Data Visualization Hackathon – 'Innovate with GoIStats'

Analyzing Sectoral Performance and Investment Trends: Data-Driven Insights for Viksit Bharat using MoSPI Statistics

By Team - STATUS-200

31 March 2025

Technicalities ● ● ● ● ●

Data Sources:

We utilized five primary MoSPI datasets:

- Monthly IIP (NIC 2008, 2-digit, Base 2011-12): Apr 2012 - Mar 2024
- Gross Capital Formation (GCF) by Industry (Statement 1.10): FY 2011-12 - 2022-23
- Net Value Added (NVA) by Economic Activity (Statement 1.7): FY 2011-12 - 2022-23
- Quarterly GVA Estimates (Statement 8.18.1): Q1 2011-12 - Q4 2023-24
- Percentage Change in GVA (Statement 1.6B): FY 2012-13 - 2022-23

Tech:

- Python
- Pandas, Numpy - Data processing
- Plotly, Matplotlib, Seaborn - Visuals

Chart Selection:

- Line charts for temporal trends and growth patterns
- Bar charts for sector comparisons and rankings
- Pie charts for compositional analysis (averaged over recent years for stability)
- Heatmaps for multi-dimensional growth comparison
- Stacked area charts for evolving sectoral compositions
- Radar charts for multi-metric sectoral performance
- Violin plots for distributional analysis across time periods
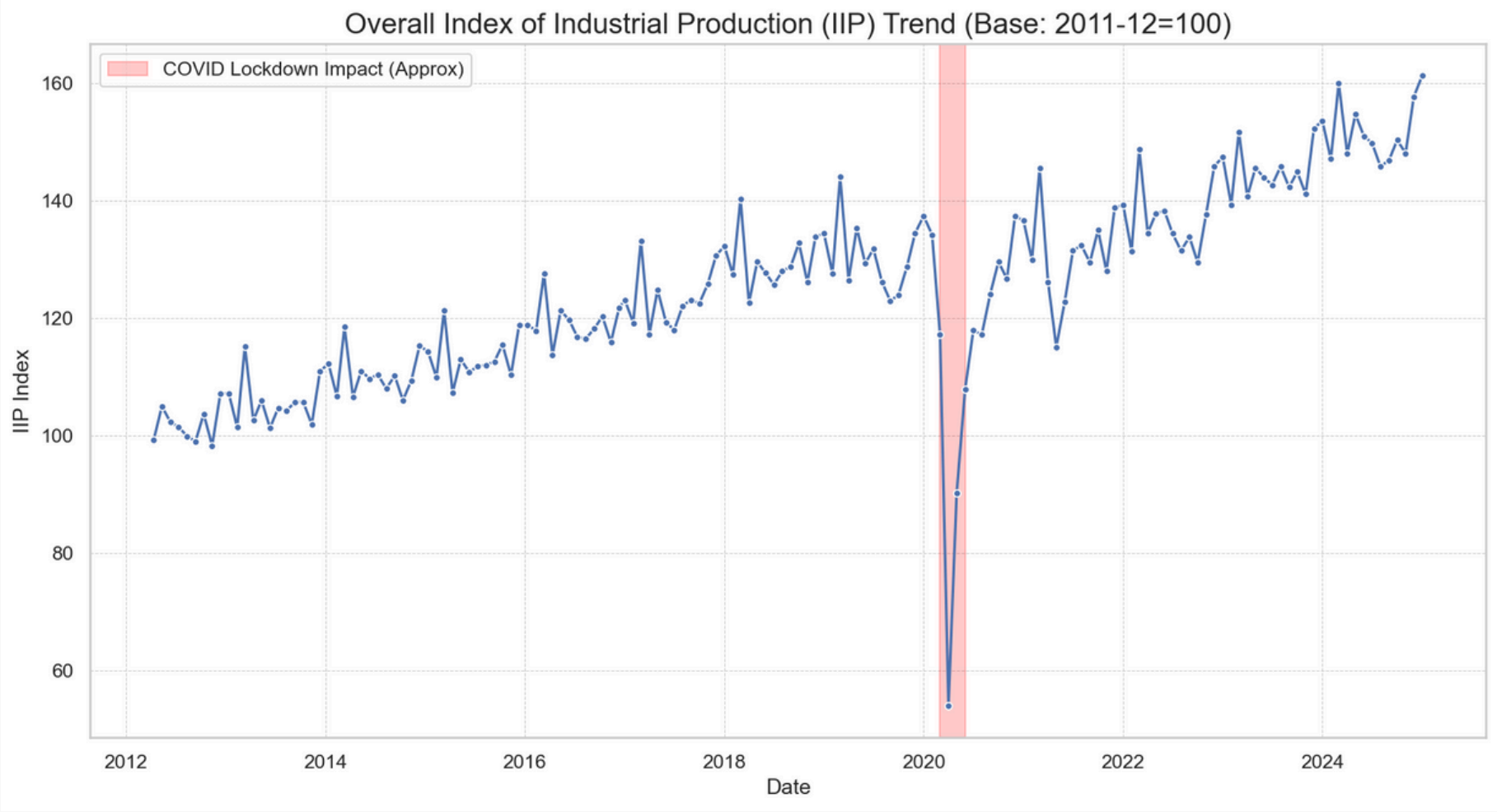
Line chart of Industrial Production Index over time showing economic output fluctuations, with sharp COVID-19 dip highlighted in 2020.
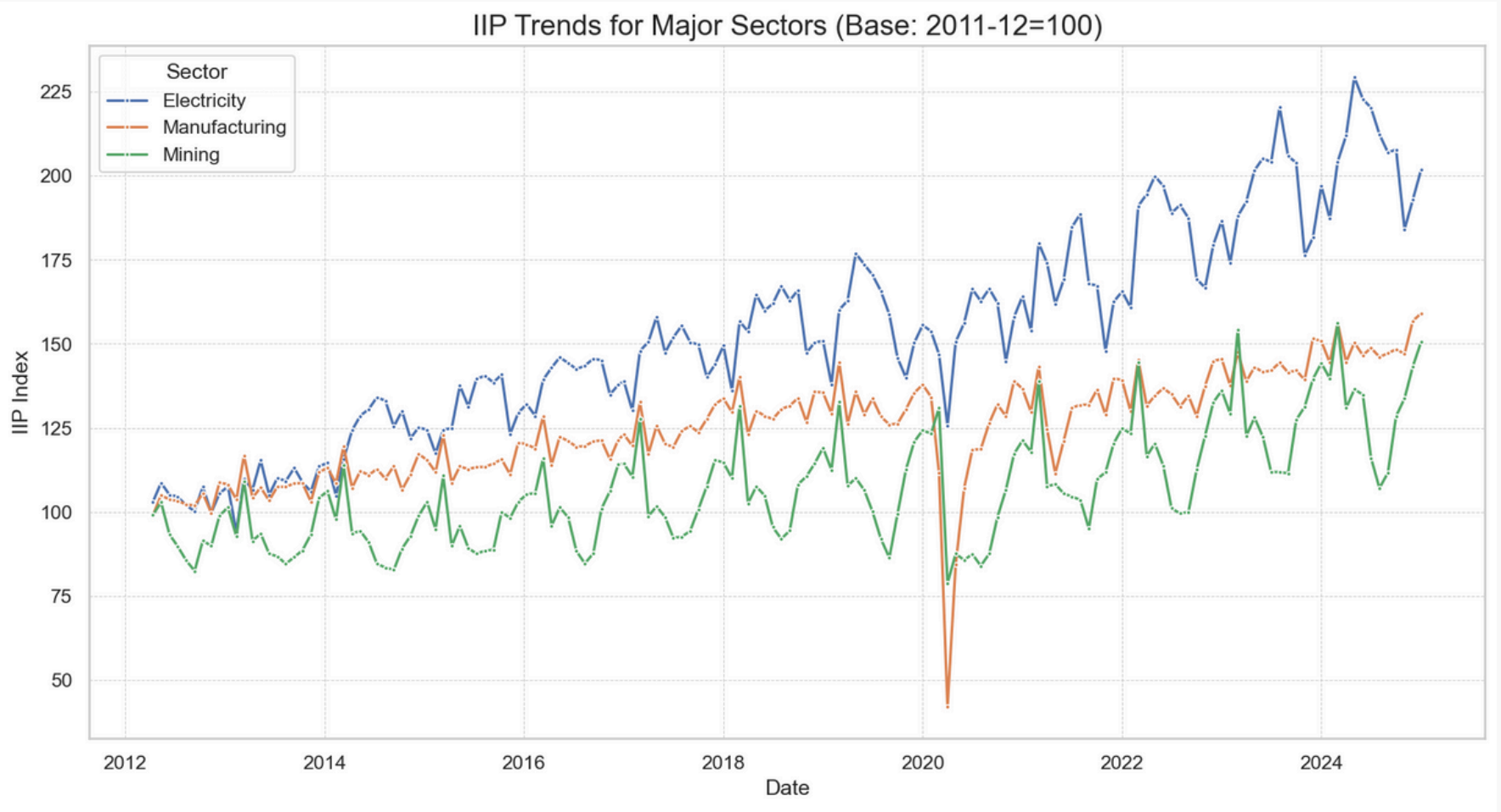
Multi-line chart comparing Mining, Manufacturing, and Electricity sectors, revealing their relative growth trajectories and differing COVID-19 recovery patterns.

