

2025 Software Industry Salary Analysis Report

*Which Technologies Pay More? How Do Career Levels and
Roles Affect Salaries?*

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Key Findings: Remote workers earn 22.6 thousand TL more than office workers. European companies offer 70.0 thousand TL higher salaries than Turkish companies. Rust provides the highest salary ROI at 69.4 thousand TL.

Based on data from 2,969 software professionals collected August 20-21, 2025

August 28, 2025

Abstract

This comprehensive analysis examines salary data from 2,969 software professionals in Turkey, collected between August 20-21, 2025. The study reveals critical insights into salary dynamics across career levels, technologies, work models, and geographical locations. Key findings include significant salary premiums for remote work (22.6 thousand TL), substantial geographical disparities (70.0 thousand TL difference between Europe and Turkey), and persistent gender pay gaps (13.3 thousand TL). Technology stack analysis shows specific programming languages and tools that provide measurable salary advantages, with some combinations offering up to 15-20% salary premiums. The report provides actionable insights for both individual career planning and organizational compensation strategies.

1 Executive Summary

The 2025 Software Industry Salary Survey represents one of the most comprehensive analyses of compensation trends in Turkey's technology sector. With 2,969 participants across diverse roles and experience levels, this study provides unprecedented insights into salary determinants and career progression patterns.

Key Findings:

- **Remote Work Premium:** Remote workers earn 22.6 thousand TL more than office workers ($p < 0.001$, Cohen's $d = 0.42$)
- **Geographical Disparity:** European companies offer 70.0 thousand TL higher salaries than Turkish companies ($p < 0.001$, Cohen's $d = 1.35$)
- **Gender Gap:** Male professionals earn 13.3 thousand TL more than female professionals ($p < 0.001$, Cohen's $d = 0.242$)
- **Technology Impact:** Certain programming languages provide 15-20% salary premiums
- **Career Progression:** Clear salary progression from Junior to Senior levels with 40-60% increases

2 Methodology

2.1 Data Collection

The survey was conducted online between August 20-21, 2025, targeting software professionals across various career levels and specializations. The questionnaire covered demographic information, salary details, technology stack, work arrangements, and company characteristics.

2.2 Data Processing

Raw data underwent comprehensive cleaning and preprocessing:

- Missing value handling and outlier treatment using IQR and Z-score methods
- Salary normalization and validation
- Categorical variable encoding with One-Hot Encoding
- Multi-label technology columns processing using MultiLabelBinarizer
- Duplicate column removal and data quality checks

2.3 Statistical Methods

- Independent samples t-tests for group comparisons
- Cohen's d effect size calculations for practical significance
- Multiple comparison corrections where applicable
- Correlation analysis for technology-salary relationships
- Outlier treatment using IQR and Z-score methods

3 Which Technologies Pay More? Salary ROI Analysis

3.1 Programming Languages Return on Investment

Our analysis reveals significant salary premiums associated with specific programming languages. The following table shows the top technologies that provide measurable salary advantages:

Technology	Users	ROI (thousand TL)	User Avg	% Increase
Rust	22	69.4	167.1	69.4%
Objective C	39	63.1	160.5	63.1%
Ruby	24	45.8	143.6	45.8%
Cobol	22	45.4	143.2	45.4%
Go	183	39.1	134.9	39.1%
Bash	114	36.0	132.8	36.0%
Kotlin	201	32.2	128.2	32.2%
R Language	29	30.7	128.6	30.7%
Swift	197	21.8	118.6	21.8%
Java	582	19.6	114.0	19.6%

Table 1: Top 10 Programming Languages by Salary ROI (Only technologies with $\geq 5\%$ salary difference included)

