

Group 12 - Half Coders

Current Employment Statistics:

Beginning 1990

EVOLVING EMPLOYMENT LANDSCAPE

A ANALYSIS OF NEW YORK CITY CITY 1990 190 - PRESENT



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Introduction

Exploring New York State's employment trends from 1990 to the present, we analyze the Current Employment Statistics dataset from Data.gov.

Using Python for data processing and visualization, we reveal evolving job markets, key sectors driving employment, and the impact of economic and policy changes on the workforce.

Our insights provide a comprehensive understanding of New York State's job dynamics, aiding stakeholders in informed decision-making for future growth and resilience.

Data Source: Bureau of Labor Statistics' Current Employment Statistics



Data Processing

- Consistent Dataset: The dataset maintains its integrity with 482,584 rows x 7 columns before and after cleaning.
- Data Stability: The dataset remains unchanged, ensuring reliability for analysis and insights.

```
In [147]: def clean_dataset(data):
    # Handling missing values
    data = data.dropna() # Remove rows with any missing values
    # Removing duplicates
    data = data.drop_duplicates()
    return df

df = clean_dataset(data)
```

```
In [148]: df
```

```
Out[148]:
```

	Area	Area Name	Series	Title	Year	Month	Current Employment
0	93561	New York City	65621400	Outpatient Care Centers	1990	4	9300
1	93561	New York City	65621400	Outpatient Care Centers	1990	3	8600
2	93561	New York City	65621400	Outpatient Care Centers	1990	2	8500
3	93561	New York City	65621400	Outpatient Care Centers	1990	1	8400
4	93561	New York City	65621400	Outpatient Care Centers	1990	0	9100
...
482579	93562	Orange-Rockland-Westchester Metro Area	90931611	Local Government Educational Services	1990	4	41000
482580	93562	Orange-Rockland-Westchester Metro Area	90931611	Local Government Educational Services	1990	3	40600
482581	93562	Orange-Rockland-Westchester Metro Area	90931611	Local Government Educational Services	1990	2	40400
482582	93562	Orange-Rockland-Westchester Metro Area	90931611	Local Government Educational Services	1990	1	39600
482583	93562	Orange-Rockland-Westchester Metro Area	90931611	Local Government Educational Services	1990	0	39200

482584 rows × 7 columns

Data Overview

```
Title  
Information 17640  
Service-Providing 17640  
Financial Activities 17640  
Trade, Transportation, and Utilities 17640  
Professional and Business Services 17640  
Name: count, dtype: int64
```

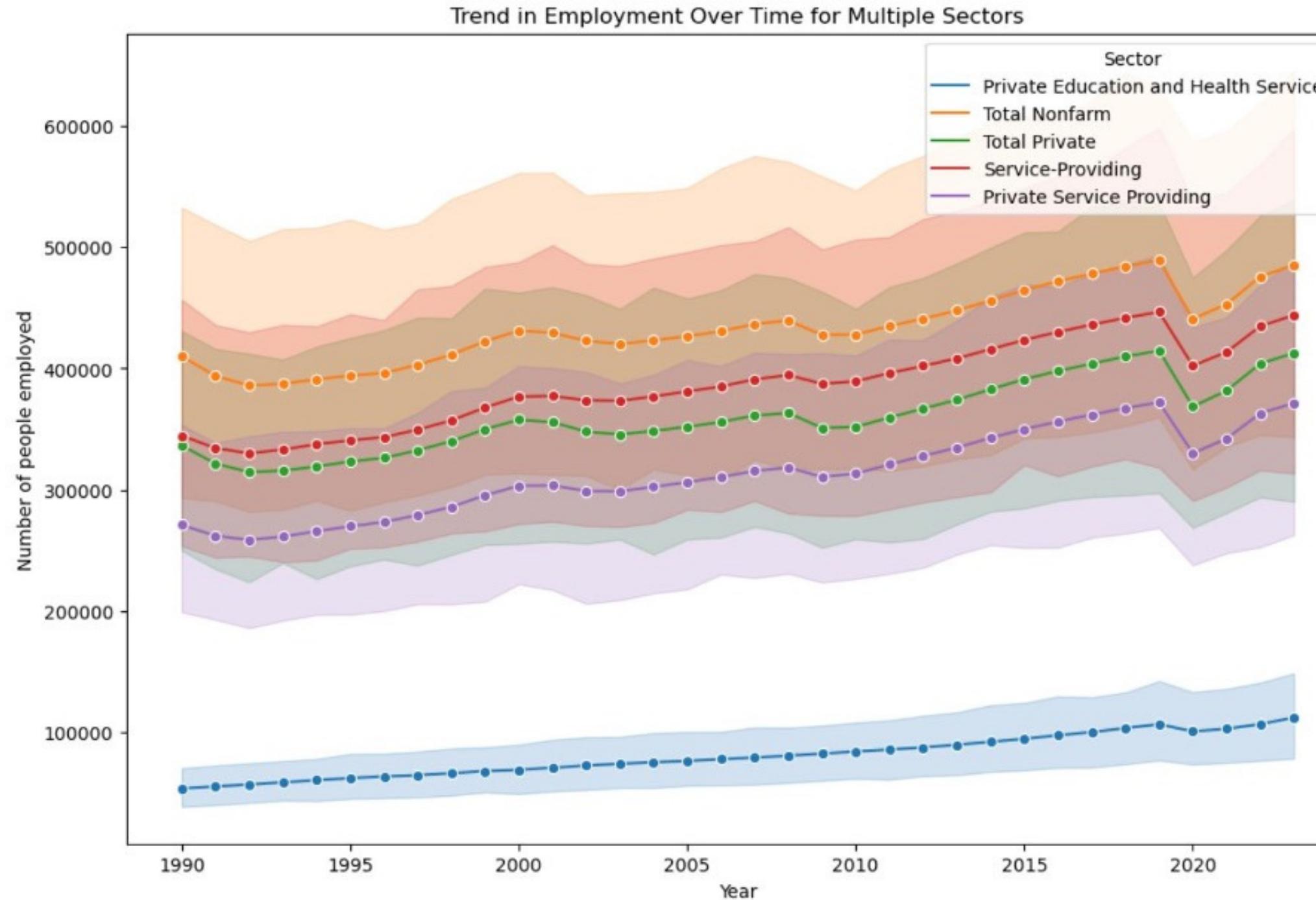
```
Title  
Local Government excluding Educational Services 168  
Specialty Food Retailers 246  
Office Administrative Services 246  
Business, Professional, Labor, Political, and Similar Organizations 246  
Motor Vehicle Parts Manufacturing 272  
Name: count, dtype: int64
```