Total Gross Capital Formation (Investment) Trend (Constant 2011-12 Prices)
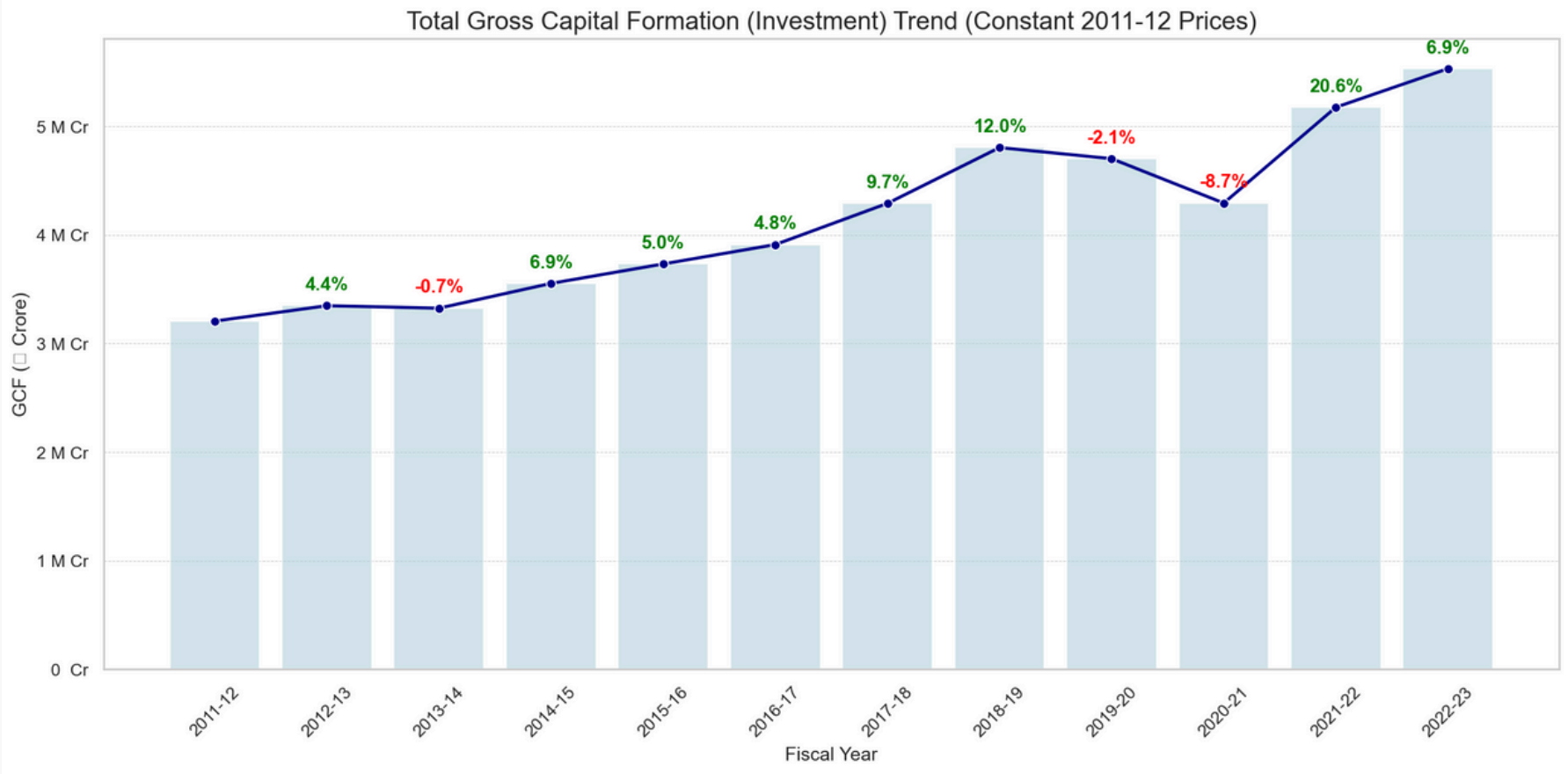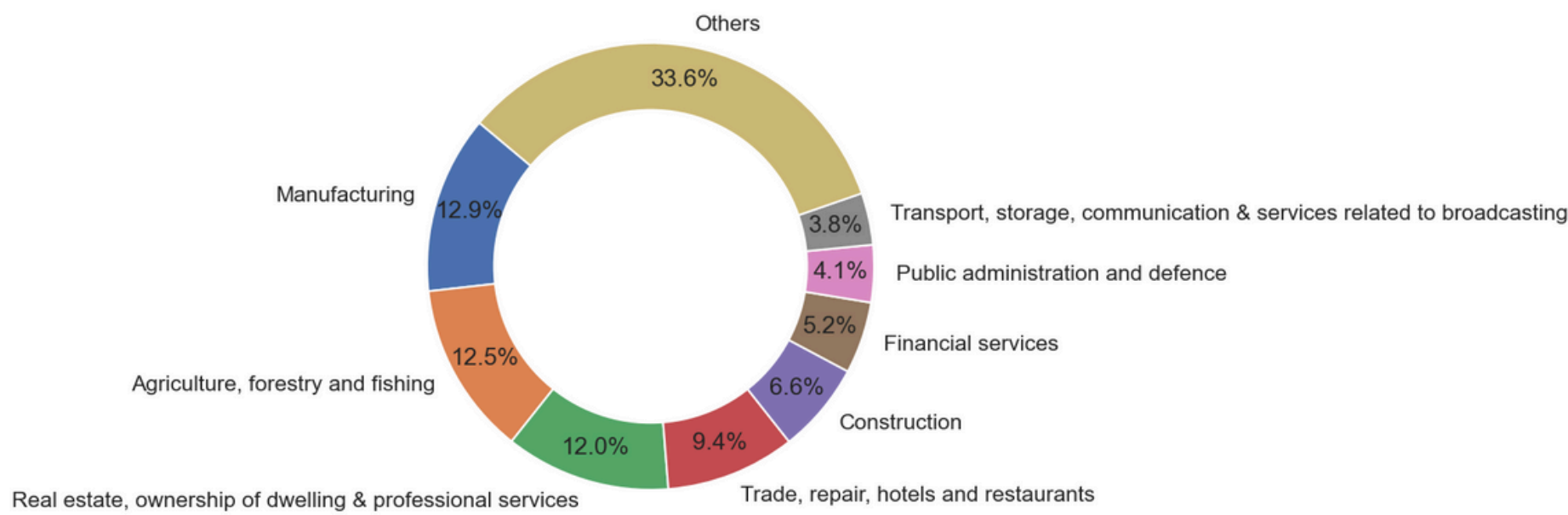
Combined bar/line visualization tracking overall investment (Gross Capital Formation) with year-on-year growth percentages, indicating investment momentum.

