

Dataset Overview

Dataset Information:

- Number of rows: 6599
- Number of columns: 12
- Columns: job_title, experience_level, employment_type, work_models, work_year, employee_residence, salary, salary_currency, salary_in_usd, company_location, company_size, job_title_grouped

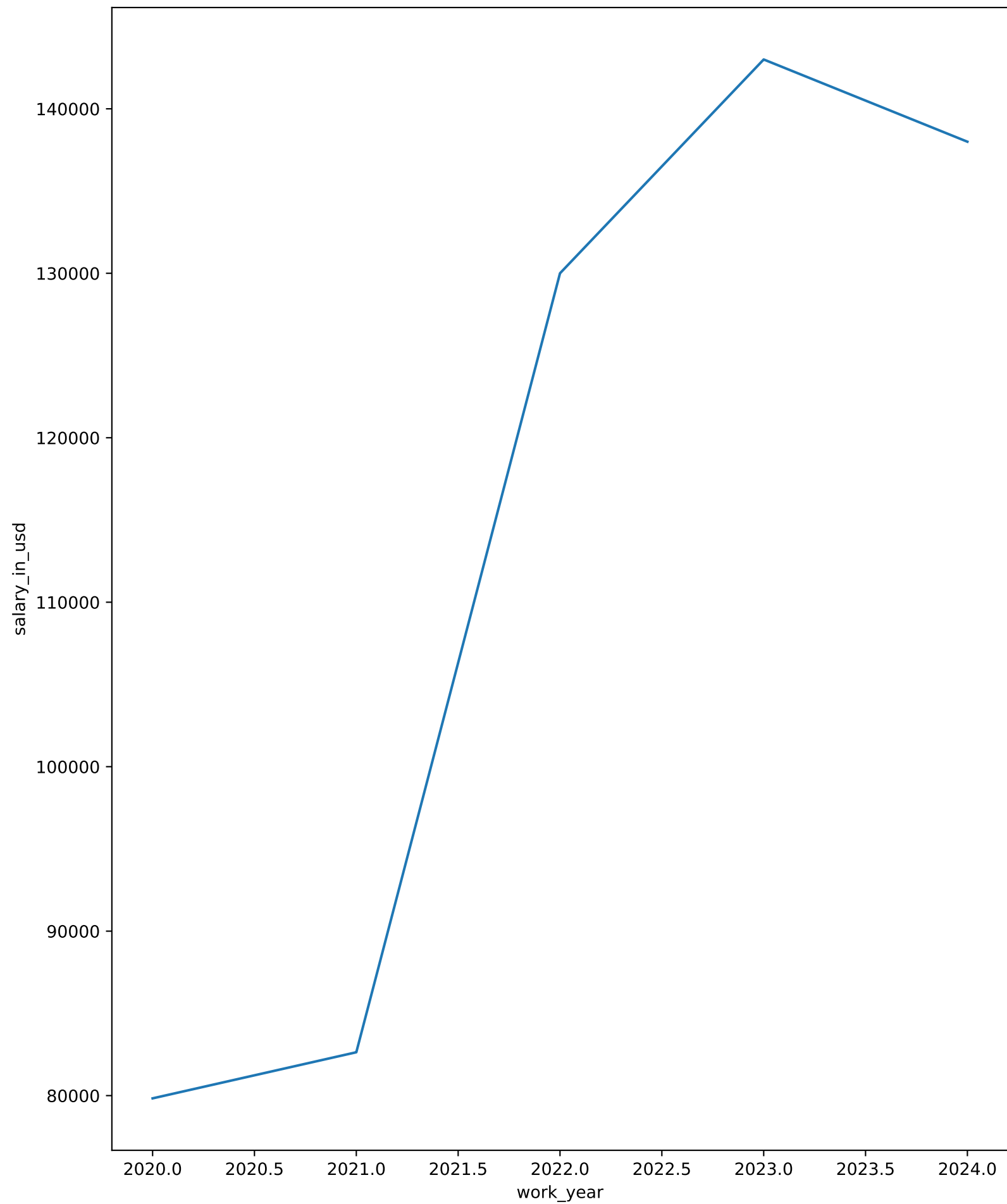
First 5 rows:

| | job_title | experience_level | employment_type | work_models | work_year | employee_residence | salary | salary_currency | salary_in_usd | company_location | company_size | job_title_grouped |
|---|----------------|------------------|-----------------|-------------|-----------|--------------------|--------|-----------------|---------------|------------------|--------------|-------------------|
| 0 | Data Engineer | Mid-level | Full-time | Remote | 2024 | United States | 148100 | USD | 148100 | United States | Medium | Data Engineer |
| 1 | Data Engineer | Mid-level | Full-time | Remote | 2024 | United States | 98700 | USD | 98700 | United States | Medium | Data Engineer |
| 2 | Data Scientist | Senior-level | Full-time | Remote | 2024 | United States | 140032 | USD | 140032 | United States | Medium | Data Scientist |
| 3 | Data Scientist | Senior-level | Full-time | Remote | 2024 | United States | 100022 | USD | 100022 | United States | Medium | Data Scientist |
| 4 | BI Developer | Mid-level | Full-time | On-site | 2024 | United States | 120000 | USD | 120000 | United States | Medium | BI Analyst |

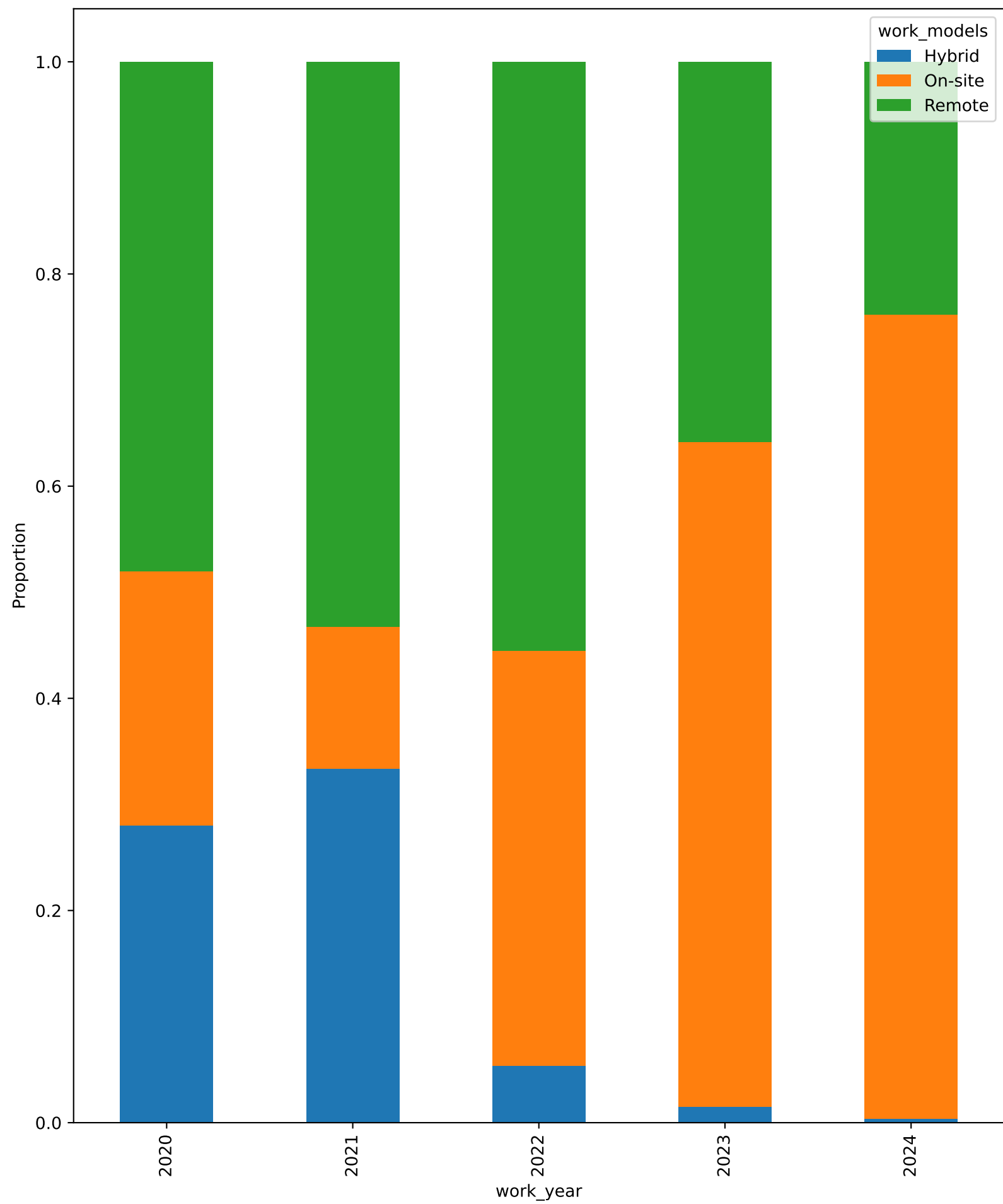
Data Types:

| | |
|--------------------|--------|
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| employment_type | object |
| work_models | object |
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| employee_residence | object |
| salary | int64 |
| salary_currency | object |
| salary_in_usd | int64 |
| company_location | object |
| company_size | object |
| job_title_grouped | object |