- **482584 rows x 7 columns**
- Top 5 sectors:
 - Information
 - Service-Providing
 - Financial Activities
 - Trade, Transportation and Utilities
 - Professional and Business services
- Bottom 5 sectors:
 - Local Government excluding Educational Services
 - Specialty Food Retailers
 - Office Administrative Services
 - Business, Professional, Labor, Political, and Similar Organizations
 - Motor Vehicle Parts Manufacturing

Current_Employment_Statistics__Beginning_1990

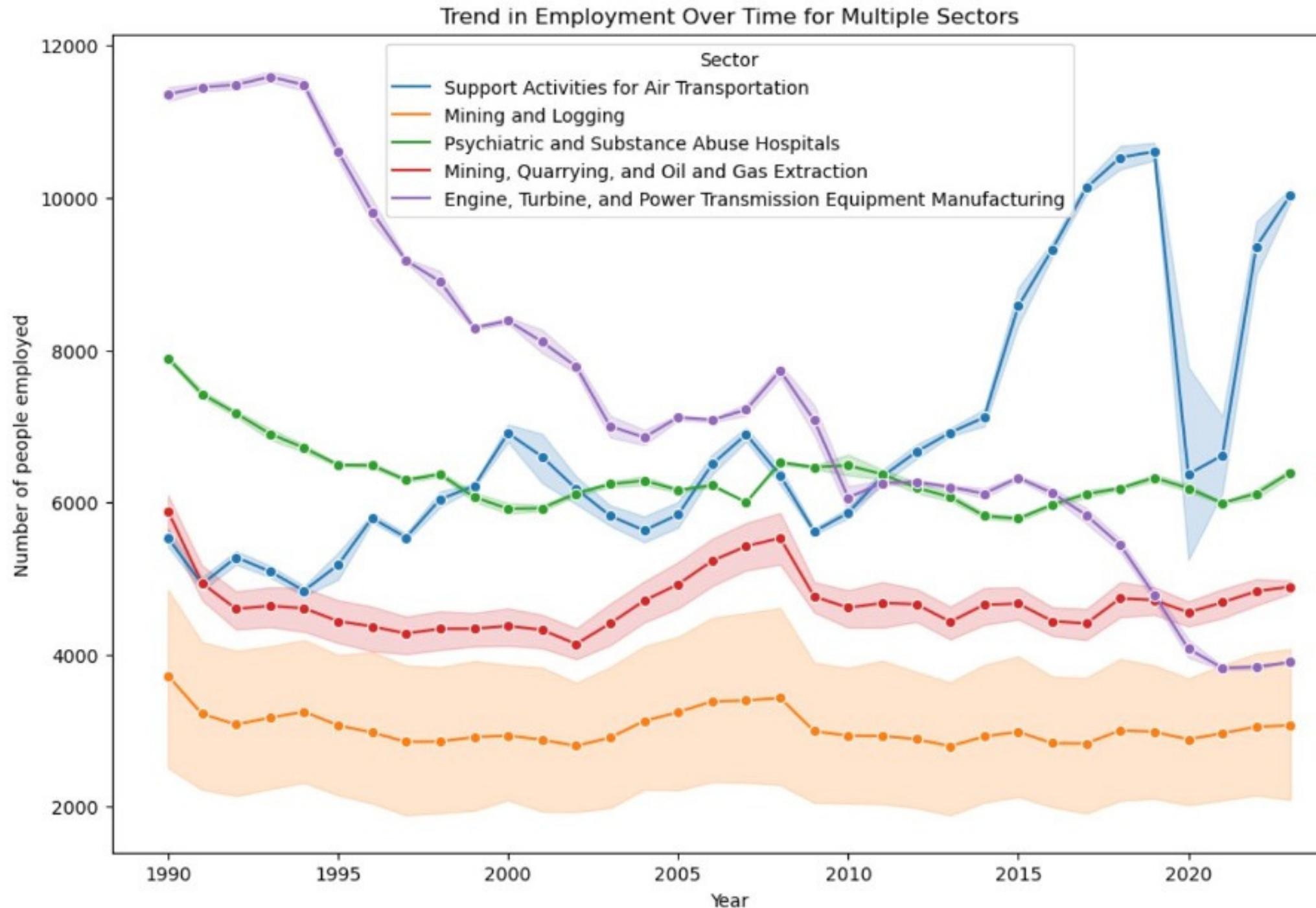
Area	Area Name	Series	Title	Year	Month	Current Employment
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Employment Trends in Top 5 Sectors