Average Sectoral Share of Gross Capital Formation (Investment) (Constant 2011-12 Prices, Avg. 2020-21 to 2022-23)
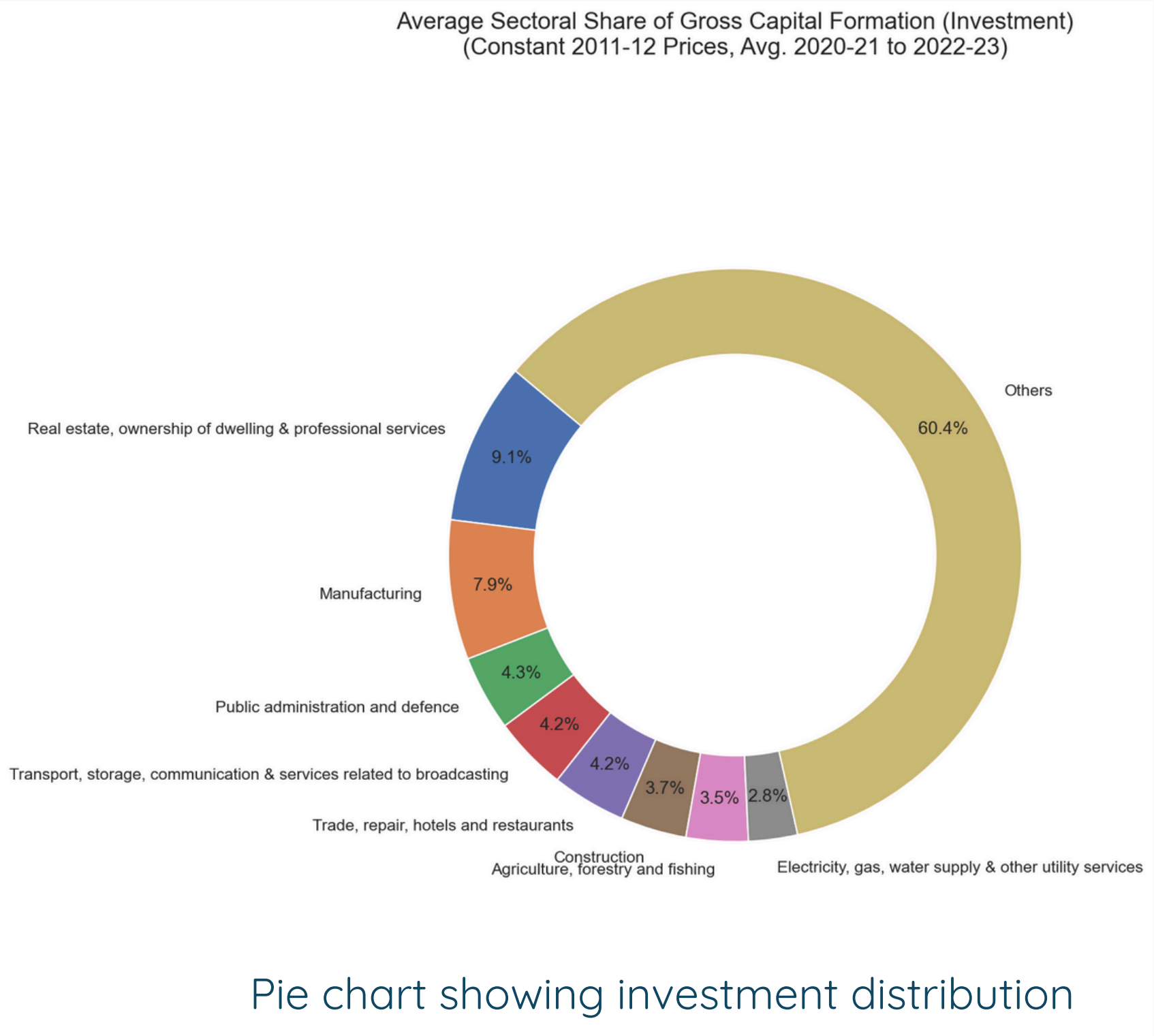
Pie chart showing investment distribution across economic sectors, revealing where capital is concentrated in the economy.

Average Sectoral Share of Net Value Added (NVA)
(Constant 2011-12 Prices, Avg. 2020-21 to 2022-23)

- Others 33.6%
- Manufacturing 12.9%
- Agriculture, forestry and fishing 12.5%
- Real estate, ownership of dwelling & professional services 12.0%
- Trade, repair, hotels and restaurants 9.4%
- Construction 6.6%
- Financial services 5.2%
- Public administration and defence 4.1%
- Transport, storage, communication & services related to broadcasting 3.8%

Total Net Value Added (NVA) Trend (Constant 2011-12 Prices)

Pie chart of sector contributions to NVA, showing economic structure and dominant sectors.
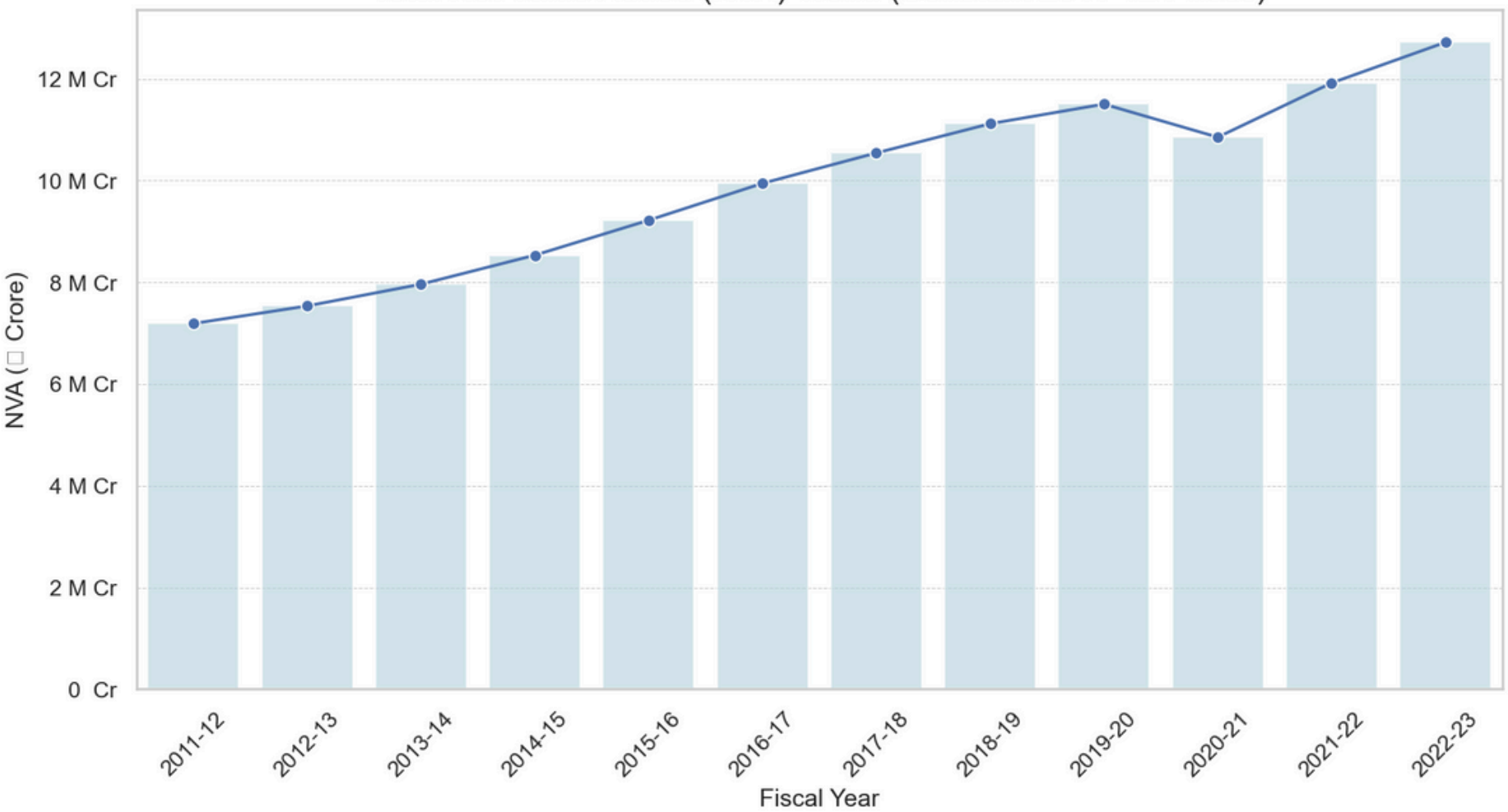
Line chart tracking Net Value Added (economic output minus depreciation), displaying overall economic growth trajectory with COVID-19 impact highlighted.

Quarterly GVA Growth (Year-on-Year) for Key Sectors (Constant Prices)

Multi-line chart comparing quarter-to-quarter growth patterns across key sectors, highlighting seasonal variations and COVID-19 impact.

Horizontal bar chart ranking sectors by recent growth rates, identifying growth leaders and laggards.