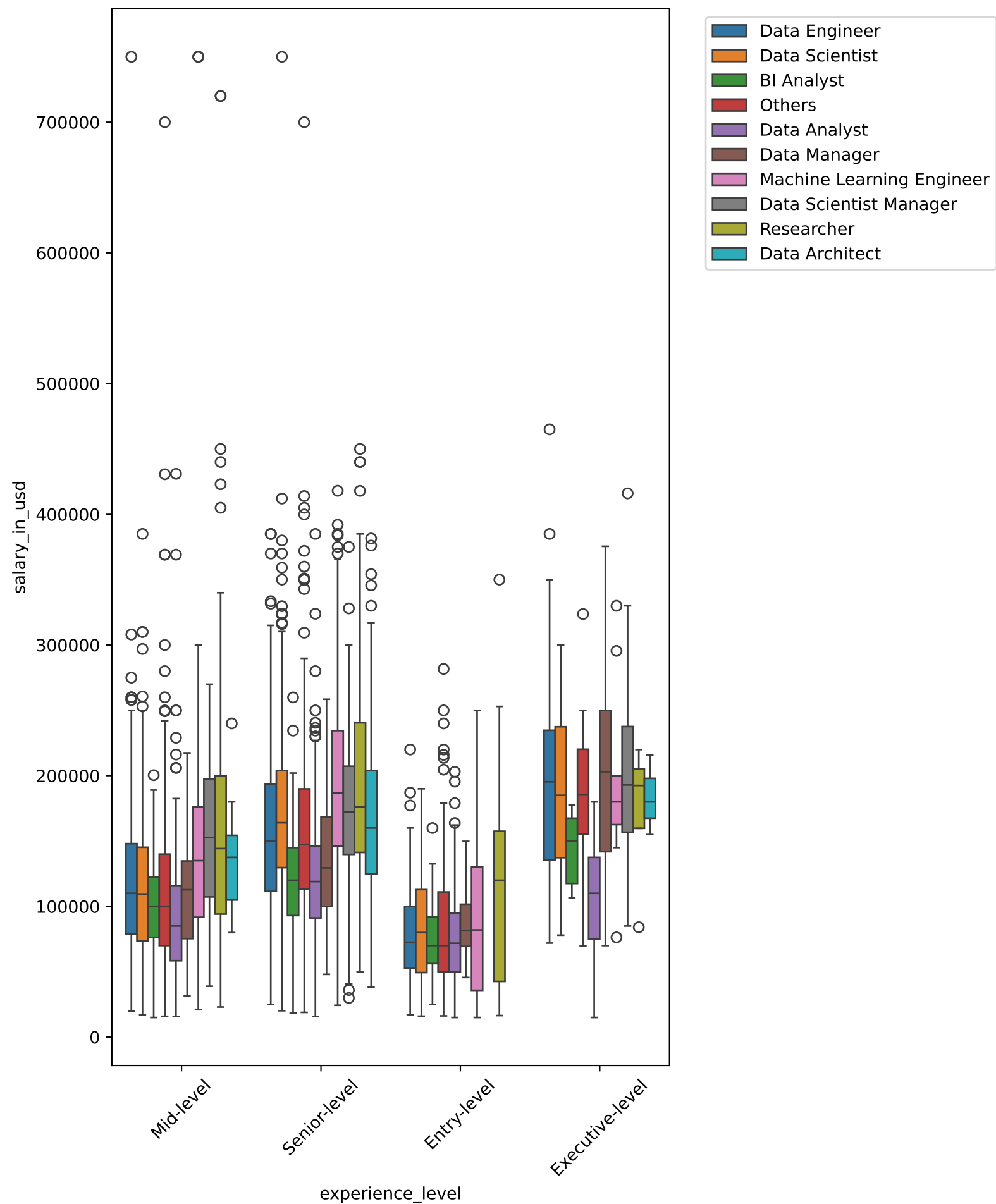
Median Salary Trend Over Years



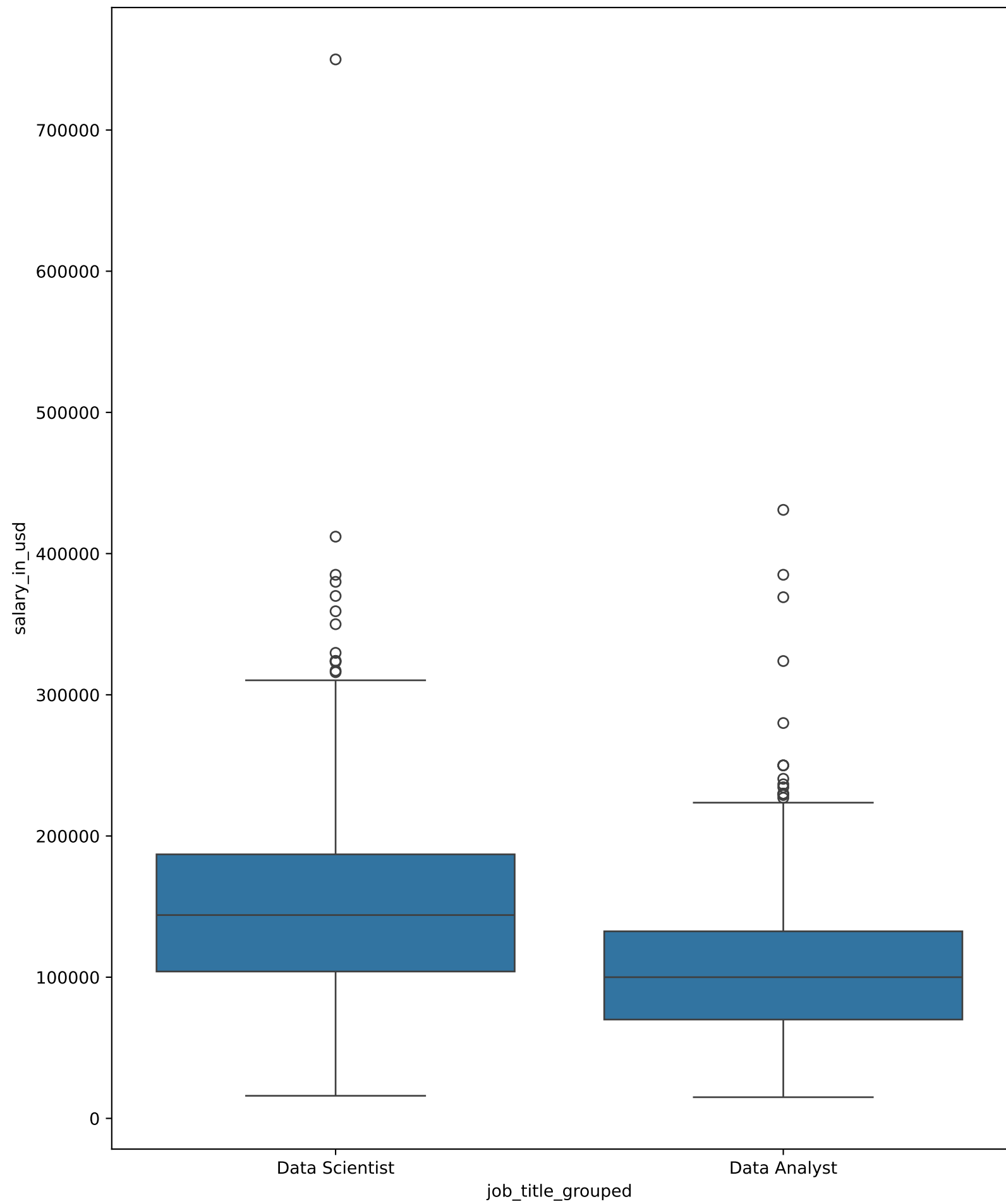
Remote Work Trend Over Years



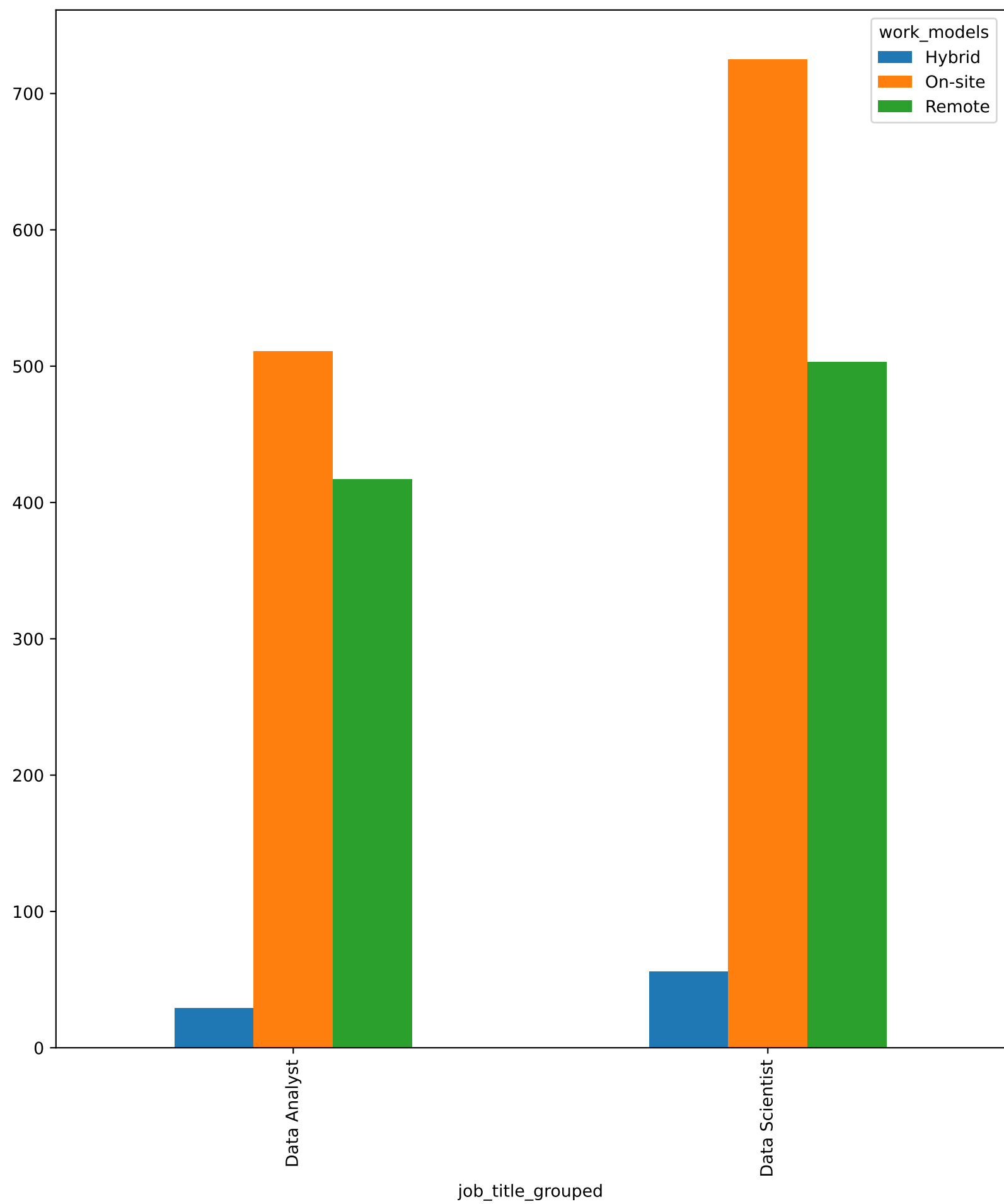
Salary Distribution by Experience Level and Job Role