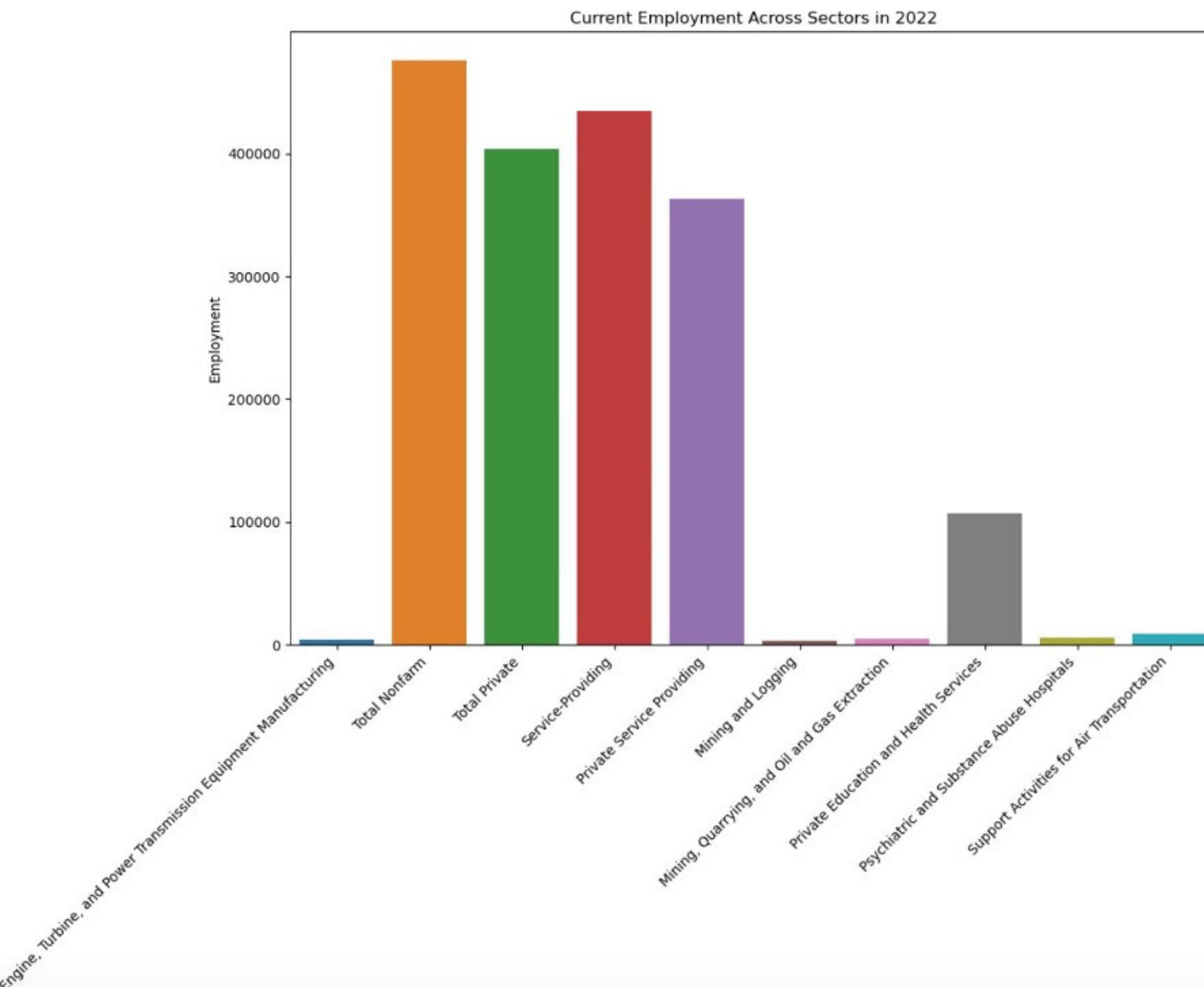
- **Service Surge:** Jobs boom in "Service-Providing" and "Private Service Providing," driving overall growth.
- **Healthcare Steadfast:** Stable rise in "Private Education & Health Services" reflects enduring demand.
- **Job Market Burst:** Recent spike across sectors, hinting at policy changes or economic expansion.
- **Beyond Farms:** "Total Nonfarm" growth indicates broader economic health.
- **Service-Driven Future:** NYC's job market charts a new course towards services.