Manufacturing Sector: Growth Indicators Comparison (Constant Prices)

Top 5 & Bottom 5 Mfg Sectors by Avg. IIP Growth (Apr 2021 - Mar 2024)

Combined visualization comparing manufacturing metrics across IIP, GVA, and investment datasets, revealing consistency or divergence.
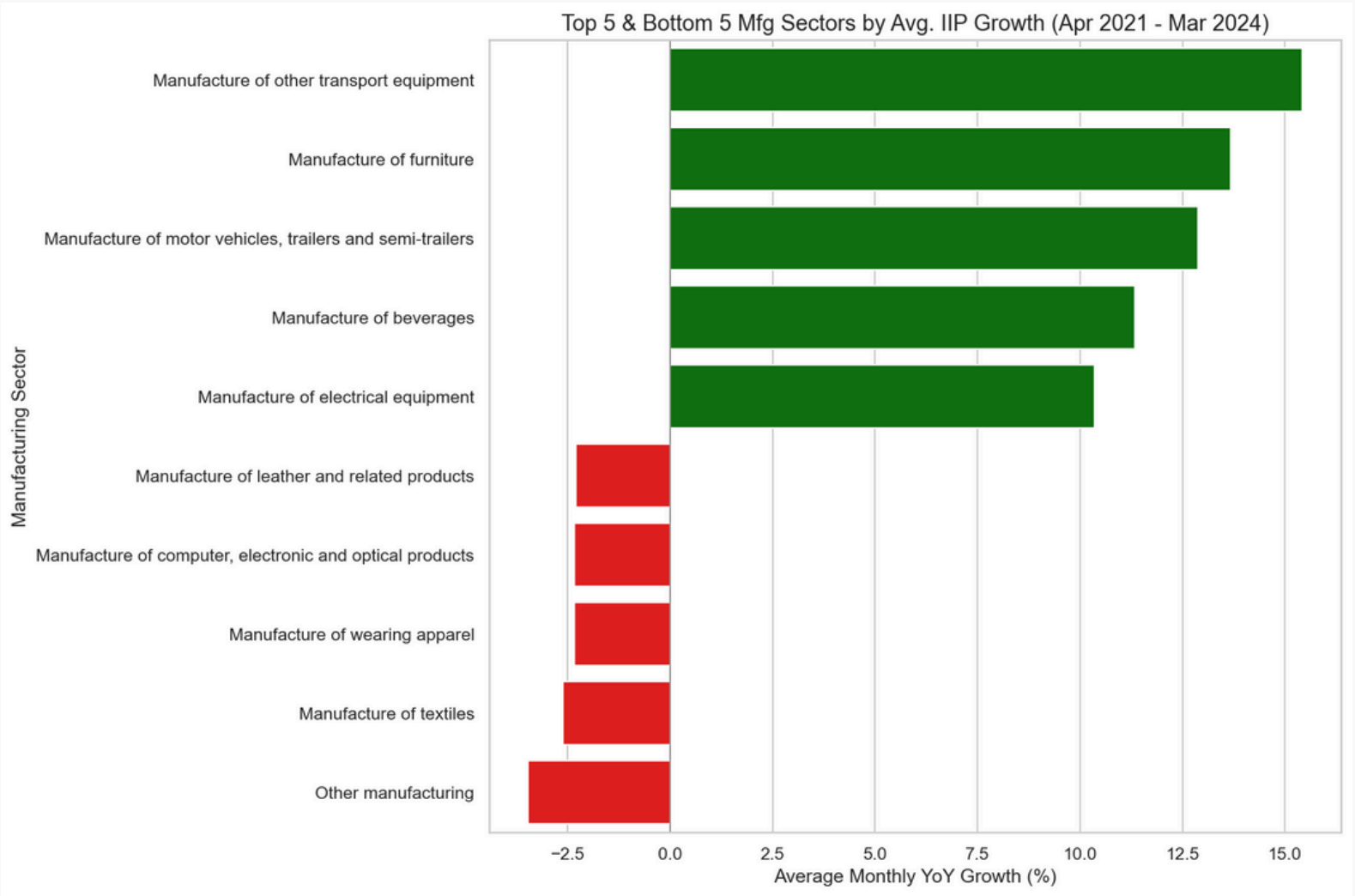
Horizontal bar chart ranking manufacturing sub-sectors by post-COVID growth rates, identifying resilient industries versus struggling ones.

Sectoral GVA Growth Heat Map (%) - 2012-2022

Color-coded grid mapping sector performance over time, with red/blue intensity showing growth/contraction.

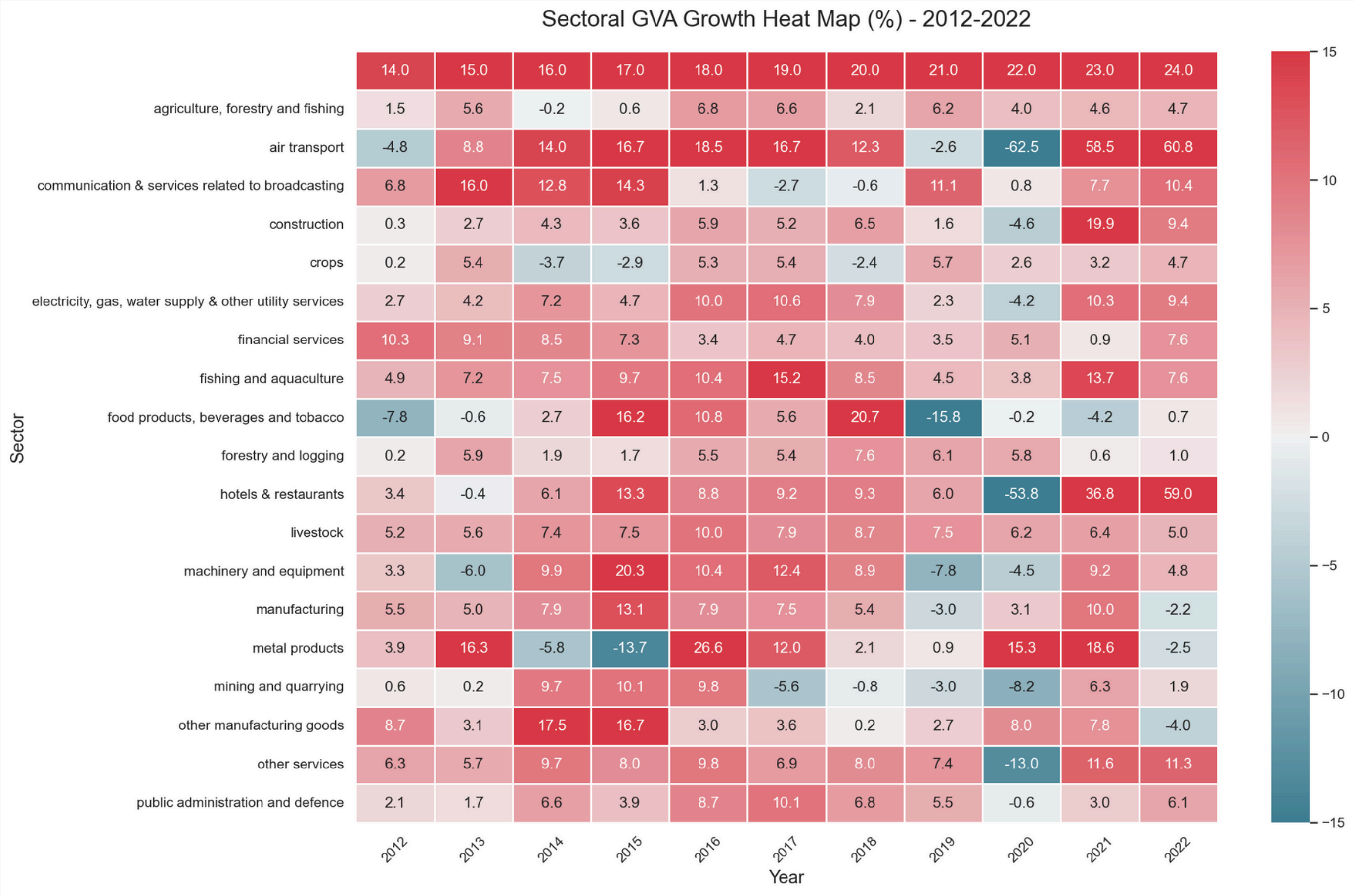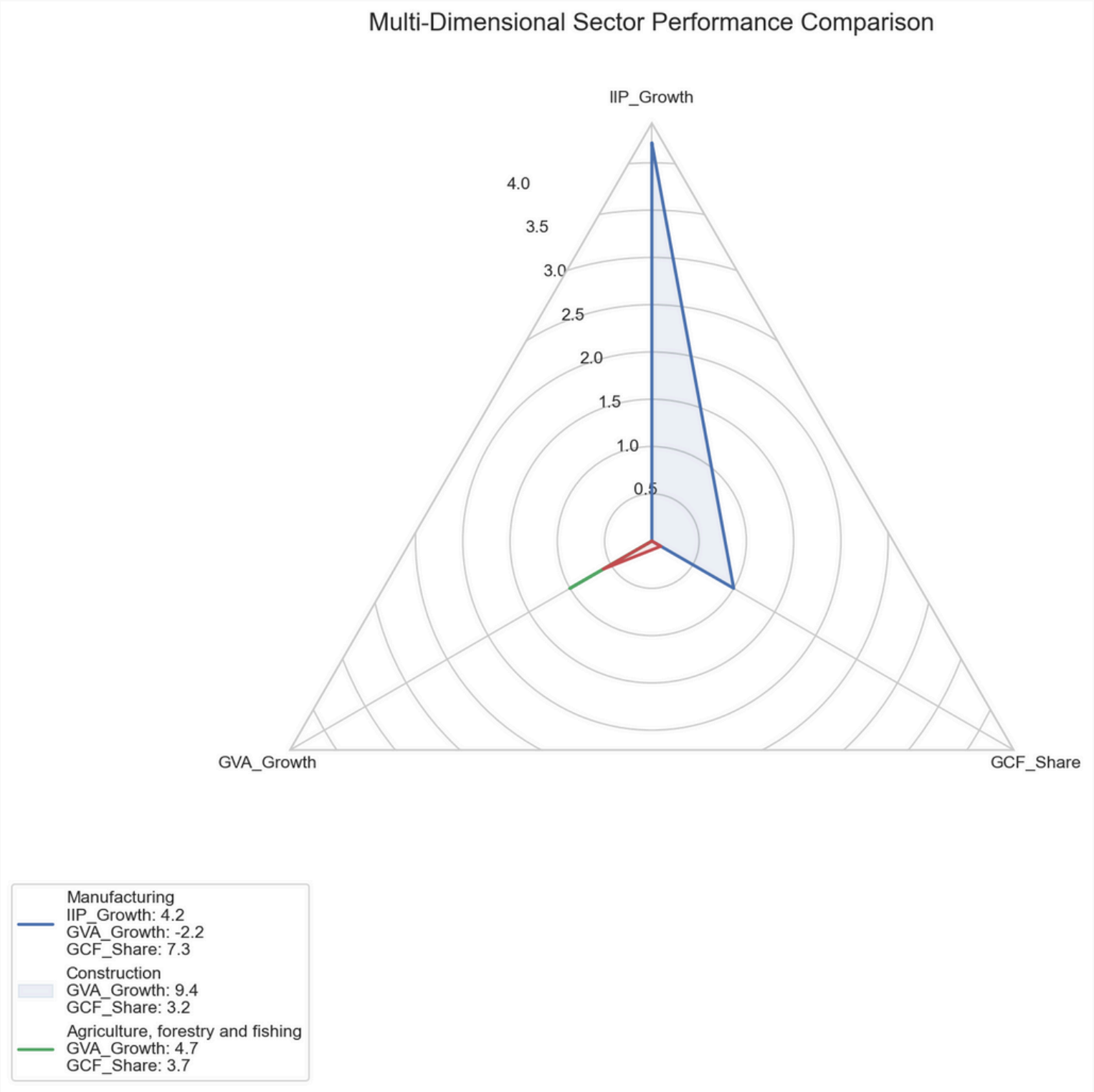| Sector	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0
agriculture, forestry and fishing	1.5	5.6	-0.2	0.6	6.8	6.6	2.1	6.2	4.0	4.6	4.7
air transport	-4.8	8.8	14.0	16.7	18.5	16.7	12.3	-2.6	-62.5	58.5	60.8
communication & services related to broadcasting	6.8	16.0	12.8	14.3	1.3	-2.7	-0.6	11.1	0.8	7.7	10.4
construction	0.3	2.7	4.3	3.6	5.9	5.2	6.5	1.6	-4.6	19.9	9.4