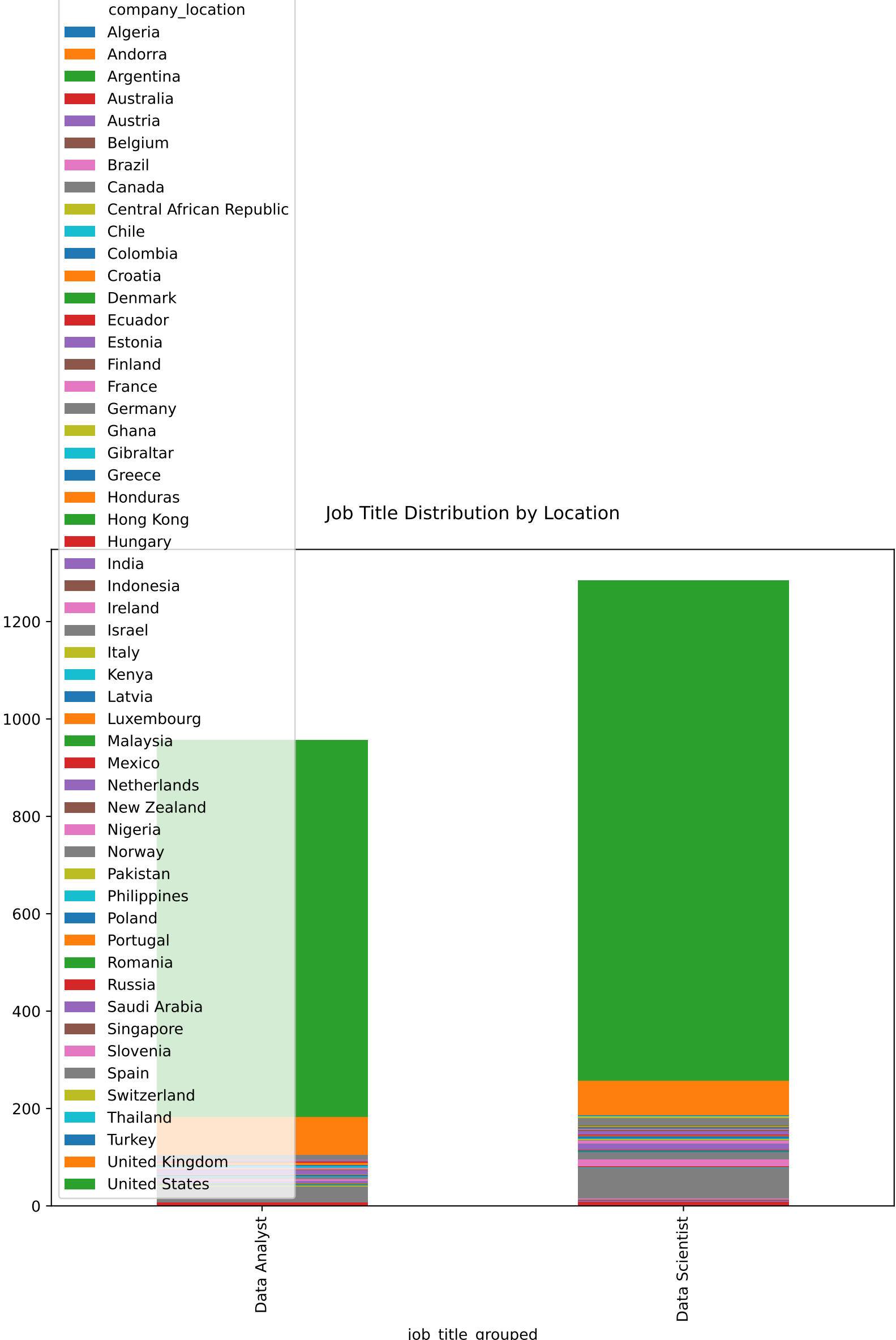


Salary Comparison: Data Analyst vs Data Scientist

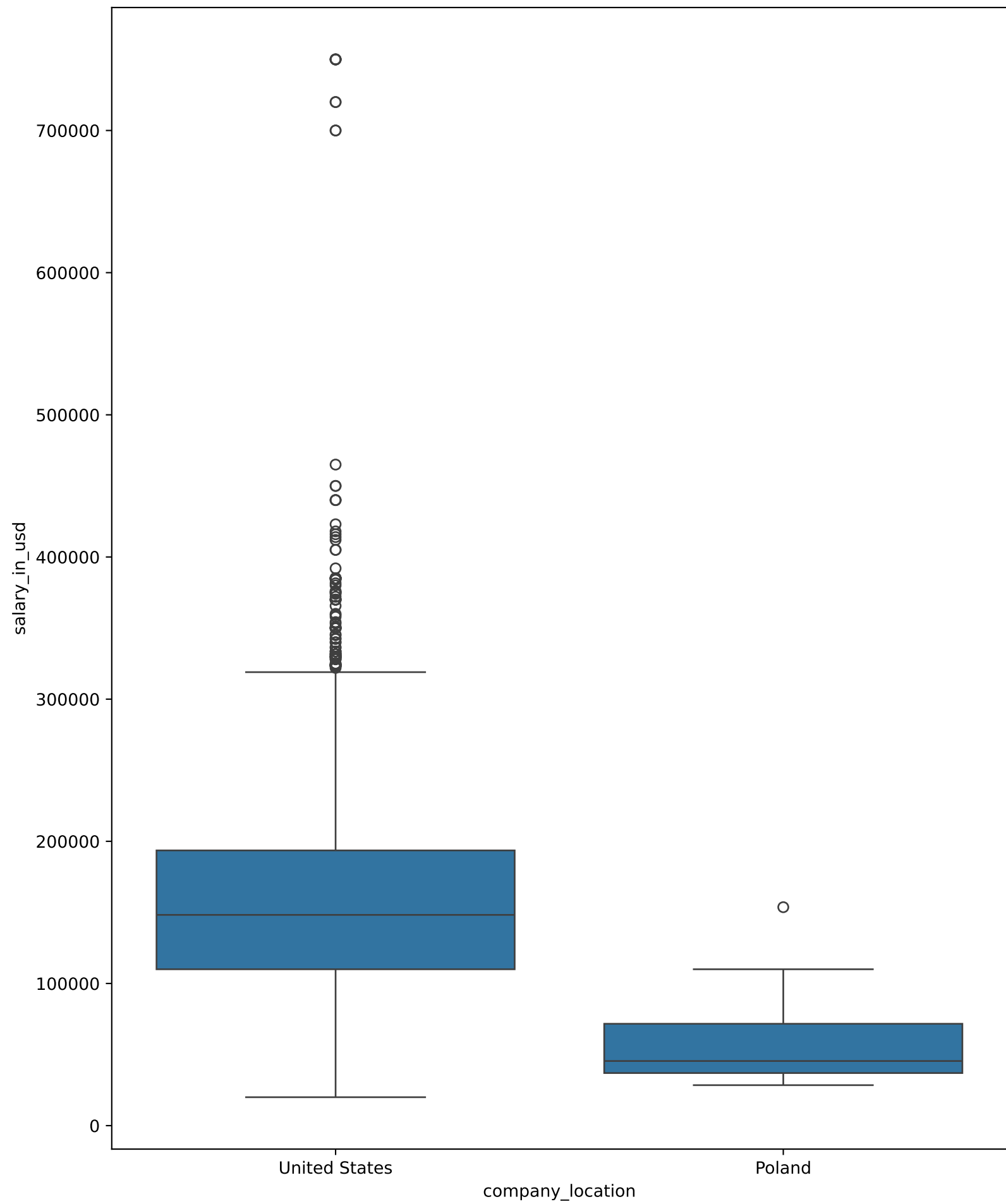


Work Model Preference: Data Analyst vs Data Scientist

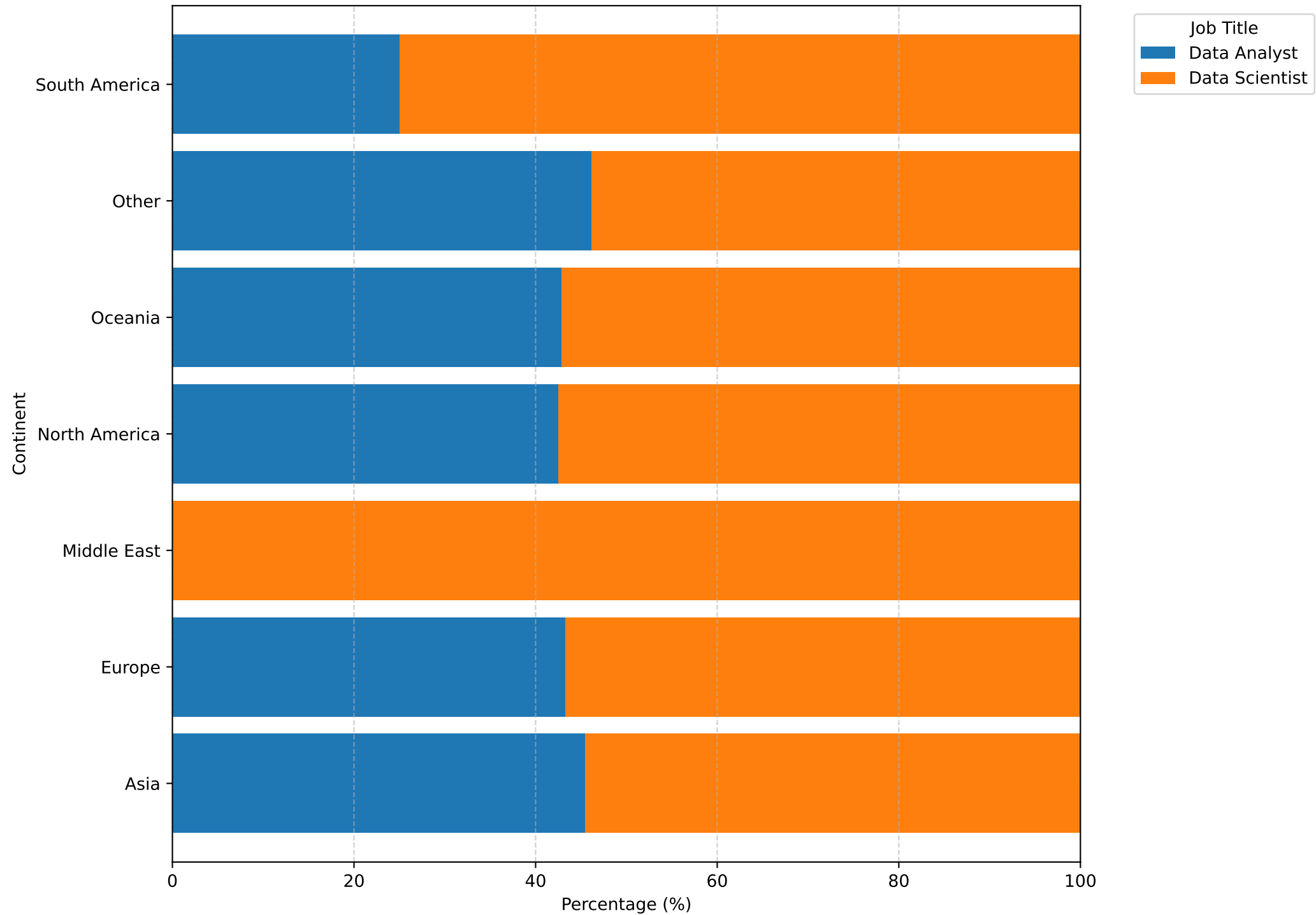




Salary Comparison: US vs Poland



Job Title Distribution by Continent (Percentage)



Outlier Detection

Outliers detected by Z-score method:

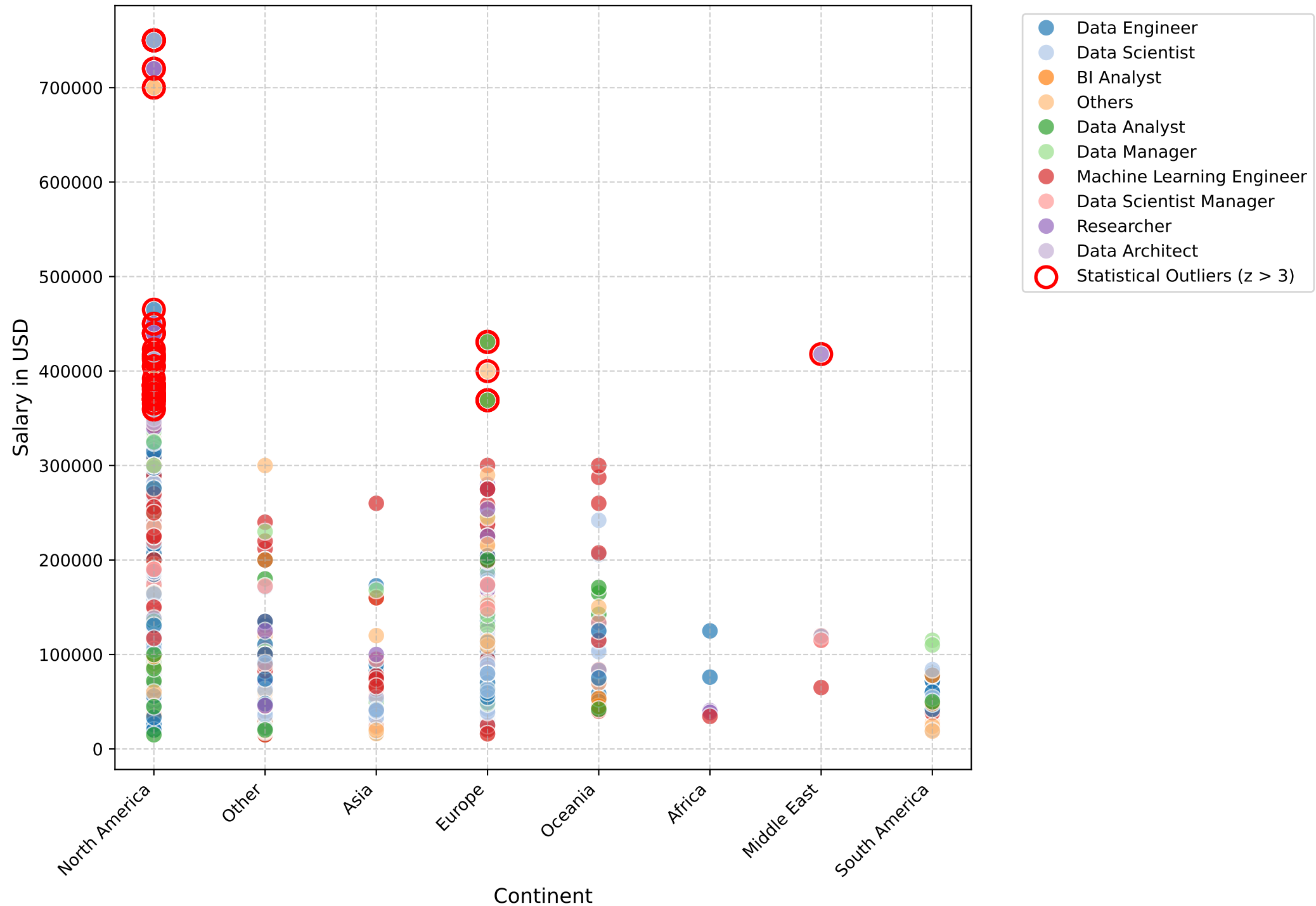
| | job_title_grouped | experience_level | continent | salary_in_usd |
|------|---------------------------|------------------|---------------|---------------|
| 82 | Machine Learning Engineer | Senior-level | North America | 418000 |
| 84 | Researcher | Senior-level | North America | 440000 |
| 111 | Data Engineer | Senior-level | North America | 385000 |
| 113 | Data Scientist | Mid-level | North America | 385000 |
| 129 | Researcher | Mid-level | North America | 440000 |
| 150 | Researcher | Senior-level | North America | 450000 |
| 170 | Researcher | Senior-level | North America | 440000 |
| 203 | Others | Senior-level | North America | 414000 |
| 213 | Data Architect | Senior-level | North America | 381500 |
| 296 | Machine Learning Engineer | Mid-level | North America | 750000 |
| 321 | Researcher | Mid-level | North America | 720000 |
| 329 | Researcher | Mid-level | North America | 720000 |
| 848 | Machine Learning Engineer | Mid-level | North America | 750000 |
| 852 | Machine Learning Engineer | Mid-level | North America | 750000 |
| 1041 | Data Scientist | Senior-level | North America | 359170 |
| 1095 | Others | Senior-level | North America | 700000 |
| 1278 | Machine Learning Engineer | Senior-level | North America | 370000 |
| 1354 | Data Engineer | Executive-level | North America | 465000 |
| 1355 | Data Engineer | Executive-level | North America | 385000 |
| 1509 | Others | Mid-level | North America | 700000 |
| 1540 | Data Engineer | Mid-level | North America | 750000 |
| 1611 | Data Scientist | Senior-level | North America | 750000 |
| 1858 | Researcher | Senior-level | North America | 370000 |