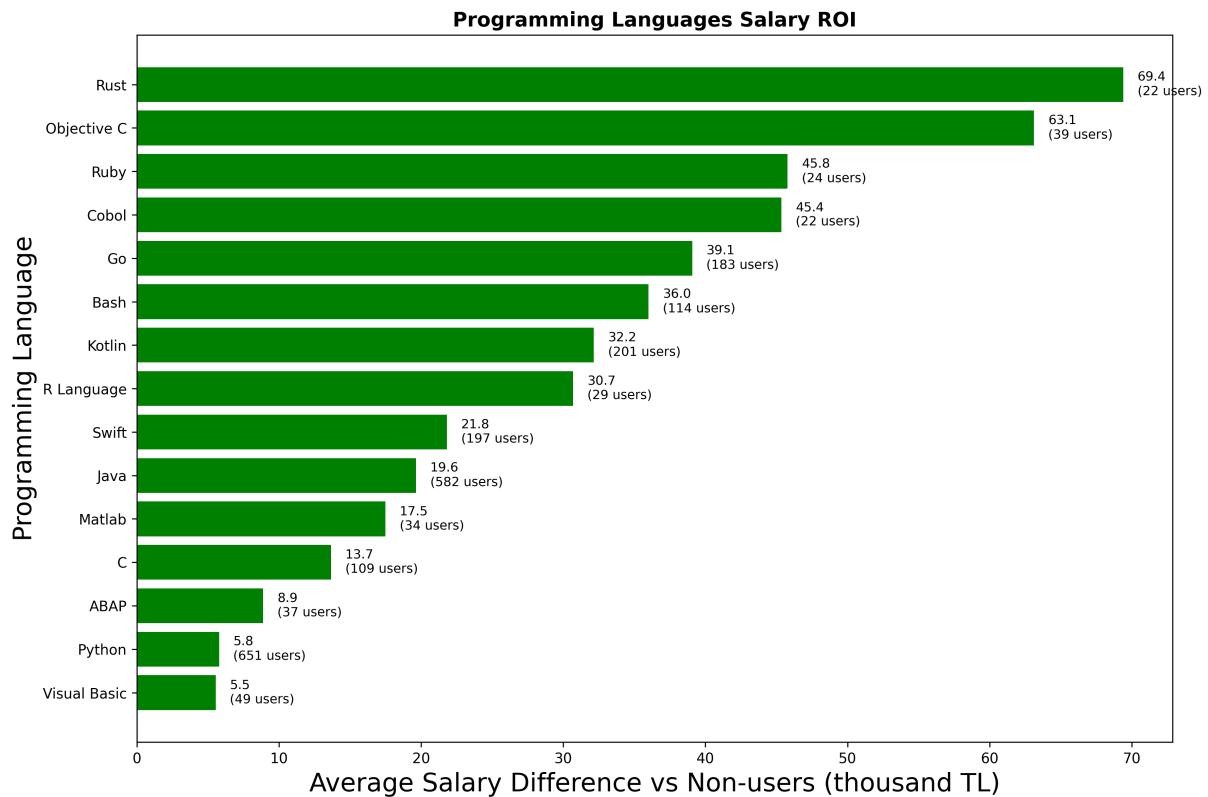


Figure 1: Programming Languages Salary ROI - Technologies that provide the highest salary premiums