crops	0.2	5.4	-3.7	-2.9	5.3	5.4	-2.4	5.7	2.6	3.2	4.7
electricity, gas, water supply & other utility services	2.7	4.2	7.2	4.7	10.0	10.6	7.9	2.3	-4.2	10.3	9.4
financial services	10.3	9.1	8.5	7.3	3.4	4.7	4.0	3.5	5.1	0.9	7.6
fishing and aquaculture	4.9	7.2	7.5	9.7	10.4	15.2	8.5	4.5	3.8	13.7	7.6
food products, beverages and tobacco	-7.8	-0.6	2.7	16.2	10.8	5.6	20.7	-15.8	-0.2	-4.2	0.7
forestry and logging	0.2	5.9	1.9	1.7	5.5	5.4	7.6	6.1	5.8	0.6	1.0
hotels & restaurants	3.4	-0.4	6.1	13.3	8.8	9.2	9.3	6.0	-53.8	36.8	59.0
livestock	5.2	5.6	7.4	7.5	10.0	7.9	8.7	7.5	6.2	6.4	5.0
machinery and equipment	3.3	-6.0	9.9	20.3	10.4	12.4	8.9	-7.8	-4.5	9.2	4.8
manufacturing	5.5	5.0	7.9	13.1	7.9	7.5	5.4	-3.0	3.1	10.0	-2.2
metal products	3.9	16.3	-5.8	-13.7	26.6	12.0	2.1	0.9	15.3	18.6	-2.5
mining and quarrying	0.6	0.2	9.7	10.1	9.8	-5.6	-0.8	-3.0	-8.2	6.3	1.9
other manufacturing goods	8.7	3.1	17.5	16.7	3.0	3.6	0.2	2.7	8.0	7.8	-4.0
other services	6.3	5.7	9.7	8.0	9.8	6.9	8.0	7.4	-13.0	11.6	11.3
public administration and defence	2.1	1.7	6.6	3.9	8.7	10.1	6.8	5.5	-0.6	3.0	6.1