| 1992 | Others | Senior-level | North America | 372000 |
| 2094 | Researcher | Senior-level | North America | 370000 |
| 2337 | Researcher | Mid-level | North America | 405000 |
| 2433 | Data Engineer | Senior-level | North America | 385000 |
| 2453 | Researcher | Senior-level | North America | 385000 |
| 2465 | Others | Senior-level | North America | 360000 |
| 2697 | Data Engineer | Senior-level | North America | 385000 |
| 2768 | Data Manager | Executive-level | North America | 375500 |
| 2811 | Machine Learning Engineer | Senior-level | North America | 385000 |
| 2918 | Data Engineer | Senior-level | North America | 370000 |
| 2969 | Data Scientist | Senior-level | North America | 370000 |
| 3344 | Machine Learning Engineer | Senior-level | North America | 383910 |
| 3414 | Machine Learning Engineer | Senior-level | North America | 392000 |
| 3457 | Machine Learning Engineer | Senior-level | North America | 365630 |
| 3581 | Researcher | Senior-level | North America | 374000 |
| 4126 | Data Architect | Senior-level | North America | 376080 |
| 4306 | Data Analyst | Senior-level | North America | 385000 |
| 4571 | Researcher | Senior-level | Middle East | 417937 |
| 4666 | Others | Mid-level | Europe | 369120 |
| 4674 | Others | Mid-level | Europe | 369120 |
| 4676 | Data Analyst | Mid-level | Europe | 369120 |
| 4789 | Others | Senior-level | Europe | 399880 |
| 4830 | Others | Mid-level | Europe | 430640 |
| 5203 | Machine Learning Engineer | Senior-level | North America | 375000 |
| 5509 | Data Scientist Manager | Senior-level | North America | 375000 |
| 6031 | Others | Senior-level | North America | 405000 |
| 6032 | Data Scientist | Senior-level | North America | 380000 |
| 6120 | Data Analyst | Mid-level | Europe | 430967 |
| 6388 | Data Scientist Manager | Executive-level | North America | 416000 |
| 6403 | Researcher | Mid-level | North America | 423000 |
| 6529 | Researcher | Mid-level | North America | 450000 |
| 6554 | Data Scientist | Senior-level | North America | 412000 |