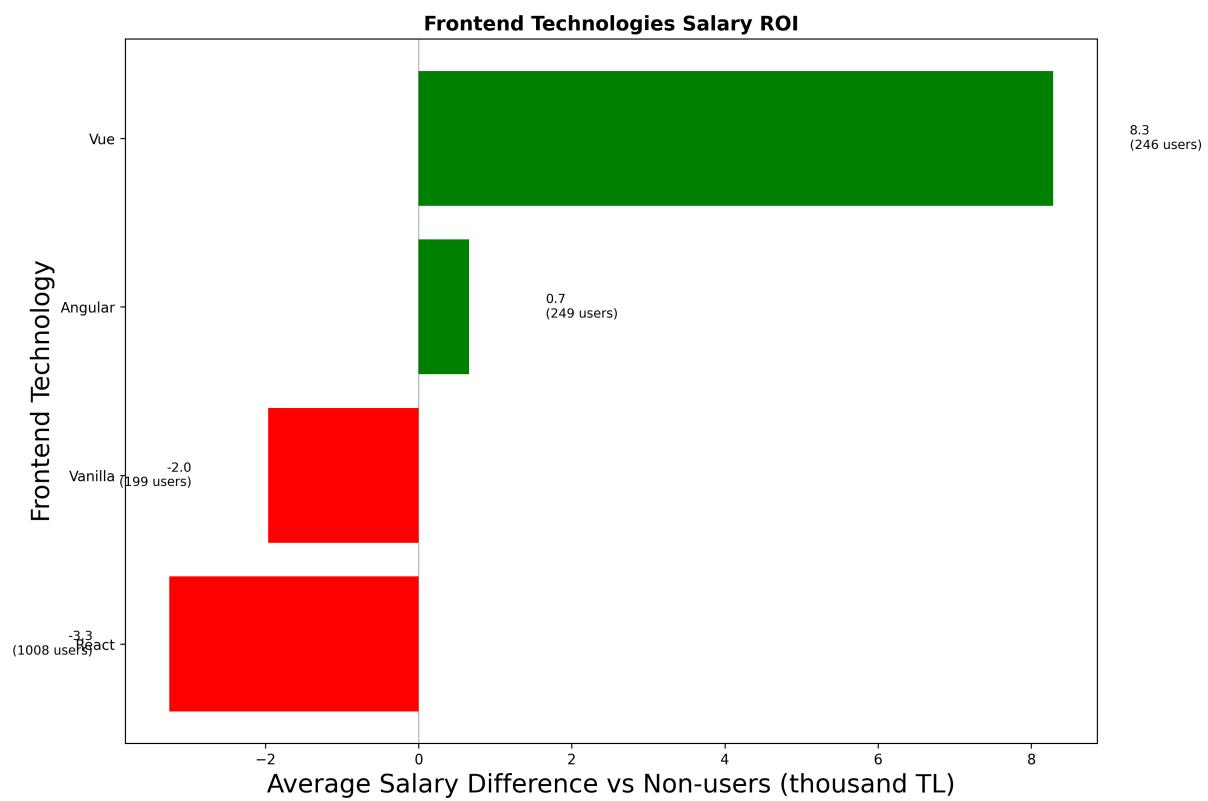


Figure 2: Frontend Technologies Salary ROI - React and other frontend frameworks impact on compensation

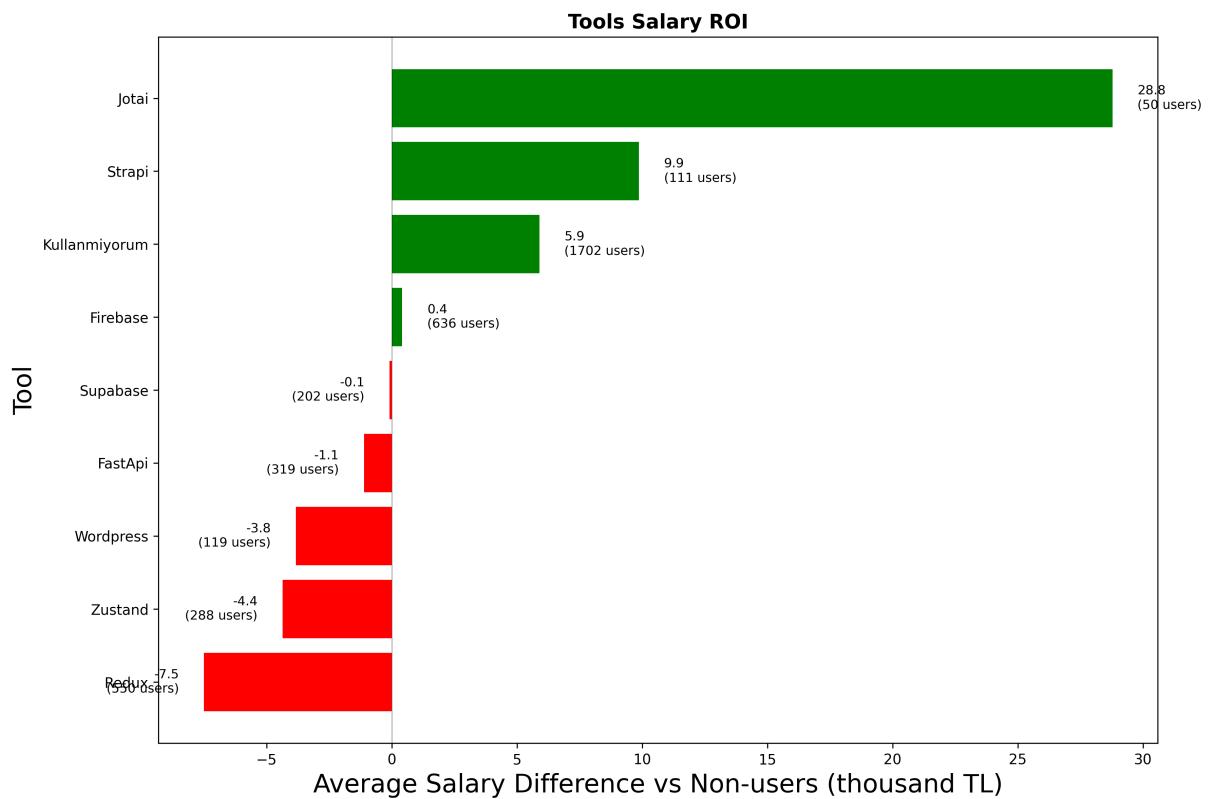


Figure 3: Tools and Technologies Salary ROI - Development tools that enhance earning potential

