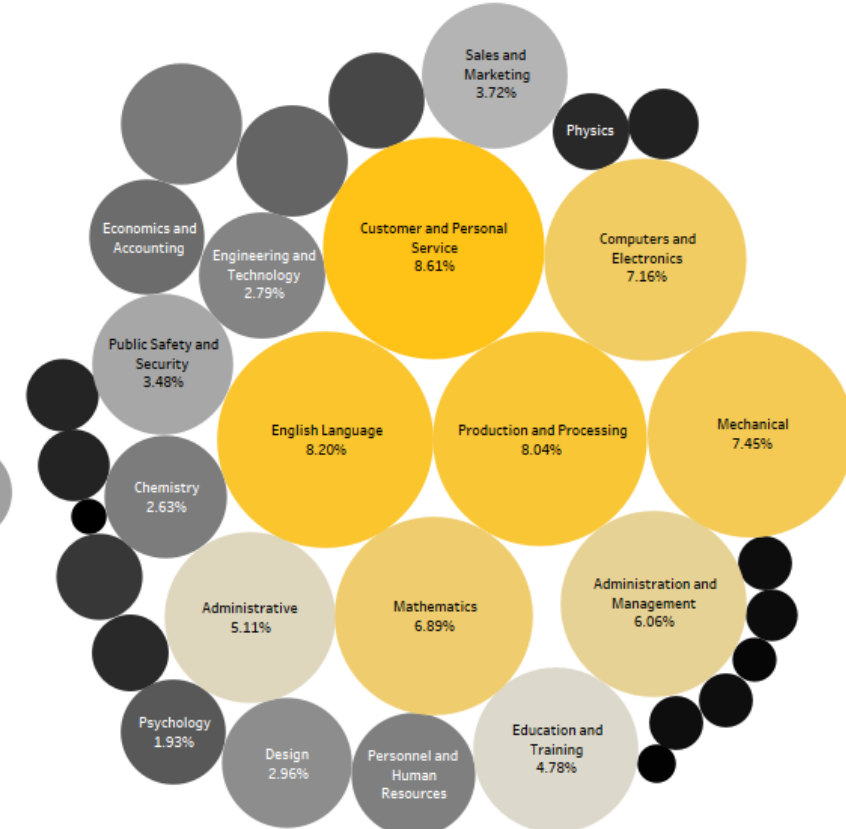
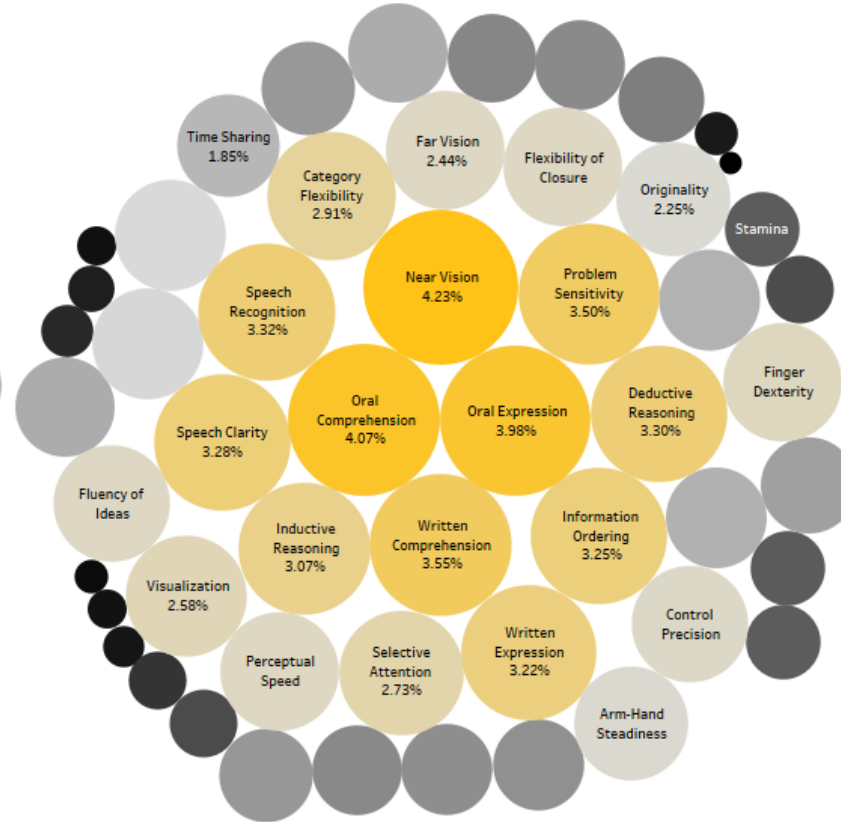