Outlier Detection

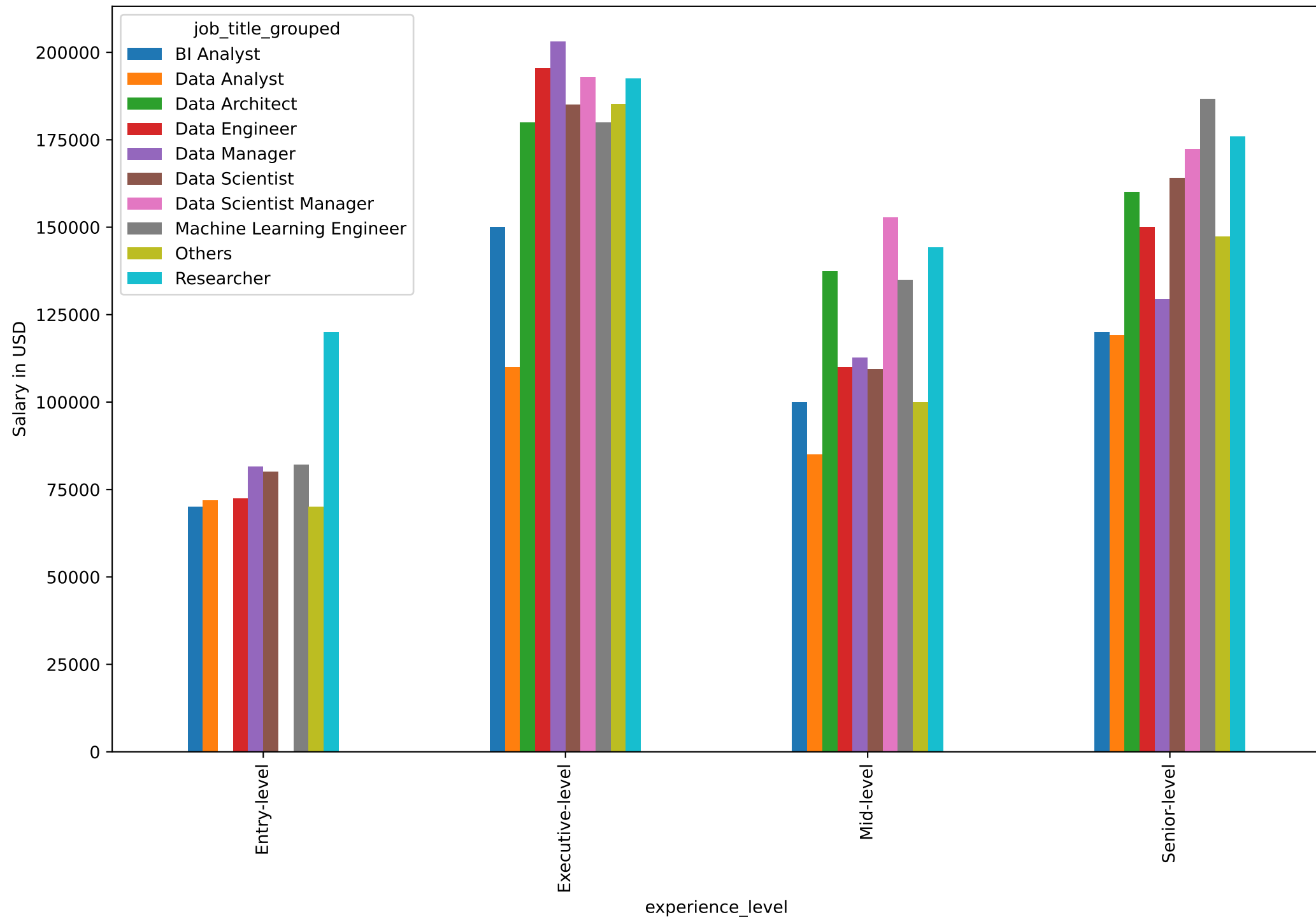
Outliers detected by IQR method:

| | job_title_grouped | experience_level | continent | salary_in_usd |
|------|---------------------------|------------------|---------------|---------------|
| 50 | Machine Learning Engineer | Senior-level | North America | 322000 |
| 68 | Others | Executive-level | North America | 323700 |
| 82 | Machine Learning Engineer | Senior-level | North America | 418000 |
| 84 | Researcher | Senior-level | North America | 440000 |
| 109 | Machine Learning Engineer | Senior-level | North America | 324000 |
| 111 | Data Engineer | Senior-level | North America | 385000 |
| 113 | Data Scientist | Mid-level | North America | 385000 |
| 129 | Researcher | Mid-level | North America | 440000 |
| 150 | Researcher | Senior-level | North America | 450000 |
| 162 | Machine Learning Engineer | Senior-level | North America | 331640 |
| 170 | Researcher | Senior-level | North America | 440000 |
| 195 | Machine Learning Engineer | Senior-level | North America | 357900 |
| 203 | Others | Senior-level | North America | 414000 |
| 213 | Data Architect | Senior-level | North America | 381500 |
| 241 | Machine Learning Engineer | Senior-level | North America | 324000 |
| 296 | Machine Learning Engineer | Mid-level | North America | 750000 |
| 321 | Researcher | Mid-level | North America | 720000 |
| 329 | Researcher | Mid-level | North America | 720000 |
| 400 | Data Scientist | Senior-level | North America | 324000 |
| 796 | Data Engineer | Senior-level | North America | 333500 |
| 848 | Machine Learning Engineer | Mid-level | North America | 750000 |
| 852 | Machine Learning Engineer | Mid-level | North America | 750000 |
| 854 | Others | Senior-level | North America | 351000 |
| 1041 | Data Scientist | Senior-level | North America | 359170 |
| 1054 | Machine Learning Engineer | Senior-level | North America | 331640 |
| 1058 | Researcher | Entry-level | North America | 350000 |
| 1095 | Others | Senior-level | North America | 700000 |
| 1278 | Machine Learning Engineer | Senior-level | North America | 370000 |
| 1287 | Data Engineer | Executive-level | North America | 350000 |
| 1354 | Data Engineer | Executive-level | North America | 465000 |
| 1355 | Data Engineer | Executive-level | North America | 385000 |
| 1509 | Others | Mid-level | North America | 700000 |
| 1540 | Data Engineer | Mid-level | North America | 750000 |
| 1611 | Data Scientist | Senior-level | North America | 750000 |
| 1625 | Machine Learning Engineer | Senior-level | North America | 331640 |
| 1689 | Machine Learning Engineer | Senior-level | North America | 336300 |
| 1704 | Researcher | Senior-level | North America | 323300 |
| 1737 | Machine Learning Engineer | Senior-level | North America | 324000 |
| 1858 | Researcher | Senior-level | North America | 370000 |
| 1900 | Machine Learning Engineer | Senior-level | North America | 333500 |
| 1904 | Data Architect | Senior-level | North America | 354200 |
| 1952 | Machine Learning Engineer | Senior-level | North America | 328400 |
| 1971 | Data Scientist | Senior-level | North America | 329700 |
| 1992 | Others | Senior-level | North America | 372000 |
| 2094 | Researcher | Senior-level | North America | 370000 |
| 2145 | Machine Learning Engineer | Senior-level | North America | 324000 |
| 2337 | Researcher | Mid-level | North America | 405000 |
| 2353 | Data Manager | Executive-level | North America | 353200 |
| 2429 | Others | Senior-level | North America | 350000 |
| 2433 | Data Engineer | Senior-level | North America | 385000 |
| 2453 | Researcher | Senior-level | North America | 385000 |
| 2465 | Others | Senior-level | North America | 360000 |
| 2526 | Machine Learning Engineer | Senior-level | North America | 330000 |
| 2572 | Data Scientist | Senior-level | North America | 324000 |
| 2664 | Machine Learning Engineer | Executive-level | North America | 330000 |
| 2676 | Data Manager | Executive-level | North America | 329500 |
| 2690 | Machine Learning Engineer | Senior-level | North America | 340000 |
| 2697 | Data Engineer | Senior-level | North America | 385000 |
| 2708 | Machine Learning Engineer | Senior-level | North America | 330000 |
| 2716 | Machine Learning Engineer | Senior-level | North America | 328133 |
| 2768 | Data Manager | Executive-level | North America | 375500 |
| 2811 | Machine Learning Engineer | Senior-level | North America | 385000 |
| 2844 | Machine Learning Engineer | Senior-level | North America | 323300 |
| 2918 | Data Engineer | Senior-level | North America | 370000 |
| 2969 | Data Scientist | Senior-level | North America | 370000 |
| 3001 | Data Architect | Senior-level | North America | 330000 |
| 3007 | Machine Learning Engineer | Senior-level | North America | 325000 |
| 3065 | Data Scientist | Senior-level | North America | 323300 |
| 3094 | Others | Senior-level | North America | 350000 |
| 3344 | Machine Learning Engineer | Senior-level | North America | 383910 |
| 3414 | Machine Learning Engineer | Senior-level | North America | 392000 |
| 3434 | Researcher | Senior-level | North America | 331640 |
| 3441 | Data Engineer | Senior-level | North America | 331640 |
| 3457 | Machine Learning Engineer | Senior-level | North America | 365630 |
| 3526 | Data Scientist Manager | Executive-level | North America | 330000 |
| 3547 | Researcher | Senior-level | North America | 345000 |
| 3581 | Researcher | Senior-level | North America | 374000 |
| 3702 | Data Engineer | Executive-level | North America | 333500 |
| 3765 | Data Manager | Executive-level | North America | 329500 |
| 3783 | Data Scientist Manager | Senior-level | North America | 328000 |
| 3835 | Data Analyst | Senior-level | North America | 323905 |
| 3849 | Data Manager | Executive-level | North America | 336400 |
| 3915 | Others | Senior-level | North America | 342810 |
| 3955 | Machine Learning Engineer | Senior-level | North America | 342300 |
| 4126 | Data Architect | Senior-level | North America | 376080 |
| 4185 | Researcher | Mid-level | North America | 340000 |
| 4306 | Data Analyst | Senior-level | North America | 385000 |
| 4342 | Others | Senior-level | North America | 350000 |
| 4571 | Researcher | Senior-level | Middle East | 417937 |
| 4666 | Others | Mid-level | Europe | 369120 |
| 4674 | Others | Mid-level | Europe | 369120 |
| 4676 | Data Analyst | Mid-level | Europe | 369120 |
| 4789 | Others | Senior-level | Europe | 399880 |
| 4830 | Others | Mid-level | Europe | 430640 |
| 5203 | Machine Learning Engineer | Senior-level | North America | 375000 |
| 5509 | Data Scientist Manager | Senior-level | North America | 375000 |
| 5514 | Data Scientist | Senior-level | North America | 350000 |
| 5607 | Data Architect | Senior-level | North America | 345600 |
| 6016 | Data Engineer | Executive-level | North America | 324000 |
| 6031 | Others | Senior-level | North America | 405000 |
| 6032 | Data Scientist | Senior-level | North America | 380000 |
| 6120 | Data Analyst | Mid-level | Europe | 430967 |
| 6388 | Data Scientist Manager | Executive-level | North America | 416000 |
| 6403 | Researcher | Mid-level | North America | 423000 |
| 6529 | Researcher | Mid-level | North America | 450000 |
| 6546 | Data Manager | Executive-level | North America | 325000 |
| 6554 | Data Scientist | Senior-level | North America | 412000 |