IIP Time Series Decomposition

Four-panel chart breaking down industrial production into trend, seasonal, residual components to isolate underlying patterns.

Multi-Dimensional Sector Performance Comparison

Manufacturing
IIP_Growth: 4.2
GVA_Growth: -2.2
GCF_Share: 7.3
Construction
GVA_Growth: 9.4
GCF_Share: 3.2
Agriculture, forestry and fishing
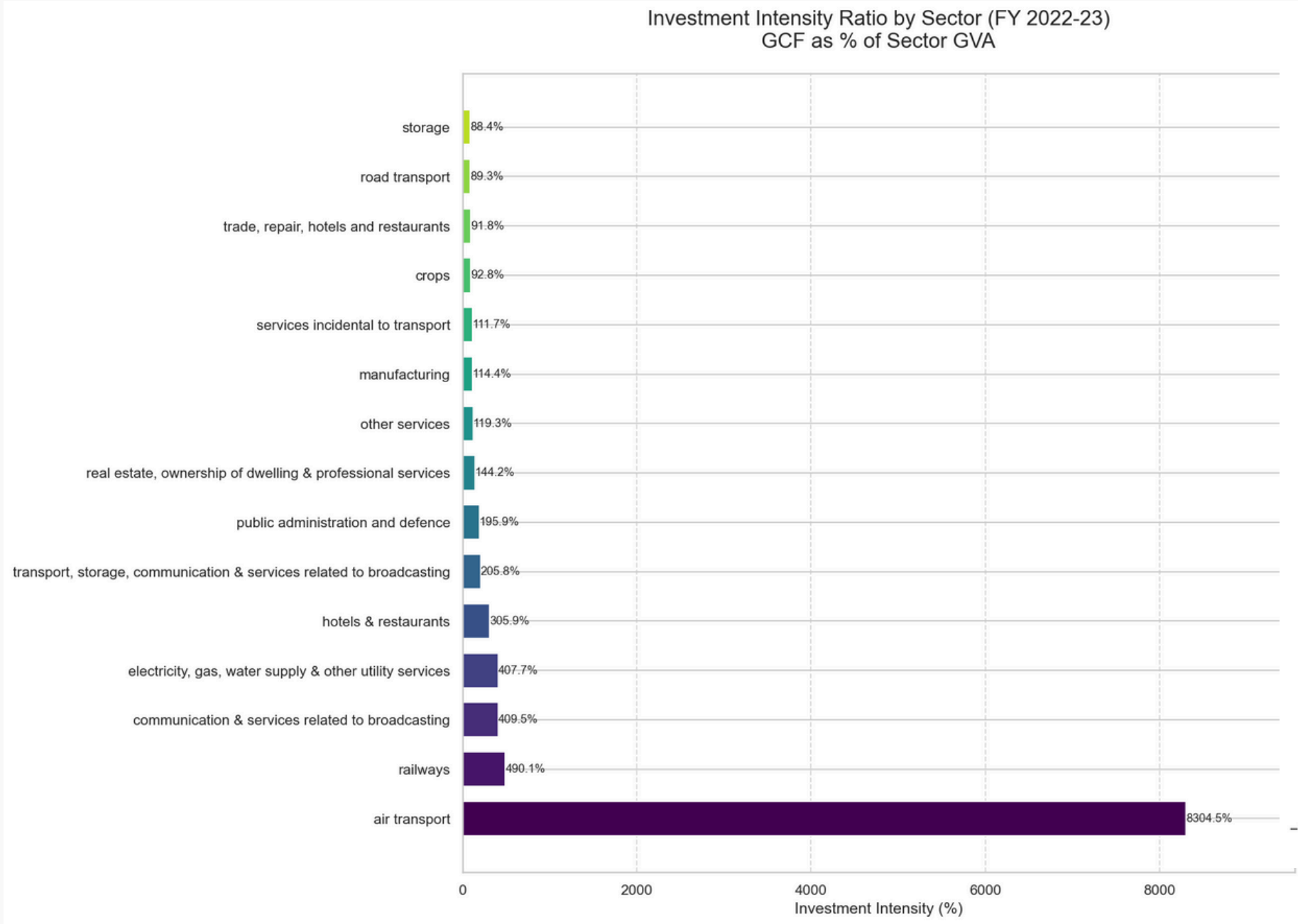GVA_Growth: 4.7
GCF_Share: 3.7