# Key Attributes - Printing

## Skills

## Abilities

## Knowledge



Share of Total Competency

Share of Total Competency

Share of Total Competency

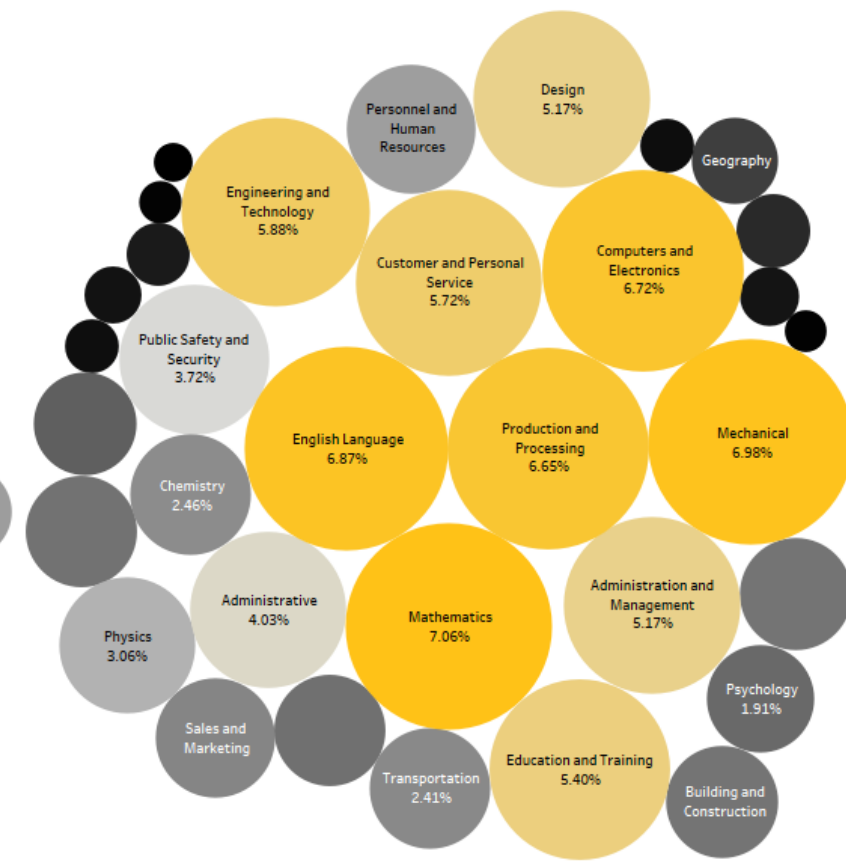
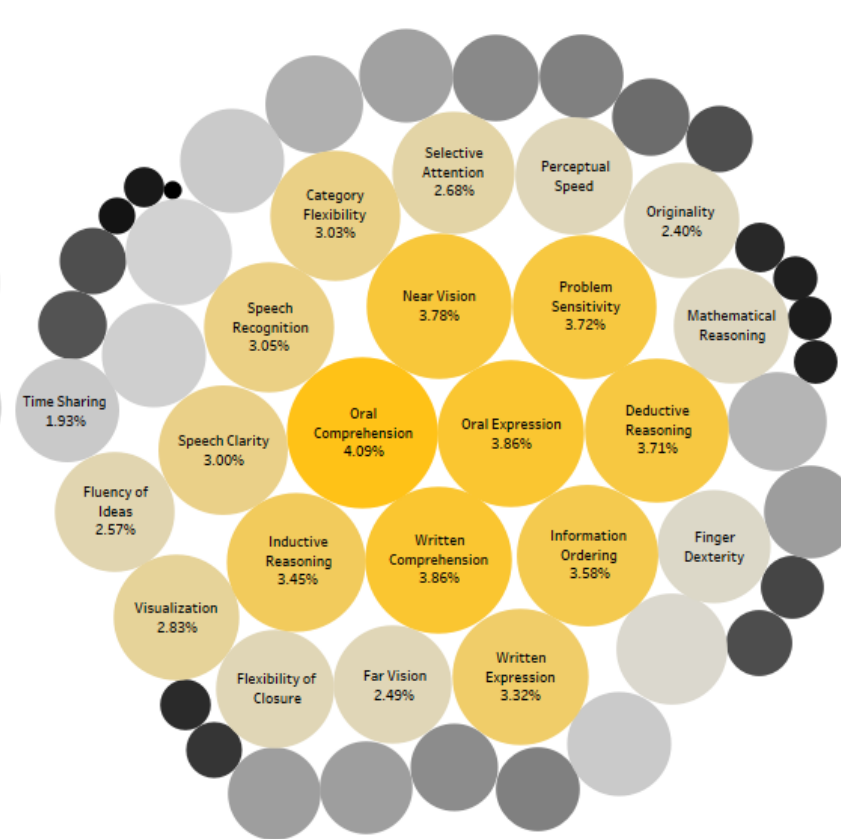
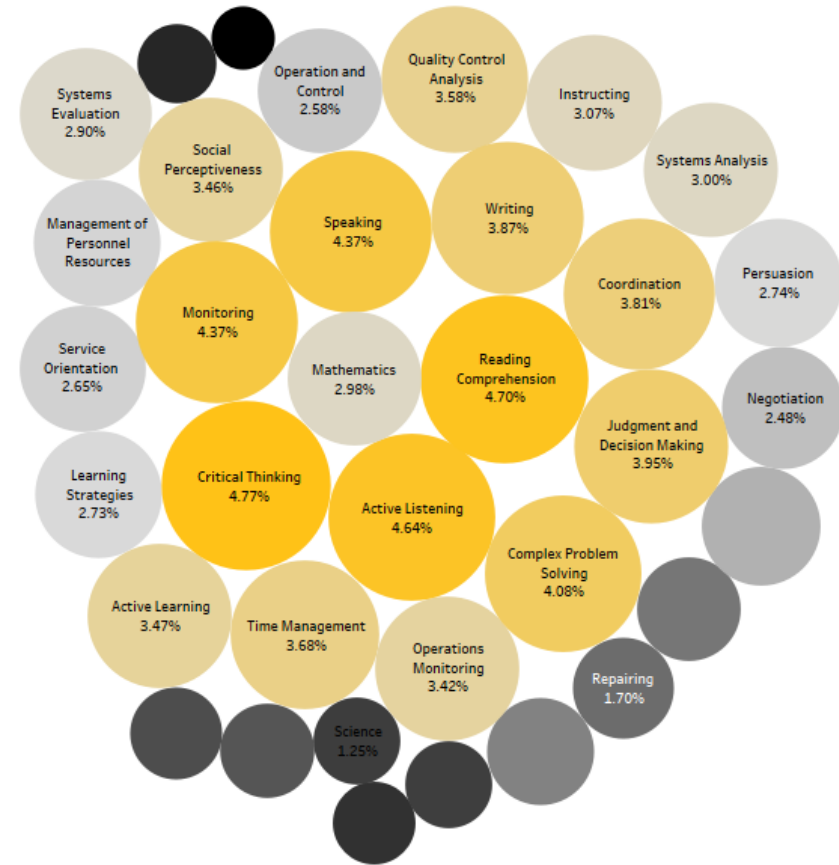