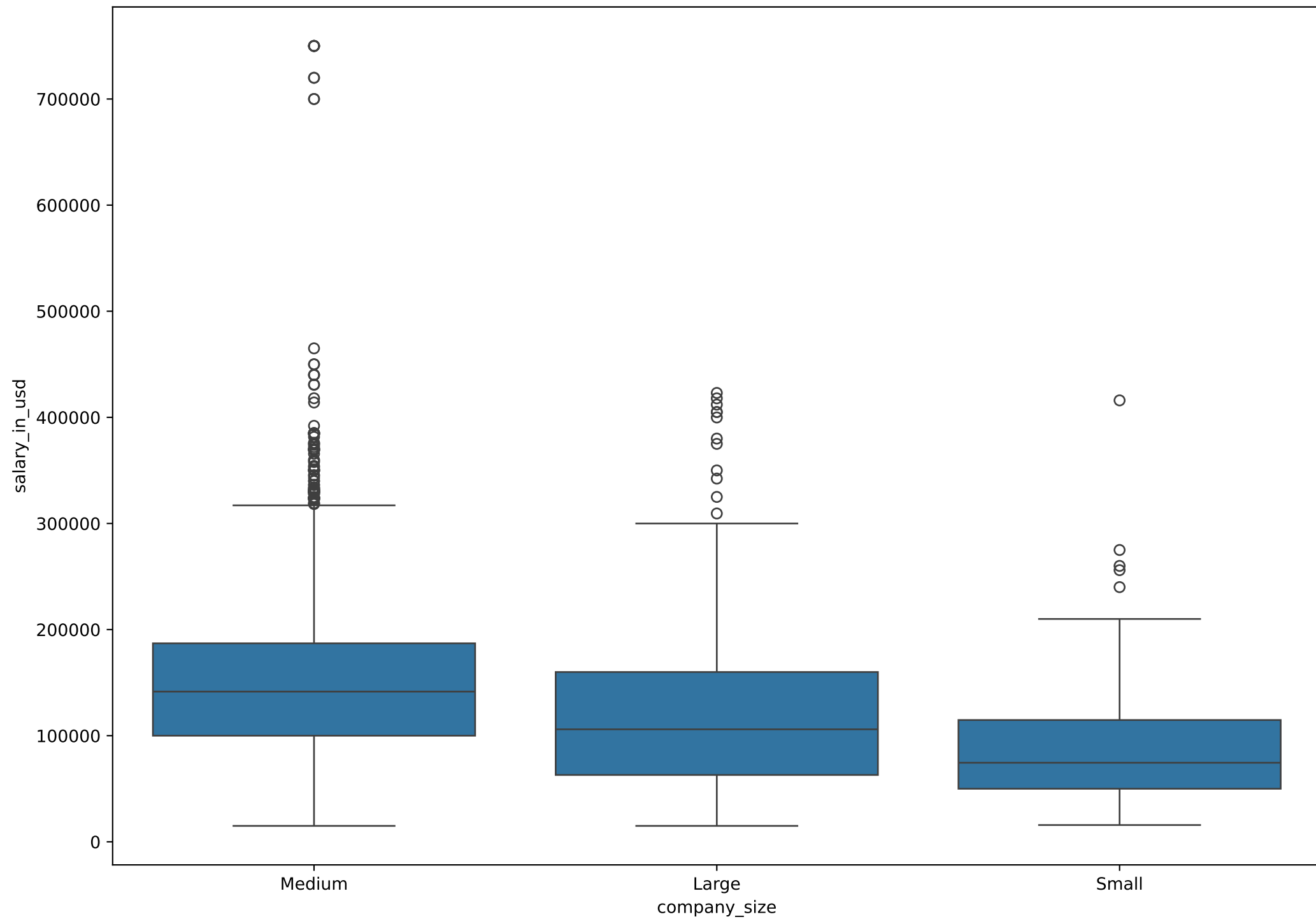
Salary Outliers by Continent and Job Title



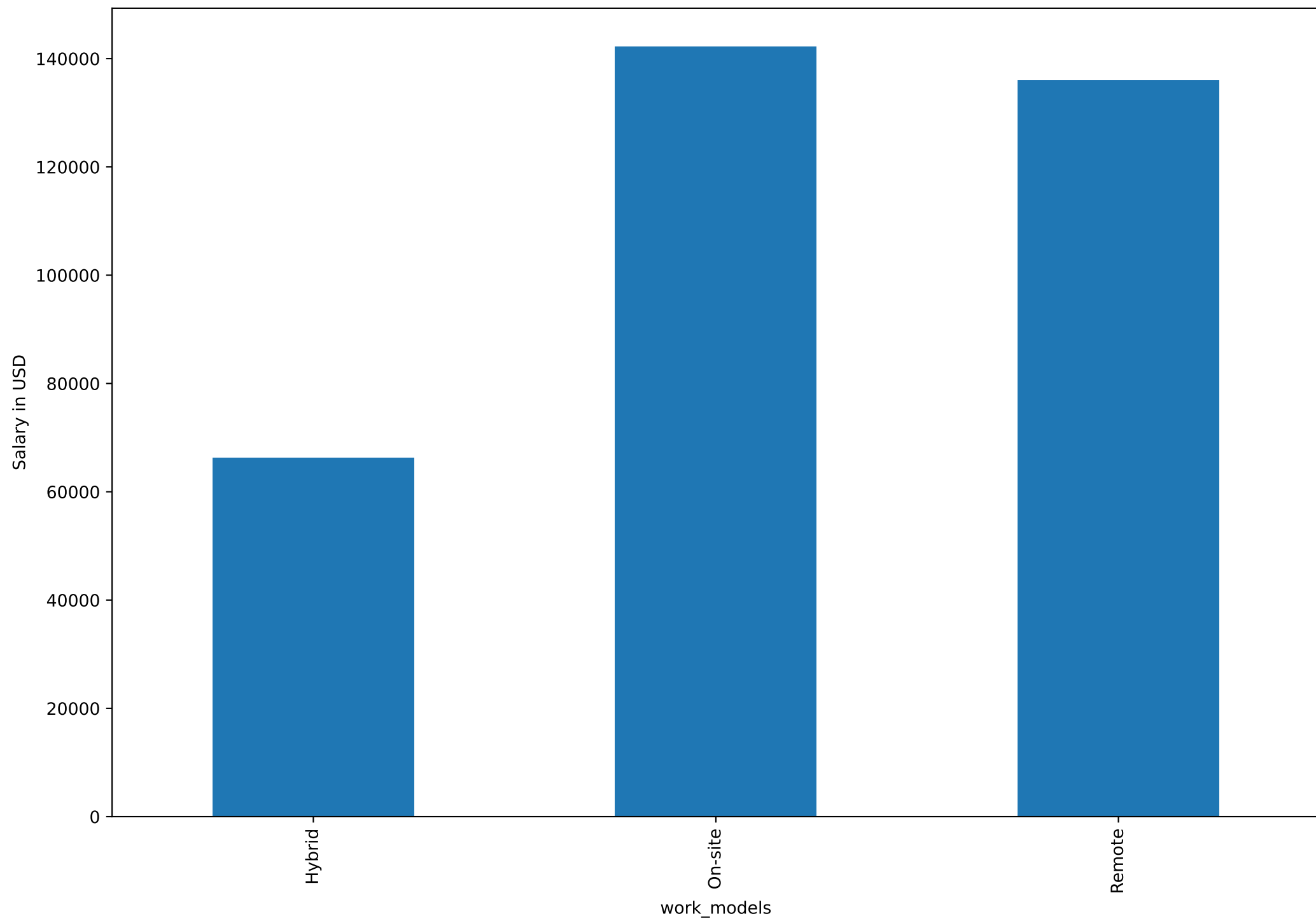
Median Salary by Experience Level and Job Title