Employment Trend in bottom 5 Sectors



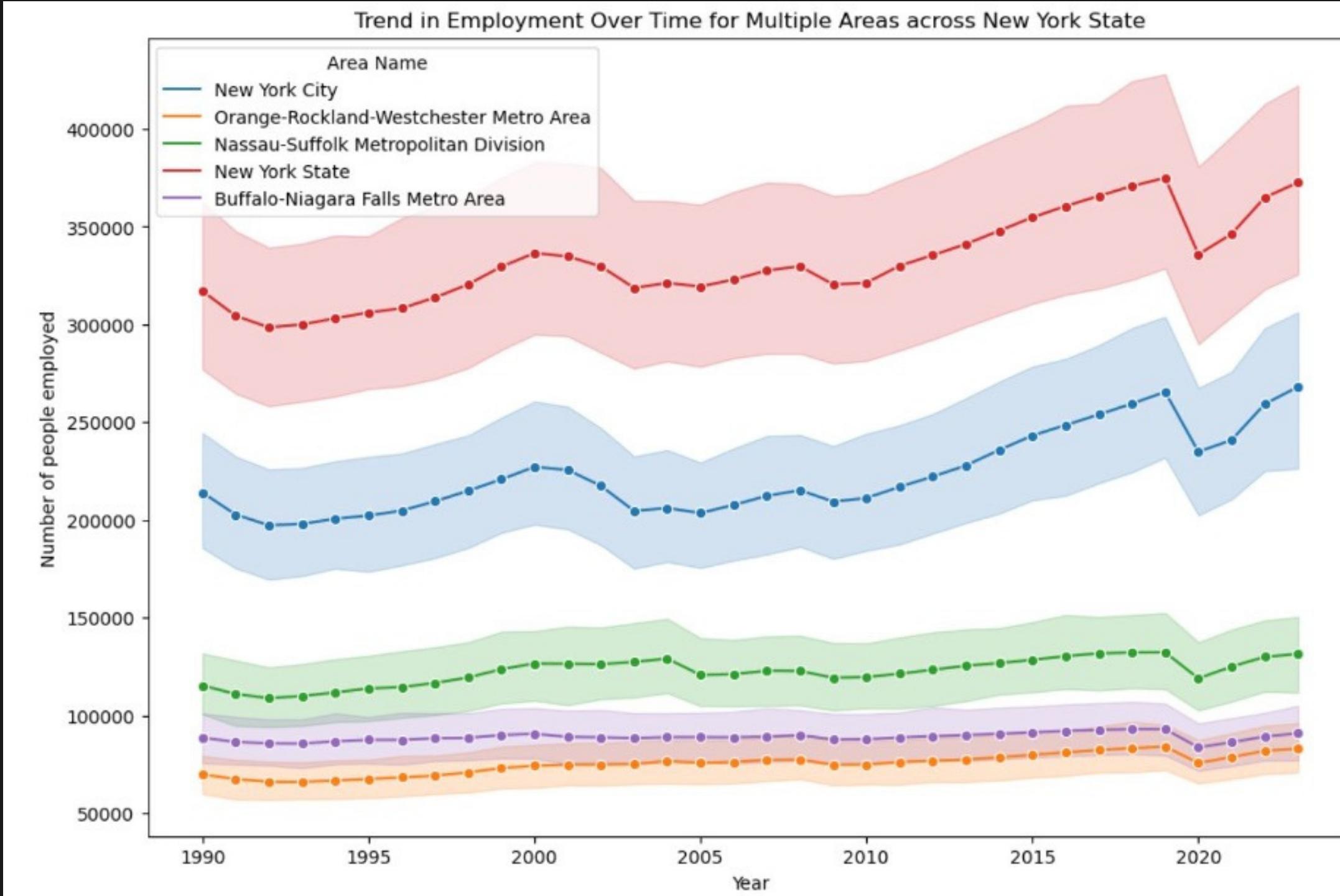
- **Sector Showdown:** Diverse performance - some thrive, others struggle.
- **Rollercoaster Ride:** One sector experiences dramatic boom-and-bust cycles.
- **Bounce Back or Fade Away:** Sectors recover or face long-term decline.
- **Recent Shifts:** Watch for global events like COVID impacting employment.
- **Deeper Dive Needed:** Data and context reveal the "why" behind the trends.

Sector Employment in 2022



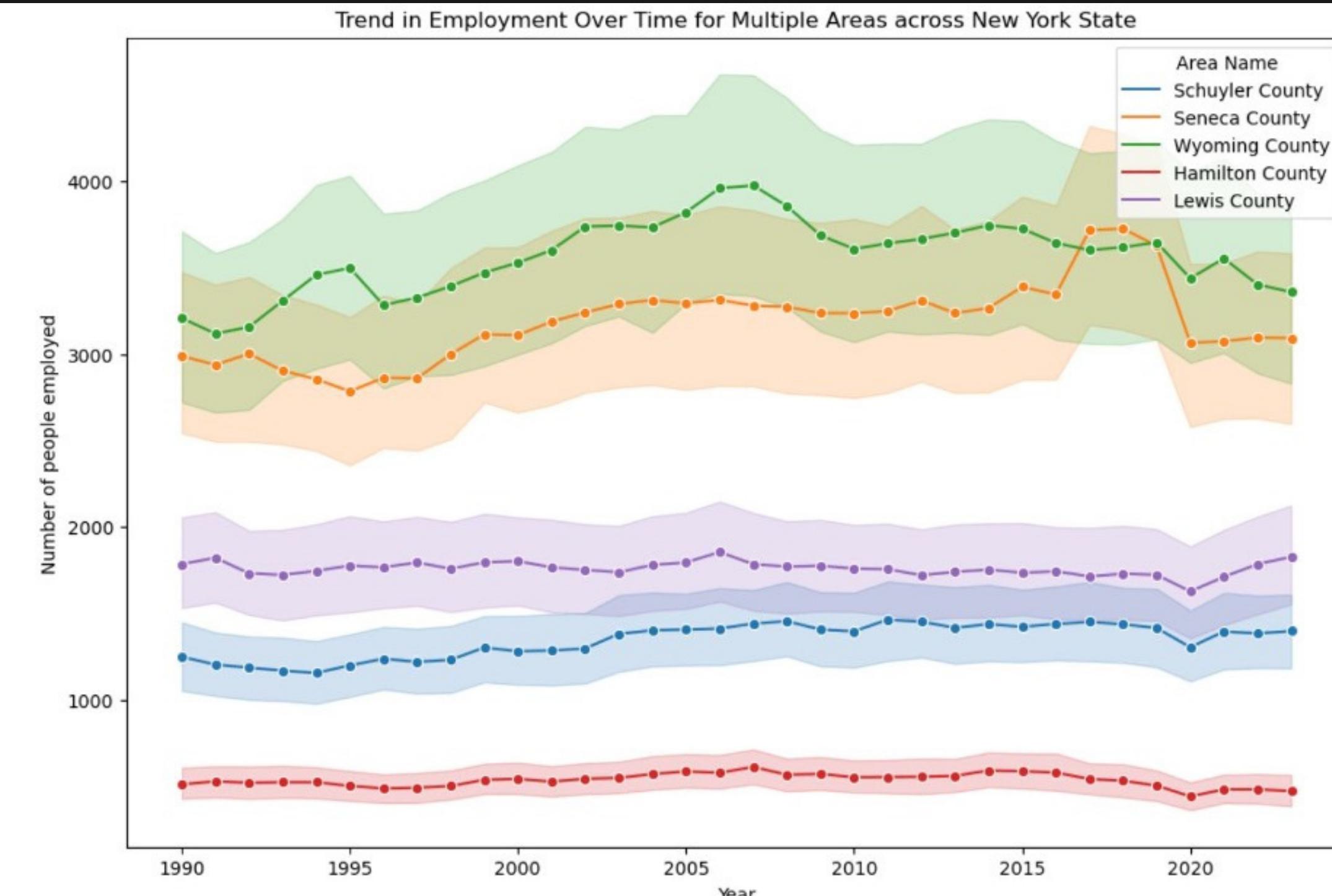
- **Service Soars:** Dominant sectors rule, led by service giants like "Total Nonfarm" and "Service-Providing."
- **Manufacturing Meltdown:** Factories fade as "Engine Manufacturing" shows low numbers, contrasting service booms.
- **Global Shift:** Service dominance reflects a worldwide trend with sectors like "Private Service Providing" thriving.
- **Niche Players:** Specialized fields like "Mining" and "Hospitals" hold unique positions with smaller workforces.