# Key Attributes – Transportation Equipment

## Skills

## Abilities

## Knowledge



Share of Total Competency

Share of Total Competency

Share of Total Competency



# Labor Gap – Subsector Highlights

## Labor Gap - Food Manufacturing

Occupation	2023	2024	2025	2026	2027	2028	2029	2030
Management	13	35	57	80	106	129	152	176
Business and Financial Operations	10	25	40	56	74	90	106	122
Computer and Mathematical	4	10	15	21	27	32	38	44
Architecture and Engineering	2	5	8	11	15	18	21	25
Life, Physical, and Social Science	4	10	17	24	32	39	46	53
Community and Social Service	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0
Arts, Design, Entertainment, Sports, and Media	0	1	1	2	2	3	4	4
Healthcare Practitioners and Technical	0	1	1	2	2	3	4	4
Healthcare Support	0	0	0	0	0	0	0	0
Protective Service	0	1	1	2	2	3	4	4
Food Preparation and Serving Related	7	21	34	48	65	78	92	107
Building and Grounds Cleaning and Maintenance	9	23	36	50	66	81	95	110
Personal Care and Service	0	0	0	0	0	0	0	0
Sales and Related	5	20	36	51	71	86	101	116
Office and Administrative Support	-1	12	24	37	55	66	78	89
Farming, Fishing, and Forestry	3	8	13	18	25	30	36	41
Construction and Extraction	1	2	3	4	5	6	7	8
Installation, Maintenance, and Repair	35	85	135	187	245	298	352	407
Production	139	398	658	923	1,242	1,506	1,778	2,050
Transportation and Material Moving	60	164	269	376	503	610	720	831

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC

# Labor Gap – Subsector Highlights

## Labor Gap - Printing & Support

Occupation	2023	2024	2025	2026	2027	2028	2029	2030
Management	2	4	6	7	9	11	13	15
Business and Financial Operations	1	2	3	4	5	6	7	8
Computer and Mathematical	1	2	2	3	4	5	6	6
Architecture and Engineering	0	0	0	0	0	0	0	0
Life, Physical, and Social Science	0	0	0	0	0	0	0	0
Arts, Design, Entertainment, Sports, and Media	2	4	5	7	9	11	12	14
Protective Service	0	0	0	0	0	0	0	0
Building and Grounds Cleaning and Maintenance	0	0	0	0	0	0	0	0
Sales and Related	3	5	8	10	13	15	18	20
Office and Administrative Support	-7	-14	-21	-28	-35	-42	-49	-56
Construction and Extraction	0	0	0	0	0	0	0	0
Installation, Maintenance, and Repair	0	0	0	1	1	1	1	1
Production	5	8	12	15	19	22	26	29
Transportation and Material Moving	2	4	6	7	9	11	13	15

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC

# Labor Gap – Subsector Highlights

## Labor Gap - Petroleum & Oil Products Mfg

Occupation	2023	2024	2025	2026	2027	2028	2029	2030
Management	3	6	8	10	12	14	16	18
Business and Financial Operations	3	5	7	9	11	13	14	17
Computer and Mathematical	0	1	1	1	1	2	2	2
Architecture and Engineering	3	5	7	8	10	12	14	16
Life, Physical, and Social Science	1	3	4	5	6	6	7	9
Legal	0	0	0	0	0	0	0	0
Arts, Design, Entertainment, Sports, and Media	0	0	0	0	0	1	1	1
Healthcare Practitioners and Technical	0	0	0	0	0	0	0	0
Protective Service	0	0	0	0	0	0	0	0
Building and Grounds Cleaning and Maintenance	0	0	0	0	0	0	0	0
Sales and Related	1	2	2	3	3	4	4	5
Office and Administrative Support	1	1	2	2	2	2	2	2
Construction and Extraction	3	5	7	9	11	13	14	17
Installation, Maintenance, and Repair	6	11	16	21	26	31	36	41
Production	13	25	33	40	49	57	65	74
Transportation and Material Moving	3	7	9	12	14	17	19	22

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC

# Labor Gap – Subsector Highlights

## Labor Gap - Chemical Products Mfg

Occupation	2023	2024	2025	2026	2027	2028	2029	2030
Management	19	87	154	175	197	218	240	262
Business and Financial Operations	14	60	106	121	136	151	167	183
Computer and Mathematical	4	18	32	37	42	47	52	57
Architecture and Engineering	14	56	99	115	131	147	163	180
Life, Physical, and Social Science	21	90	158	182	207	232	256	282
Legal	0	1	2	2	2	2	2	3
Arts, Design, Entertainment, Sports, and Media	1	4	6	7	8	9	10	11
Healthcare Practitioners and Technical	1	3	5	5	6	7	7	8
Healthcare Support	0	1	2	2	2	2	2	3
Protective Service	0	1	2	2	2	2	2	3
Building and Grounds Cleaning and Maintenance	2	7	13	15	18	20	22	25
Sales and Related	6	28	50	57	64	71	79	86
Office and Administrative Support	10	65	120	129	139	148	157	165
Farming, Fishing, and Forestry	0	2	3	4	4	4	5	5
Construction and Extraction	1	4	8	9	10	11	12	13
Installation, Maintenance, and Repair	18	69	121	141	162	182	203	224
Production	66	341	614	684	754	824	893	962
Transportation and Material Moving	14	65	115	131	147	163	179	195