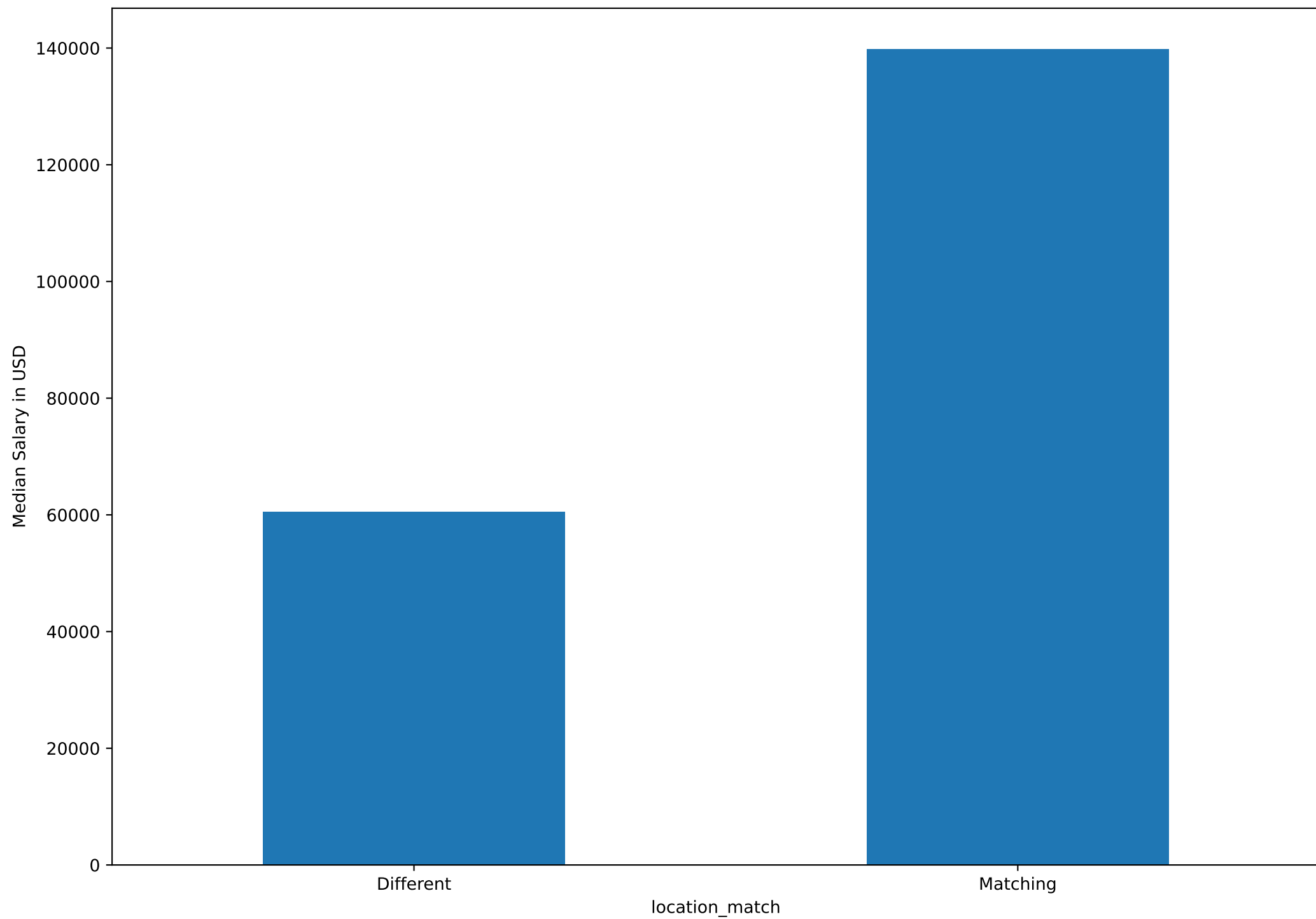
Salary Distribution by Company Size



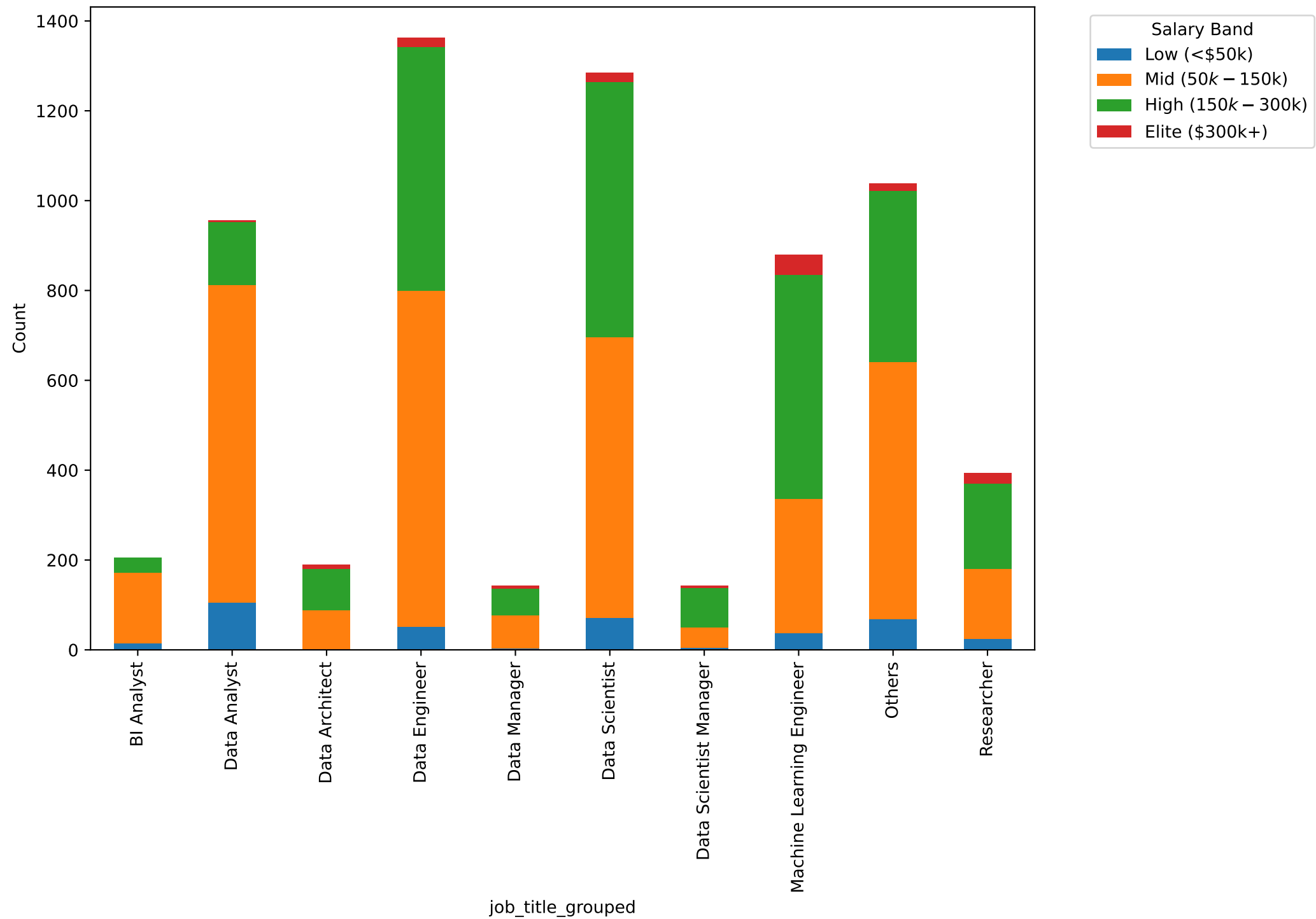
Median Salary by Work Model



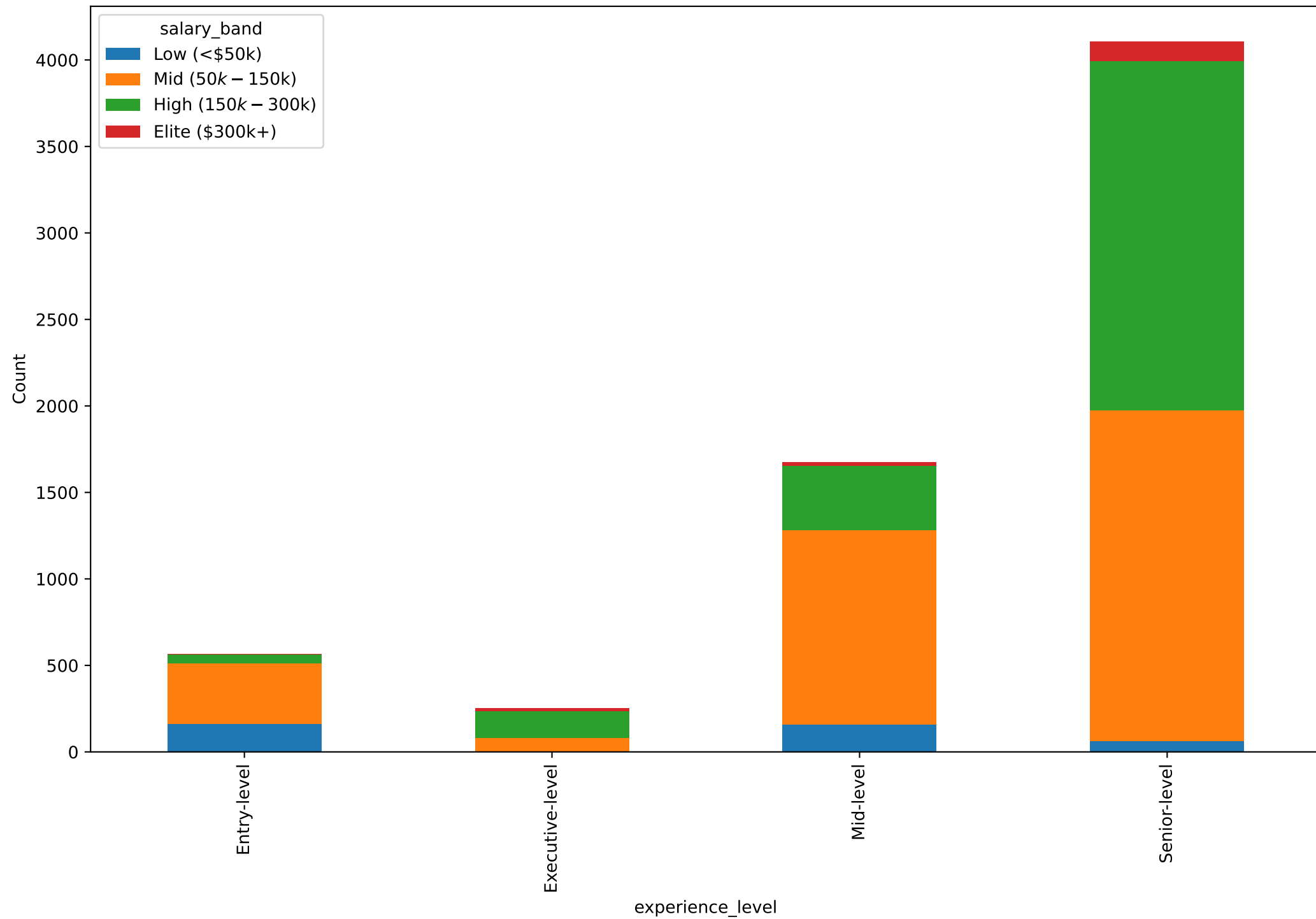
Salary Comparison: Matching vs Different Locations



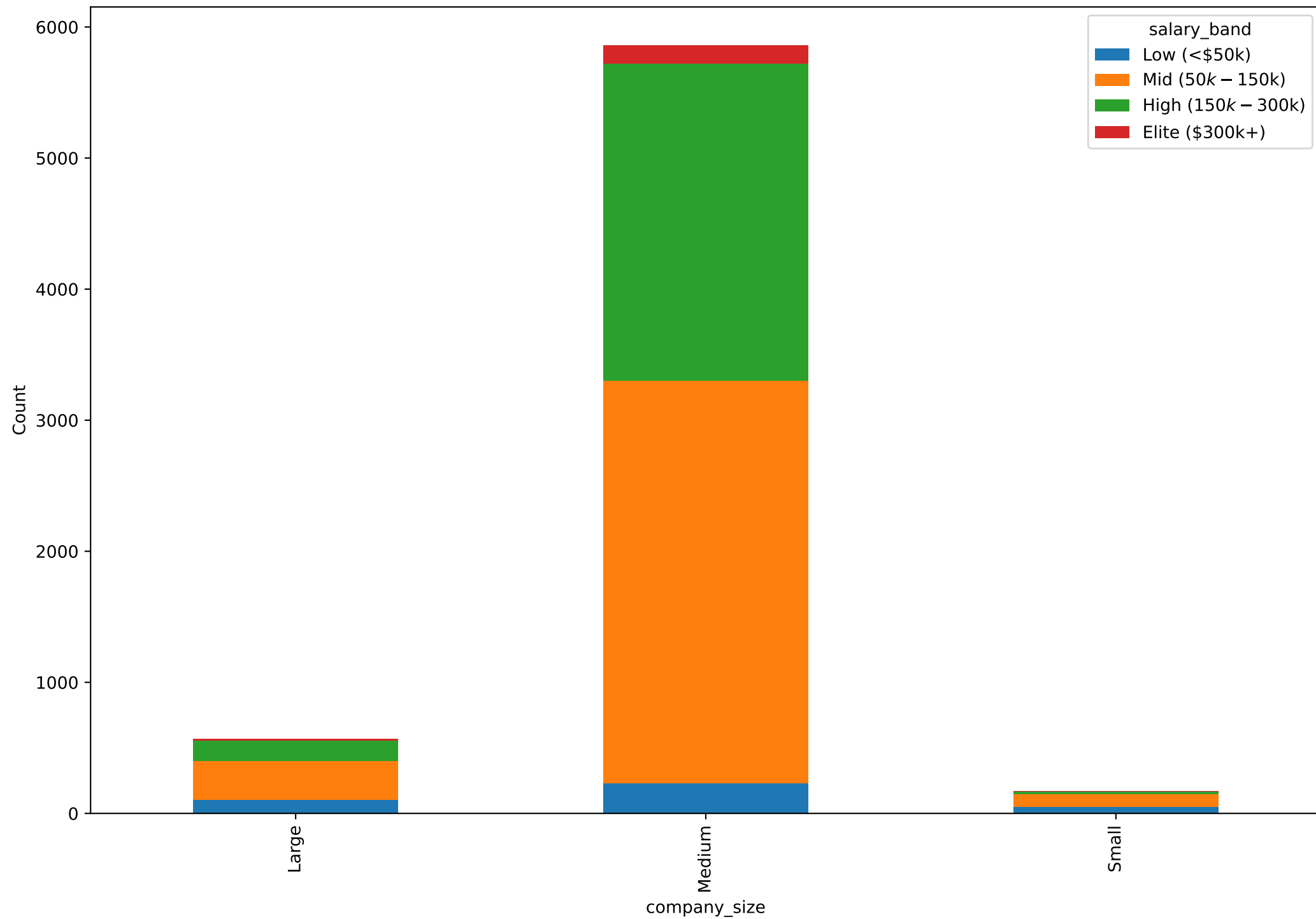
Job Title Distribution Across Salary Bands



Experience Level Distribution Across Salary Bands



Company Size Distribution Across Salary Bands



Key Metrics and Top Lists

Remote work premium (average difference): \$-12,049.96

Top 5 Overpaid Roles vs Market Average:

| job_title_grouped | |
|---------------------------|--------------|
| Machine Learning Engineer | 32713.598249 |
| Data Scientist Manager | 28439.714158 |
| Researcher | 27545.855136 |
| Data Architect | 21080.736167 |
| Data Manager | 12650.714158 |

Top 5 Underpaid Roles vs Market Average:

| job_title_grouped | |
|-------------------|---------------|
| Data Analyst | -40071.402875 |
| BI Analyst | -36560.558569 |
| Others | -5734.706789 |
| Data Engineer | -1004.383955 |
| Data Scientist | 2869.812147 |

Top 5 Countries with Highest Remote Work Adoption:

| company_location | |
|------------------|-----|
| Argentina | 1.0 |
| Ecuador | 1.0 |
| Saudi Arabia | 1.0 |
| Qatar | 1.0 |
| Puerto Rico | 1.0 |

Top 5 Job Titles with Highest Experience Diversity:

| job_title_grouped | |
|-------------------|---|
| BI Analyst | 4 |
| Data Analyst | 4 |
| Data Engineer | 4 |
| Data Manager | 4 |
| Data Scientist | 4 |

Final Insights and Recommendations

Global Tech Job Market Insights:

- Average salary across all roles: \$145,560.56
- Most common job title: Data Engineer
- Remote work percentage: 38.8%

Highest Paid Individual:

- Role: Machine Learning Engineer
- Experience: Mid-level
- Location: United States
- Salary: \$750,000.00

Job Seeker Recommendations:

- Consider remote roles for potential salary premiums
- Target senior-level positions in high-paying countries