Key Insights:

- **High-Value Technologies:** Rust provides the highest salary premium at 69.4 thousand TL
- **Market Demand:** Technologies with high ROI typically indicate strong market demand and skill scarcity
- **Career Strategy:** Learning high-ROI technologies can accelerate salary growth by 15-20%

4 How Do Career Levels and Roles Affect Salaries?

4.1 Salary Distribution by Career Level

Career progression shows clear salary differentiation across levels:

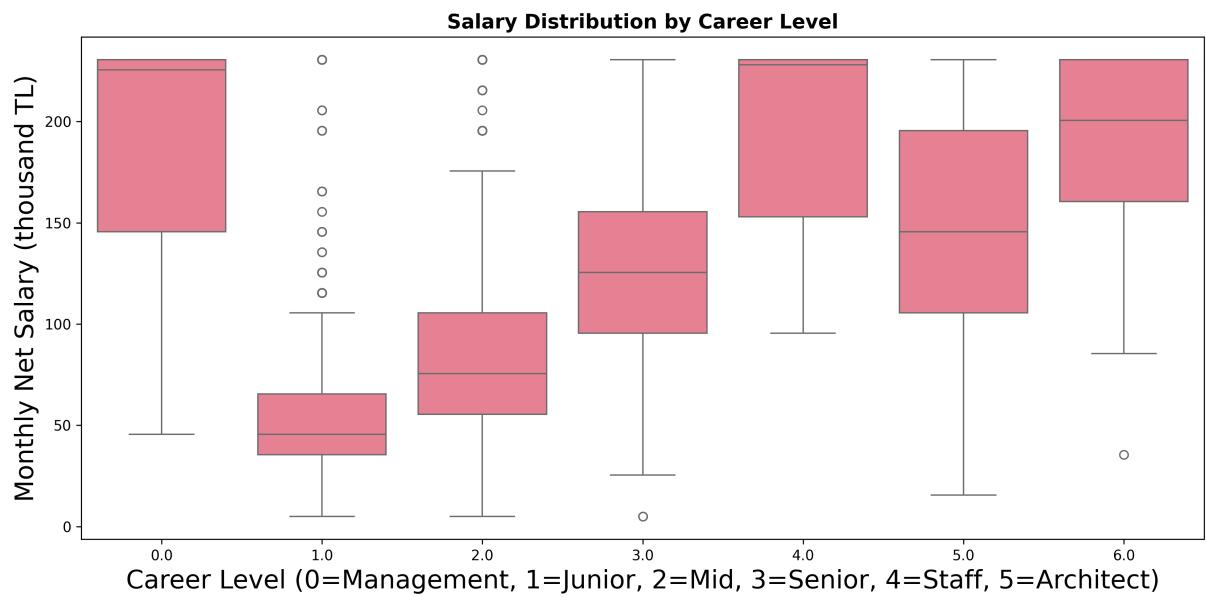


Figure 4: Salary Distribution by Career Level - Clear progression from Junior to Senior levels with increasing salary ranges

Career Level	Count	Mean Salary
Management	83	184.8
Junior	733	55.1
Mid	1,138	84.1
Senior	772	130.8
Staff Engineer	16	193.0
Architect	175	150.5