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC

# Labor Gap – Subsector Highlights

## Labor Gap - Plastics & Rubber Products Mfg

Occupation	2023	2024	2025	2026	2027	2028	2029	2030
Management	7	15	24	32	40	48	56	64
Business and Financial Operations	4	9	15	20	25	29	34	39
Computer and Mathematical	1	2	3	4	5	6	7	8
Architecture and Engineering	5	11	18	24	30	36	42	48
Life, Physical, and Social Science	0	1	1	2	2	3	3	4
Legal	0	0	0	0	0	0	0	0
Arts, Design, Entertainment, Sports, and Media	0	0	1	1	1	1	2	2
Healthcare Practitioners and Technical	0	0	0	0	0	0	0	0
Protective Service	0	0	0	0	0	0	0	0
Building and Grounds Cleaning and Maintenance	0	1	1	2	2	3	3	4
Sales and Related	3	6	10	14	17	21	24	28
Office and Administrative Support	2	6	12	16	19	22	25	28
Construction and Extraction	0	1	1	2	2	3	3	4
Installation, Maintenance, and Repair	13	28	46	61	76	92	108	124
Production	47	109	189	249	309	366	426	485
Transportation and Material Moving	14	32	52	69	87	104	121	139

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC



# Labor Gap – Subsector Highlights

## Labor Gap - Nonmetallic Mineral Products Mfg

Occupation	2023	2024	2025	2026	2027	2028	2029	2030
Management	0	1	1	2	2	2	3	3
Business and Financial Operations	0	0	1	1	1	1	1	2
Computer and Mathematical	0	0	0	0	0	0	0	0
Architecture and Engineering	0	0	0	1	1	1	1	1
Life, Physical, and Social Science	0	0	0	0	0	0	0	0
Arts, Design, Entertainment, Sports, and Media	0	0	0	0	0	0	0	0
Protective Service	0	0	0	0	0	0	0	0
Building and Grounds Cleaning and Maintenance	0	0	0	0	0	0	0	0
Sales and Related	0	1	1	1	1	2	2	2
Office and Administrative Support	-4	-7	-11	-15	-19	-23	-27	-31
Construction and Extraction	2	3	5	6	8	10	11	13
Installation, Maintenance, and Repair	2	4	6	8	10	12	14	16
Production	5	9	14	18	22	27	31	36
Transportation and Material Moving	2	5	7	9	11	13	15	17

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC

# Labor Gap – Subsector Highlights

## Labor Gap - Fabricated Metal Products Mfg

Occupation	2023	2024	2025	2026	2027	2028	2029	2030
Management	13	29	42	54	65	74	83	89
Business and Financial Operations	7	16	23	29	35	40	44	47
Computer and Mathematical	1	2	3	4	5	5	6	6
Architecture and Engineering	8	17	25	32	38	43	47	50
Life, Physical, and Social Science	0	1	1	2	2	2	2	3
Legal	0	0	0	0	0	0	0	0
Arts, Design, Entertainment, Sports, and Media	0	0	0	1	1	1	1	1
Healthcare Practitioners and Technical	0	0	0	0	0	0	0	0
Protective Service	0	0	0	1	1	1	1	1
Building and Grounds Cleaning and Maintenance	1	2	2	3	3	4	4	4
Sales and Related	6	12	17	22	27	30	34	36
Office and Administrative Support	5	12	16	18	18	15	11	4
Construction and Extraction	9	19	29	37	45	53	59	65
Installation, Maintenance, and Repair	10	21	32	41	49	57	64	70
Production	74	167	239	296	340	372	392	399
Transportation and Material Moving	12	25	37	47	56	64	70	76