Employment trends over time across top 5 regions



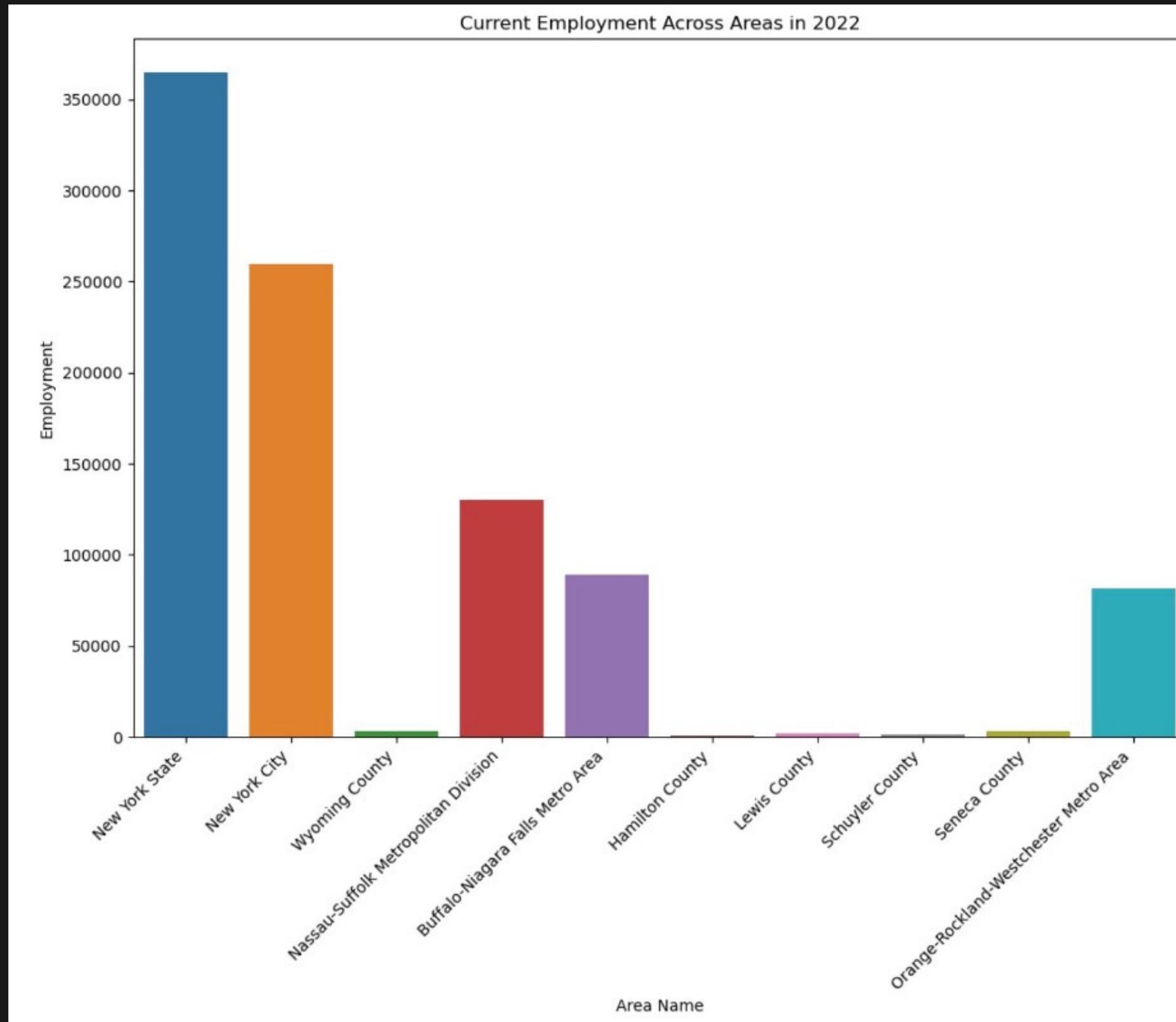
- **New York City:** At the top, significant growth making it economic hub of the State.
- **The Orange-Rockland-Westchester Metro Area and Nassau-Suffolk Metro Division:** exhibit growth over the years, indicating economic development
- **Buffalo-Niagara Metro Area:** A stable increase indicating mature economy with established industries.
- **Entire State:** Slow but significant increase but shaded area indicates uneven growth.

Employment trends over time across bottom 5 regions



- **Schuyler and Seneca Counties:** have a stable but stagnant growth rate indicating a consistent but limited job market.
- **Wyoming County:** Has gradual decrease in employment indicating economic challenges or sign of declining industry.
- **Hamilton & Lewis counties:** there is low & variable employment, highlighting the limited job opportunities.
- Across all the bottom performing regions, the employment levels are considerably lower than more populous regions of the State.