Multi-axis radar chart comparing sectors across diverse metrics, providing holistic performance view
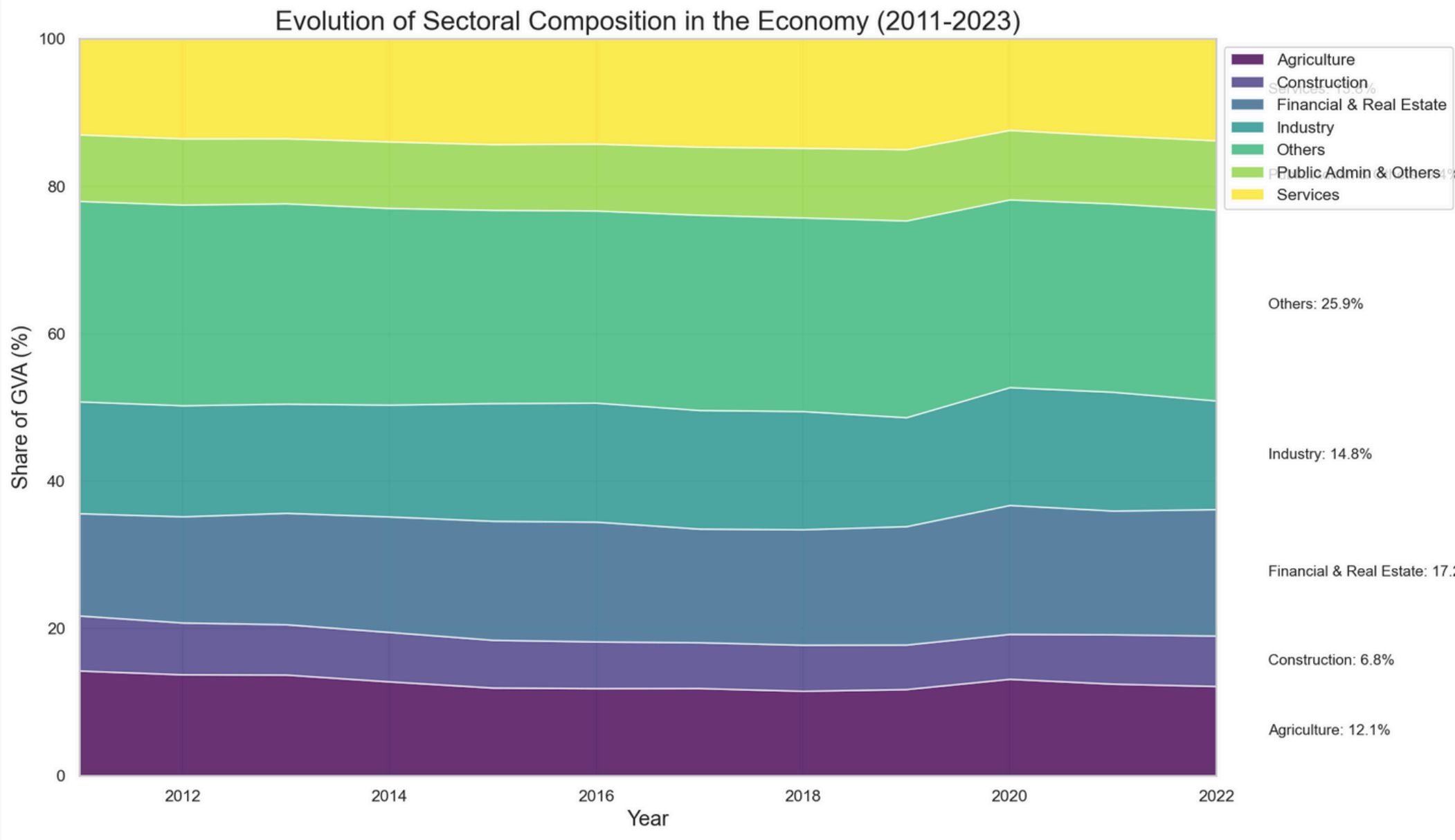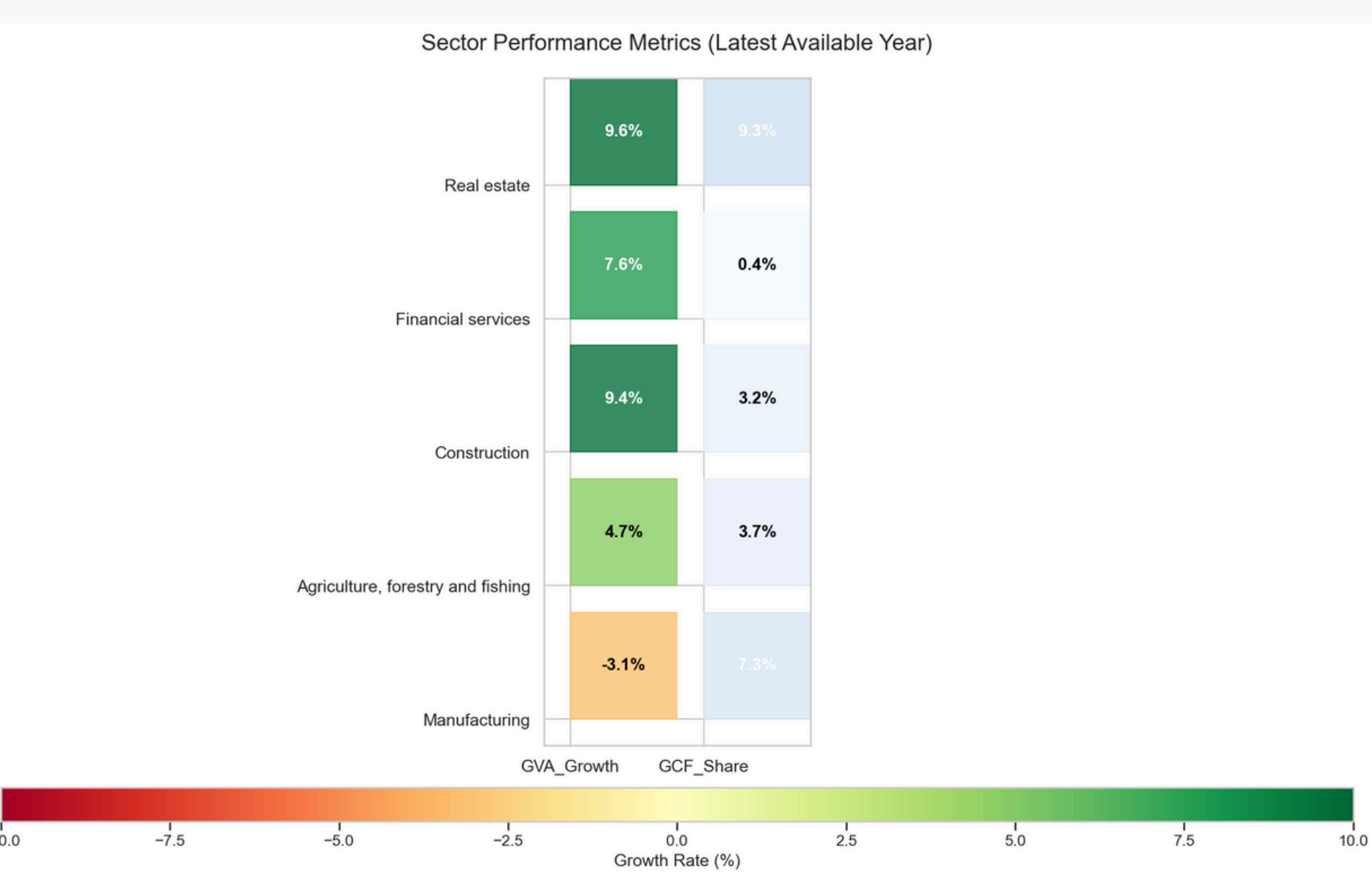
Stacked area chart showing how sectoral GDP shares changed over time (2011-2023), revealing economic structural transformation
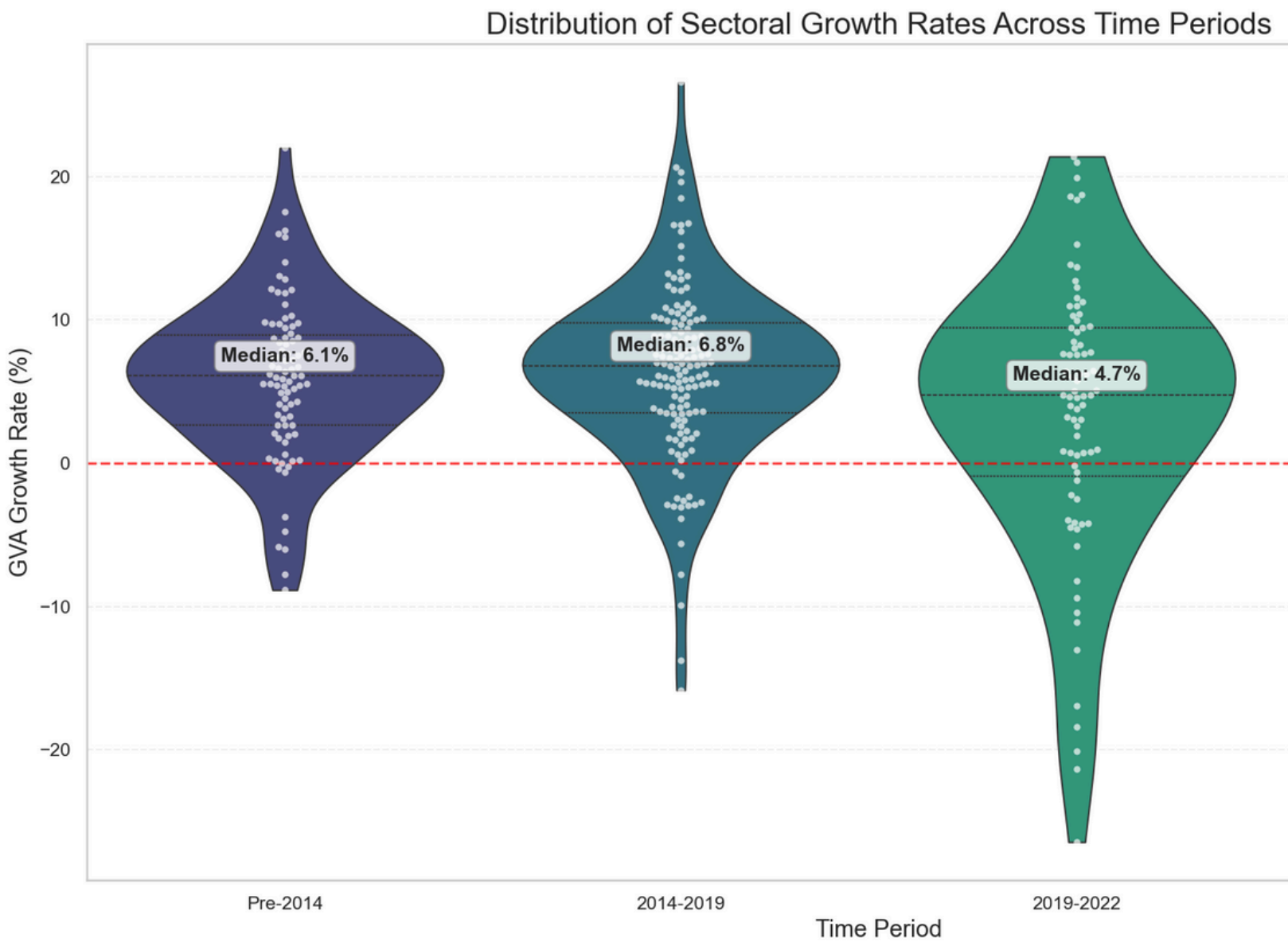
Violin plots comparing growth patterns across different time periods, showing distribution changes in the economy