- Research company size as it affects compensation
- Some roles have wider salary bands than others

Analysis Questions Covered & Key Takeaways

Questions Explored in This Analysis:

1. Pattern Discovery:

- How have salaries trended over recent years?
- How has remote work adoption changed over time?
- How does salary growth vary by experience level across different roles?

2. Storytelling with Contrasts:

- How do salaries compare between Data Analysts and Data Scientists?
- What are the work model preferences for different roles?
- How does job title distribution vary by continent?
- How do salaries compare between different regions (e.g., US vs Poland)?

3. Anomaly & Outlier Investigation:

- Which salary values are statistical outliers?
- Where are these outliers concentrated by location and job title?

4. Insight-Driven Questions:

- Which roles offer the highest salaries per experience level?
- How does company size affect salaries?
- Is there a pay premium for remote work?
- Does location matching (company vs employee) affect salaries?

5. Salary Bands Analysis:

- How are different job titles distributed across salary bands?
- How does experience level distribute across salary bands?
- How does company size distribute across salary bands?

6. Derived Metrics:

- What is the salary per year of experience?
- What is the remote work salary premium?

7. Top N Lists:

- Which roles are most overpaid/underpaid vs market average?
- Which countries have highest remote work adoption?
- Which roles have most experience diversity?

Key Recommendations:

1. Consider continental salary differences when job hunting
2. Target roles with highest salary growth potential
3. Remote work offers both flexibility and potential pay premiums
4. Larger companies tend to offer higher salaries for senior roles
5. Some roles have wider salary bands than others - negotiate carefully