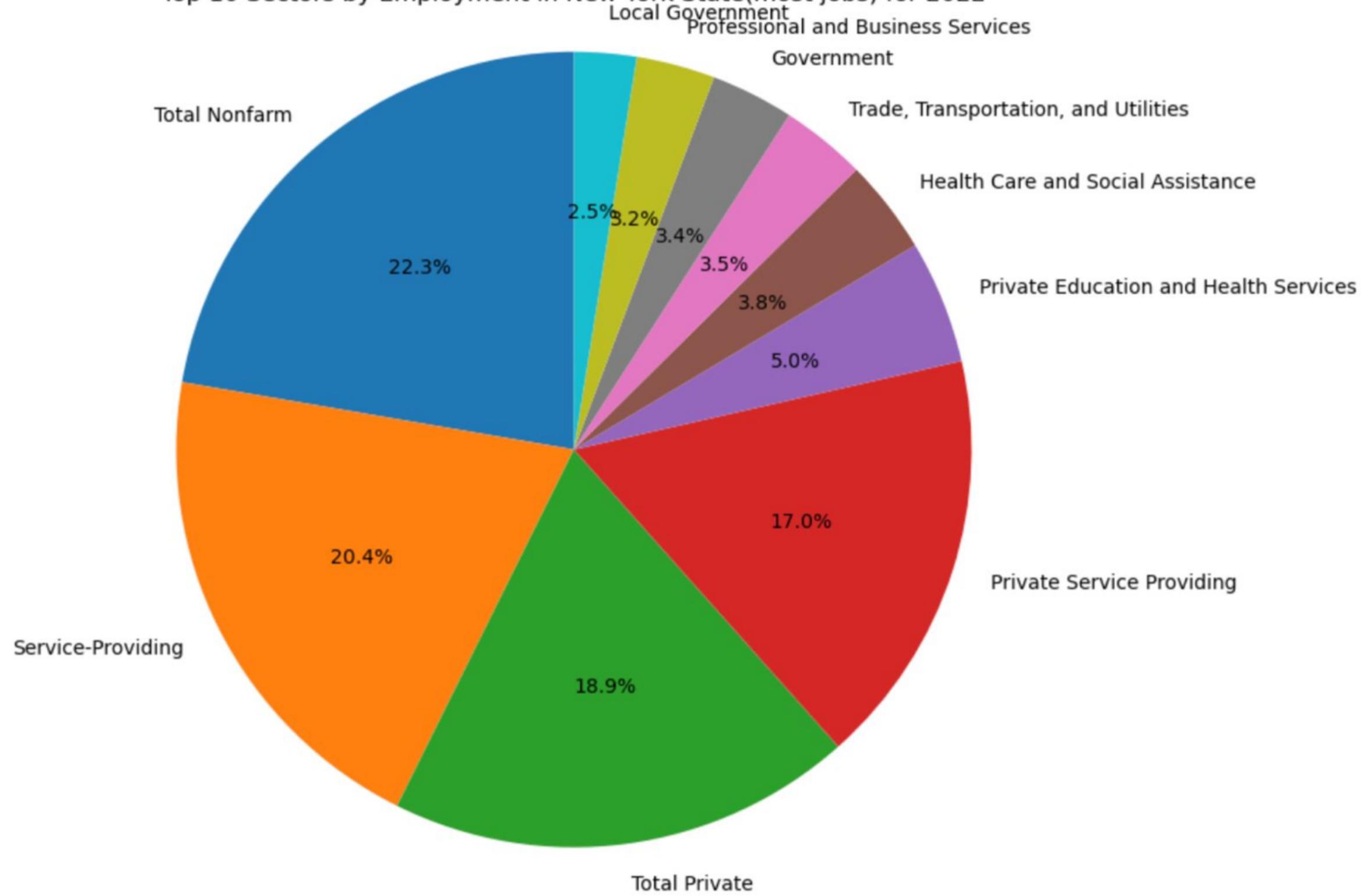
Region Employment trends for 2022



- No change in the top & bottom performing regions compared to the past 3 decades of data.
- New York City and Nassau-Suffolk Metro Division are still the major contributors followed by Orange-Rockland-Westchester Metro Area and Buffalo-Niagara Metro Area.
- Bottom five areas highlighting the economic disparities within the state.
- These disparities underline the potential need for targeted economic development and job creation strategies in less populated or rural counties.