Investment Intensity Ratio by Sector (FY 2022-23)
GCF as % of Sector GVA

Sector	Investment Intensity (%)
storage	88.4%
road transport	89.3%
trade, repair, hotels and restaurants	91.8%
crops	92.8%
services incidental to transport	111.7%
manufacturing	114.4%
other services	119.3%
real estate, ownership of dwelling & professional services	144.2%
public administration and defence	195.9%
transport, storage, communication & services related to broadcasting	205.8%
hotels & restaurants	305.9%
electricity, gas, water supply & other utility services	407.7%
communication & services related to broadcasting	409.5%
railways	490.1%
air transport	8304.5%

Horizontal bar chart showing investment-to-output ratio by sector, identifying capital-intensive versus labor-intensive sectors

Sector Performance Metrics (Latest Available Year)

Sector	GVA_Growth	GCF_Share
Real estate	9.6%	9.3%
Financial services	7.6%	0.4%
Construction	9.4%	3.2%
Agriculture, forestry and fishing	4.7%	3.7%
Manufacturing	-3.1%	7.3%

Color-coded performance matrix showing sectors (rows) against multiple metrics (columns), providing multi-dimensional performance assessment.
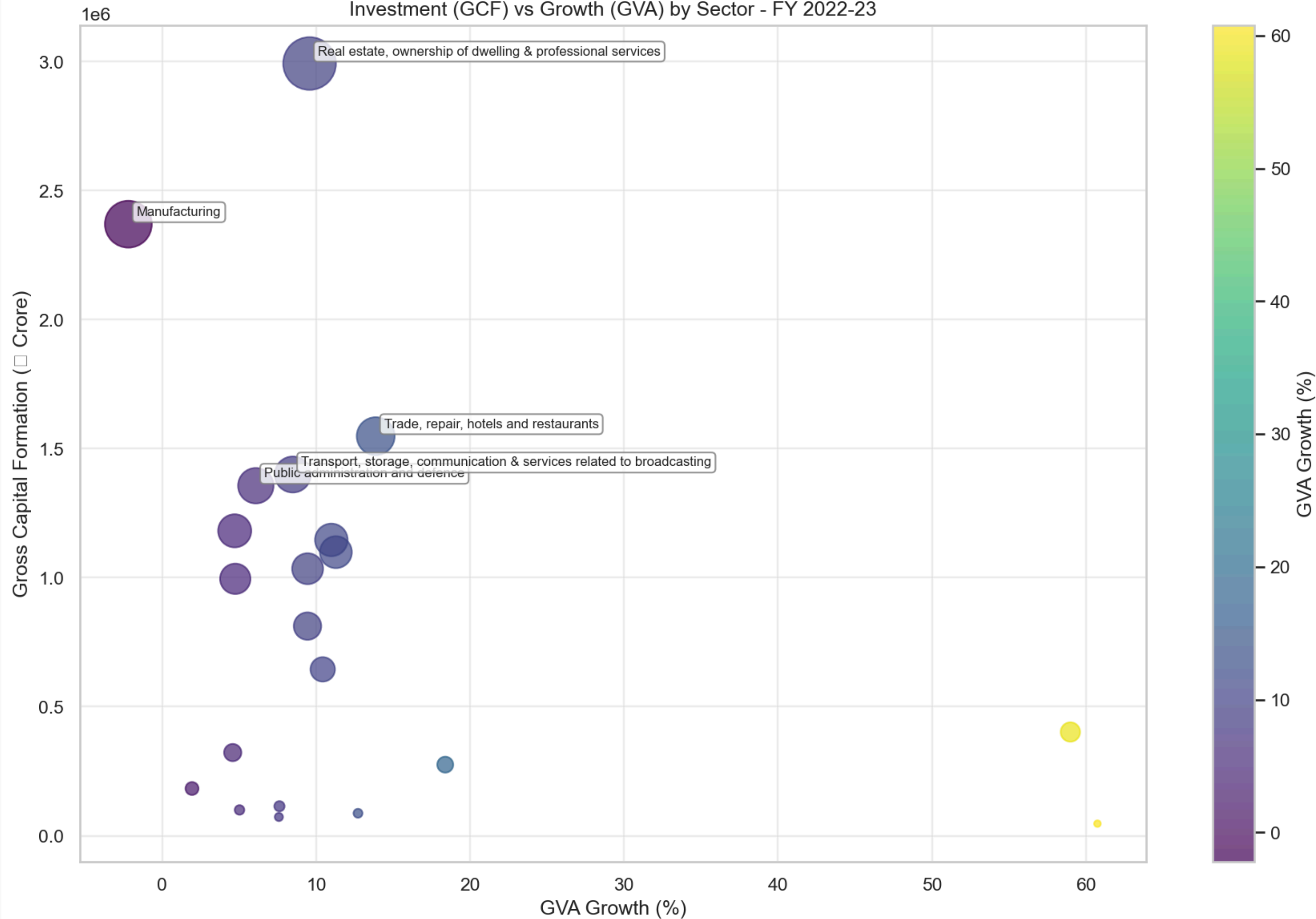
Sectoral Growth Trends with 3-Year Moving Average
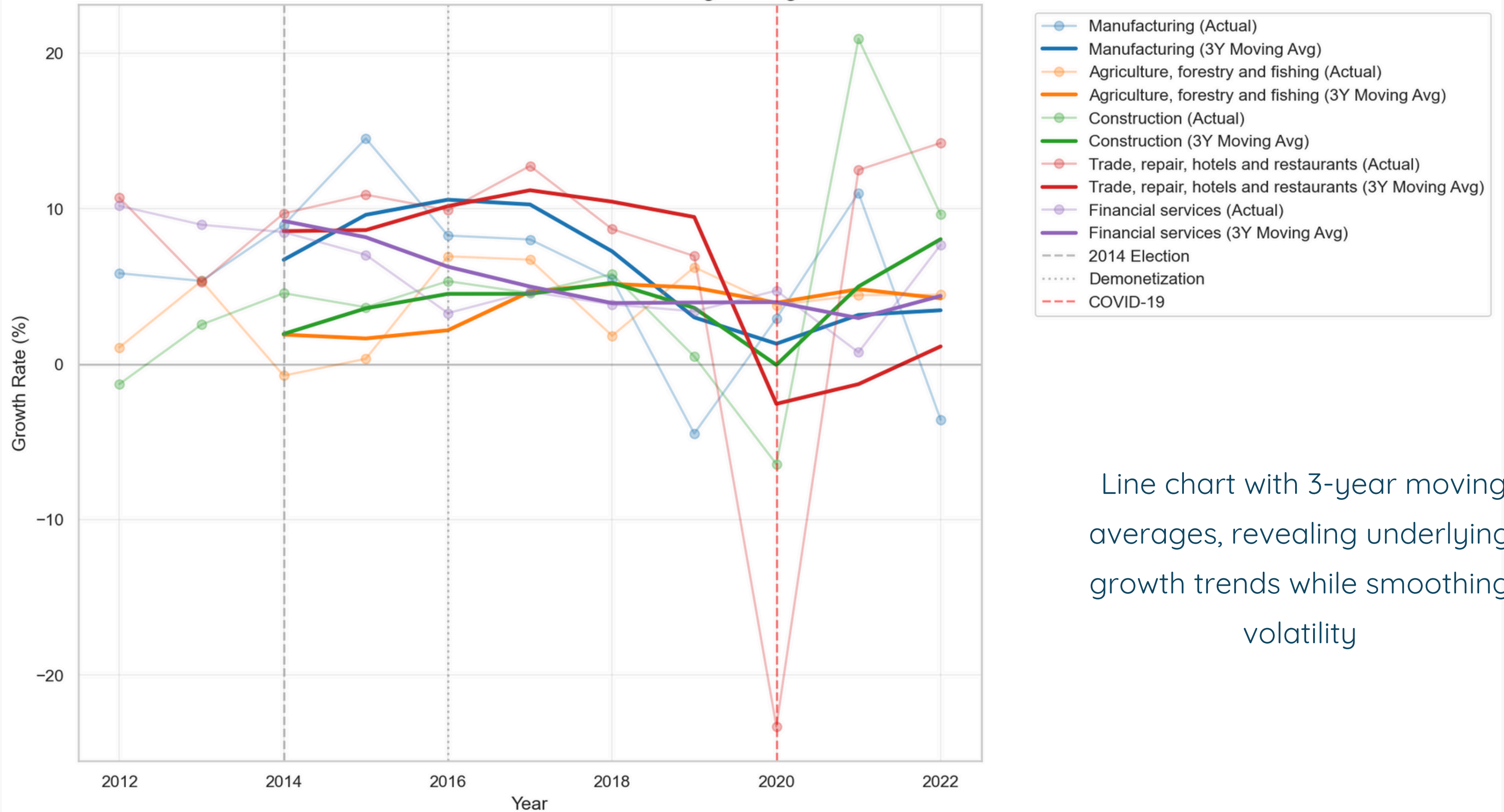
Line chart with 3-year moving averages, revealing underlying growth trends while smoothing volatility

Investment (GCF) vs Growth (GVA) by Sector - FY 2022-23

Real estate, ownership of dwelling & professional services
Manufacturing
Trade, repair, hotels and restaurants
Transport, storage, communication & services related to broadcasting
Public administration and defence

GVA Growth (%)

Gross Capital Formation (□ Crore)

GVA Growth (%)

Scatter plot where position shows GVA growth, bubble size represents investment amount, revealing sectors with high investment but low growth or vice versa

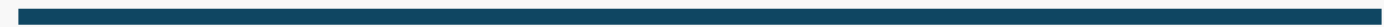Sectoral Recovery Index Post-COVID
(Q4 2019 = 100)
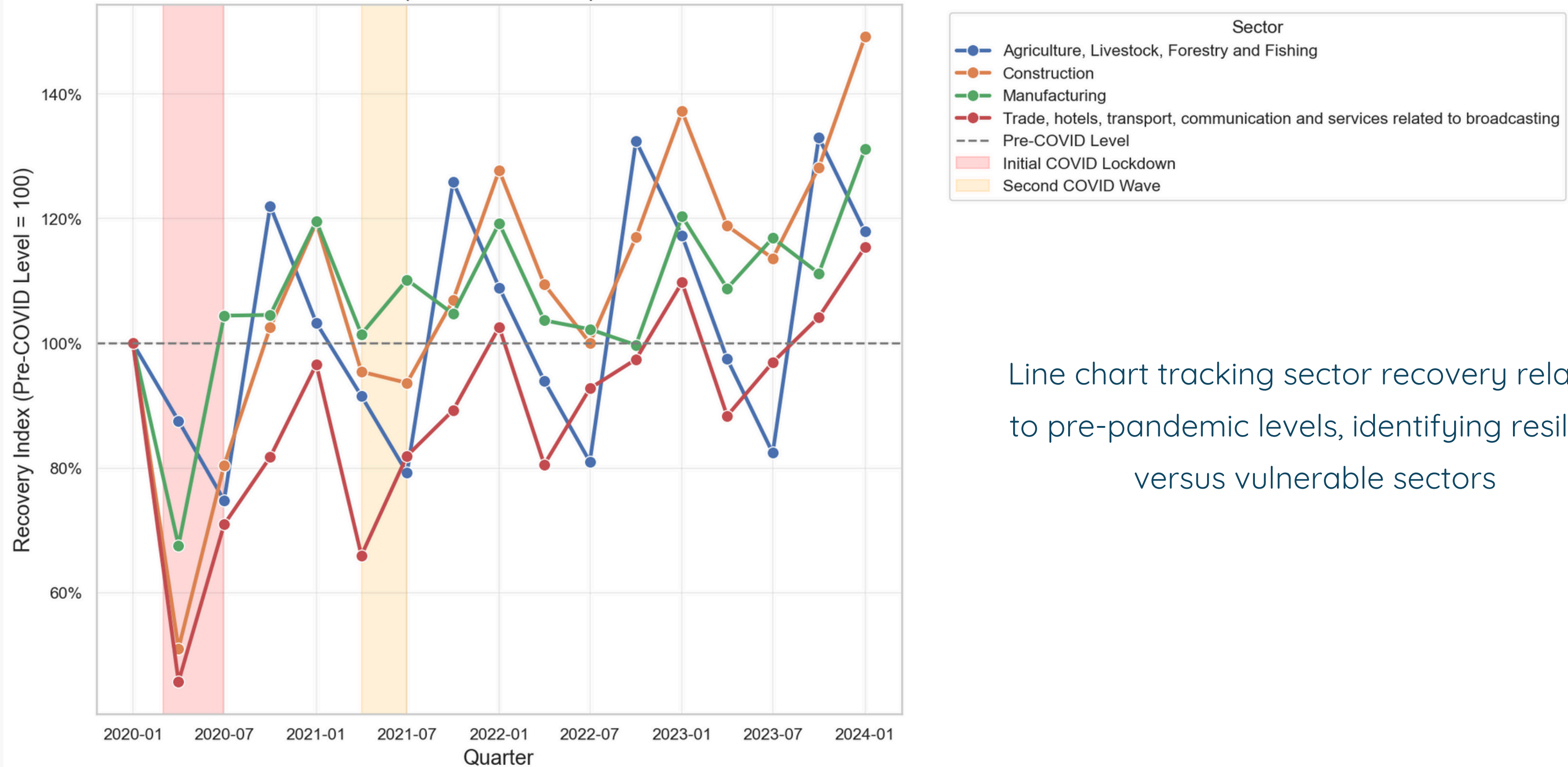
Line chart tracking sector recovery relative to pre-pandemic levels, identifying resilient versus vulnerable sectors

Team STATUS-200

Data for Development, Insights for Impact

Thank you