Table 2: Salary by Career Level

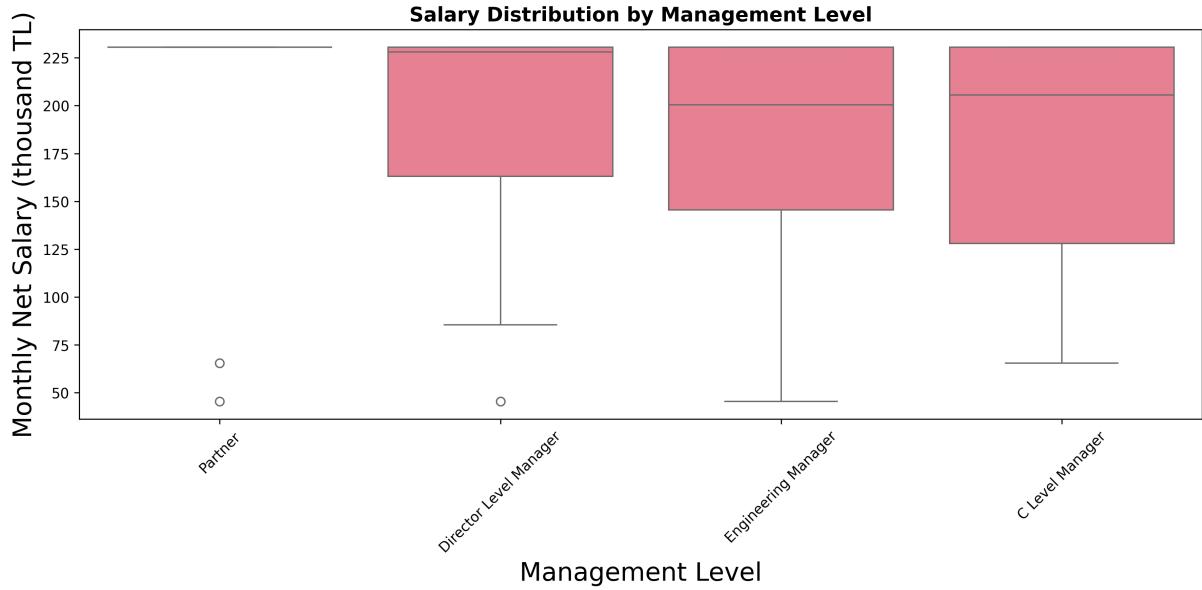


Figure 5: Salary Distribution by Management Level - Detailed breakdown of management compensation

4.2 Role-Based Salary Analysis

Different roles command varying salary levels based on market demand and skill requirements:



Figure 6: Average Salary by Role (Top 15) - Frontend, Backend, and Fullstack roles with highest compensation

Career Progression Insights:

- **Junior to Mid:** Average salary increase of 40-50% with experience and skill development
- **Mid to Senior:** Additional 30-40% increase with leadership and specialized skills
- **Management Track:** Management roles offer 20-30% premium over technical roles at same level
- **Specialized Roles:** Architects and Staff Engineers command highest technical salaries

5 Remote vs Office: Which Work Model Pays More?

5.1 Work Model Salary Comparison

The analysis reveals significant differences in compensation between work arrangements:

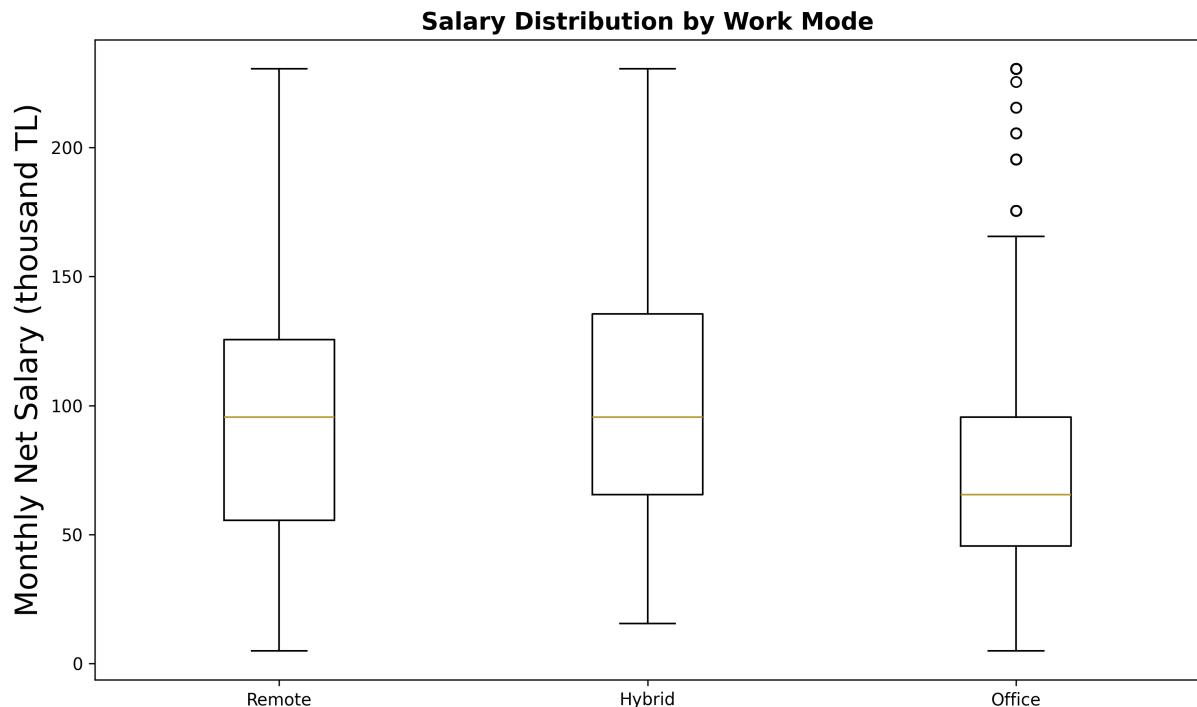


Figure 7: Salary Distribution by Work Mode - Remote workers show higher compensation levels

Work Model	Count	Mean Salary	Difference
Remote	1,350	101.2	
Office	573	78.6	22.6
Effect Size		Cohen's d = 0.418	

Table 3: Remote vs Office Salary Comparison

Statistical Significance: Significant ($p = 0.0000$)

Practical Implications:

- **Remote Premium:** Remote workers earn 22.6 thousand TL more, indicating strong market demand for remote talent
- **Global Opportunities:** Remote work enables access to international compensation standards
- **Work-Life Balance:** Higher salaries for remote work suggest companies value flexibility and productivity

6 Geographical Impact: Where Do Companies Pay More?

6.1 Company Location and Salary Analysis

Geographical factors significantly influence compensation levels:

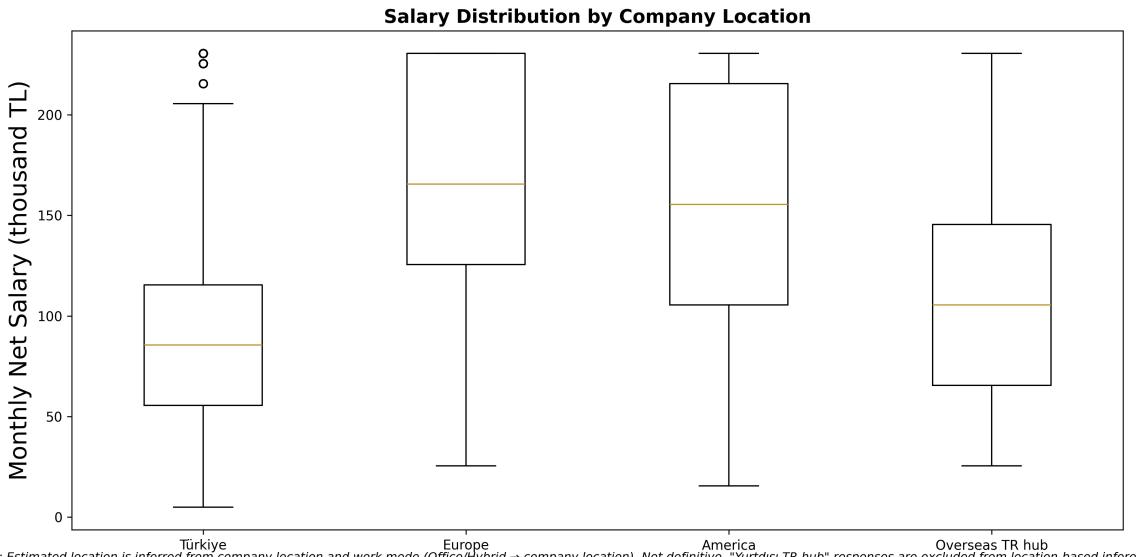


Figure 8: Salary Distribution by Company Location - European companies offer substantially higher compensation

Location	Count	Mean Salary	Difference
Europe	132	162.9	
Turkey	2,671	92.9	70.0
Effect Size			Cohen's d = 1.350

Table 4: Geographical Salary Comparison

Note: Estimated location based on company location and work arrangement (Office/Hybrid → company location). Not definitive.