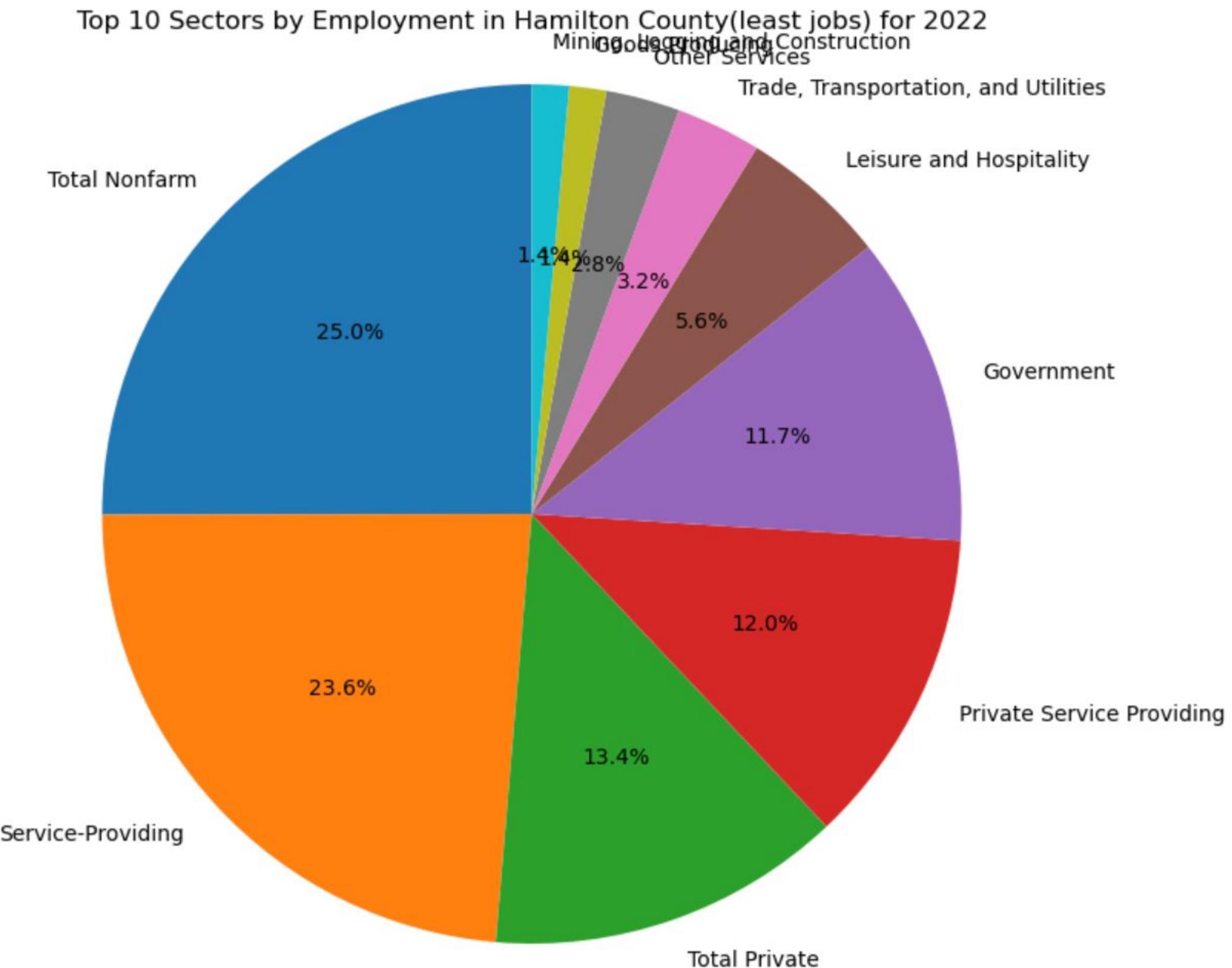
New York State Employment Distribution

Top 10 Sectors by Employment in New York State(most jobs) for 2022



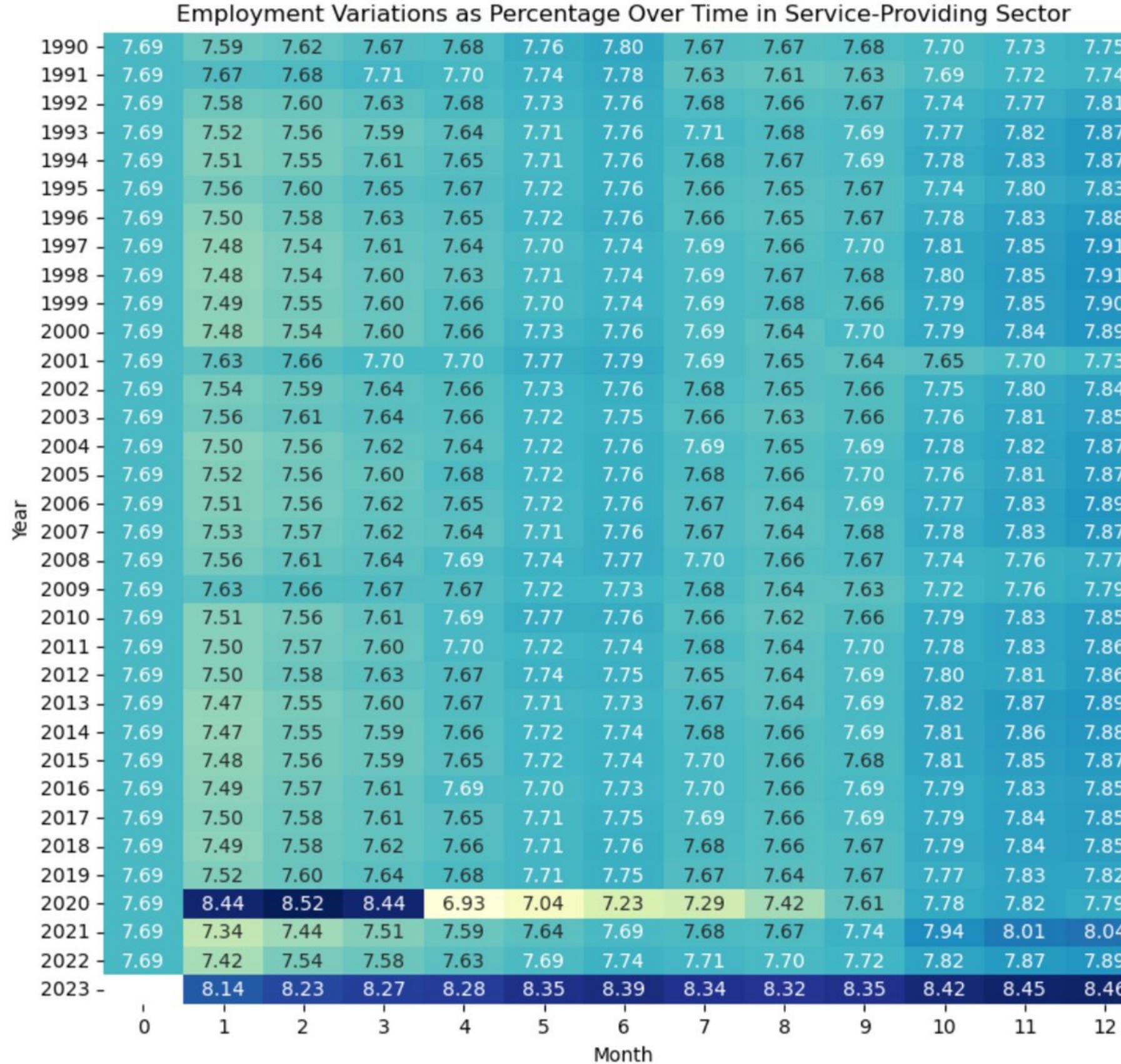
- Service Industry Powerhouse
- Healthcare Focus
- Public Sector Presence
- Economic Diversification