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC

# Labor Gap – Subsector Highlights

## Labor Gap - Machinery Mfg

Occupation	2023	2024	2025	2026	2027	2028	2029	2030
Management	21	41	61	80	99	118	138	157
Business and Financial Operations	15	29	43	57	71	84	98	111
Computer and Mathematical	9	19	28	37	46	56	65	74
Architecture and Engineering	42	83	124	165	206	246	287	329
Life, Physical, and Social Science	1	1	2	3	3	4	4	5
Legal	0	0	1	1	1	1	1	2
Arts, Design, Entertainment, Sports, and Media	1	2	3	4	4	5	6	7
Healthcare Practitioners and Technical	0	0	0	0	0	0	0	0
Protective Service	0	0	0	0	0	0	0	0
Food Preparation and Serving Related	0	0	0	0	0	0	0	0
Building and Grounds Cleaning and Maintenance	3	5	8	11	13	16	19	22
Sales and Related	11	21	31	41	51	61	71	81
Office and Administrative Support	7	13	17	21	25	28	30	32
Farming, Fishing, and Forestry	0	0	0	0	0	0	0	0
Construction and Extraction	2	4	6	8	10	12	13	15
Installation, Maintenance, and Repair	20	41	61	81	101	121	141	162
Production	87	167	243	316	386	454	522	588
Transportation and Material Moving	11	23	33	44	55	65	76	86

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC

# Labor Gap – Subsector Highlights

## Labor Gap - Computer Products Mfg

Occupation	2023	2024	2025	2026	2027	2028	2029	2030
Management	11	120	230	253	276	299	323	347
Business and Financial Operations	10	102	195	214	233	253	273	294
Computer and Mathematical	22	162	306	343	382	422	463	505
Architecture and Engineering	21	210	402	442	483	525	568	612
Life, Physical, and Social Science	1	8	15	16	18	19	20	22
Legal	1	4	7	8	10	11	13	15
Arts, Design, Entertainment, Sports, and Media	1	8	15	16	18	19	20	22
Healthcare Practitioners and Technical	0	1	2	2	3	3	3	3
Protective Service	0	1	2	2	3	3	3	3
Food Preparation and Serving Related	0	0	0	0	0	0	0	0
Building and Grounds Cleaning and Maintenance	0	3	6	7	8	8	9	9
Sales and Related	4	47	91	99	108	117	126	135
Office and Administrative Support	2	72	142	149	156	163	171	178
Construction and Extraction	0	2	4	5	5	5	6	6
Installation, Maintenance, and Repair	3	30	58	64	70	77	83	90
Production	21	303	586	633	680	729	778	827
Transportation and Material Moving	2	24	46	51	55	60	64	69

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC

# Labor Gap – Subsector Highlights

## Labor Gap - Transportation Equipment Mfg

Occupation	2023	2024	2025	2026	2027	2028	2029	2030
Management	65	164	217	239	252	267	292	325
Business and Financial Operations	77	193	255	281	295	314	342	380
Computer and Mathematical	48	118	158	178	192	207	229	256
Architecture and Engineering	146	364	484	539	573	614	674	752
Life, Physical, and Social Science	5	13	17	19	19	20	22	25
Legal	0	0	0	0	0	0	0	0
Arts, Design, Entertainment, Sports, and Media	4	10	13	14	15	15	17	18
Healthcare Practitioners and Technical	0	0	0	0	0	0	0	0
Protective Service	3	7	9	9	10	10	11	12
Food Preparation and Serving Related	0	0	0	0	0	0	0	0
Building and Grounds Cleaning and Maintenance	3	7	9	9	10	10	11	12
Sales and Related	16	40	53	61	67	73	81	91
Office and Administrative Support	55	143	183	191	190	191	201	219
Construction and Extraction	32	82	107	117	122	128	139	154
Installation, Maintenance, and Repair	93	230	310	352	382	415	461	518
Production	678	1,735	2,260	2,430	2,491	2,587	2,782	3,065
Transportation and Material Moving	67	167	223	248	265	284	312	349

Source: CEDBR, BLS - QCEW, BLS - National Employment Matrix, KLIC