Hamilton County Job Market



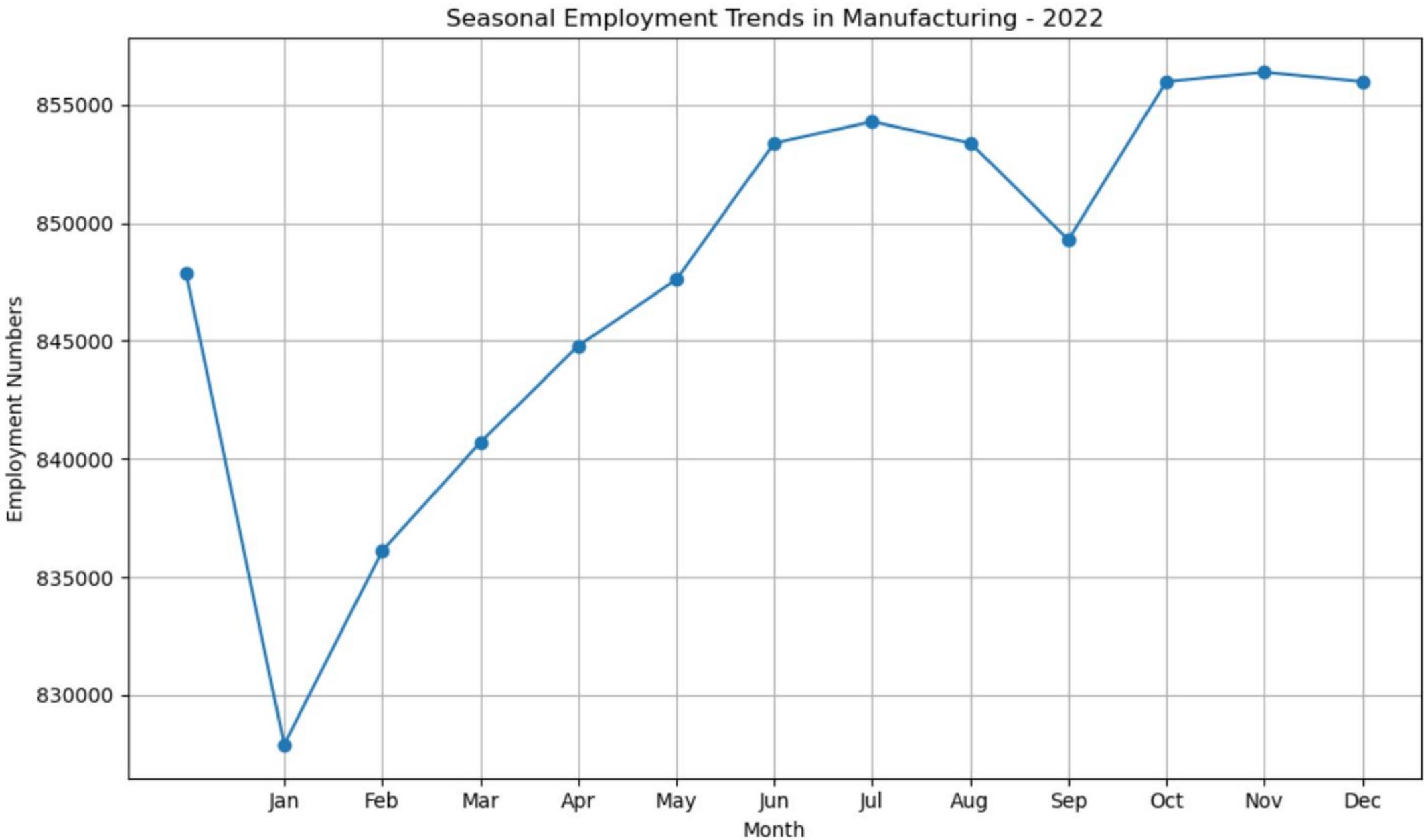
- Service Focus
- Public Service Backbone
- Tourism Powerhouse
- Niche & Diverse.

Visualizing Employment Variations



- **Growth Spurts:** Heatmap reveals service sector booms, with overall employment rising year-on-year.
- **Seasonal Swings:** Summer tourism fuels hiring surges, while cooler months see dips.
- **COVID Curveball:** Pandemic disrupts trends, but potential recovery emerges.
- **Data Dive Deep:** Each shade tells a story - uncover hidden patterns for strategic decisions.

Monthly Manufacturing Employment in 2022



- Clear seasonal fluctuations visible
- Starting point in Jan, peak till July
- Steady ramp up from March to July
- Slight decrease after July, stabilizing till November
- December uptick but not to peak levels

Unique Finding: Sweetviz for EDA

- Open-source Python library for exploratory data analysis.
- Generates visual reports from just 2 lines of code.
- Compares datasets and data subsets.
- Analyzes distribution, missing values, variable associations.
- Great for initial visualization and insights into data.

```
import sweetviz as sv

# Analyze a single dataset
report = sv.analyze(df)
report.show_html() # Generates and opens a HTML report
```

Conclusion

- **Service sector dominance:** We observed a surge in service-oriented sectors like "Private Service Providing," shaping a service-driven economy.
- **Regional dynamics:** While New York City reigned supreme, hubs like Nassau-Suffolk and Buffalo-Niagara Falls showcased promising growth. Rural areas, however, faced limited opportunities.
- **Shifting trends:** We witnessed the decline of manufacturing sectors like "Engine Manufacturing," suggesting economic transitions. Similarly, resource extraction industries saw a gradual retreat.
- **Data-driven insights:** By visualizing these trends, we gained valuable insights that can inform decision-making for future growth and resilience.



Questions?