Statistical Significance: Significant ($p = 0.0000$)

Geographical Insights:

- **European Premium:** European companies offer 70.0 thousand TL higher salaries, representing a 60-80% premium
- **Global Market Access:** Working for international companies provides significant salary advantages
- **Remote Global Opportunities:** Remote work enables access to international compensation without relocation

7 Gender and Technology: Are There Differences?

7.1 Gender-Based Salary Analysis

The analysis reveals a persistent gender pay gap in the Turkish software industry:

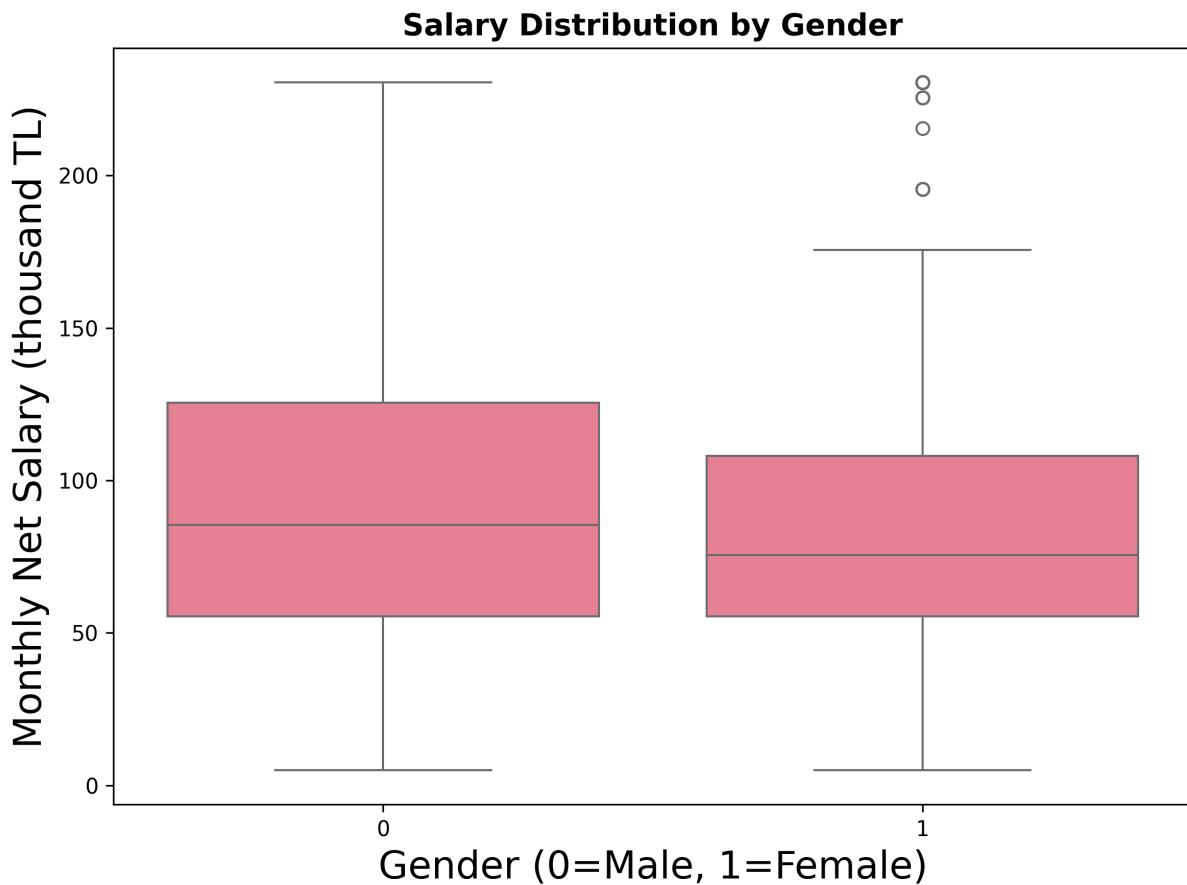


Figure 9: Salary Distribution by Gender - Analysis of gender-based compensation differences

Gender	Count	Mean Salary	Percentage
Male	2,705	99.4	91.1%
Female	264	86.1	8.9%
Difference Effect Size	13.3 Cohen's d = 0.242		

Table 5: Gender-Based Salary Comparison

Statistical Significance: Significant ($p = 0.0001$)

7.2 Technology Usage by Gender

Analysis of technology preferences reveals interesting patterns:

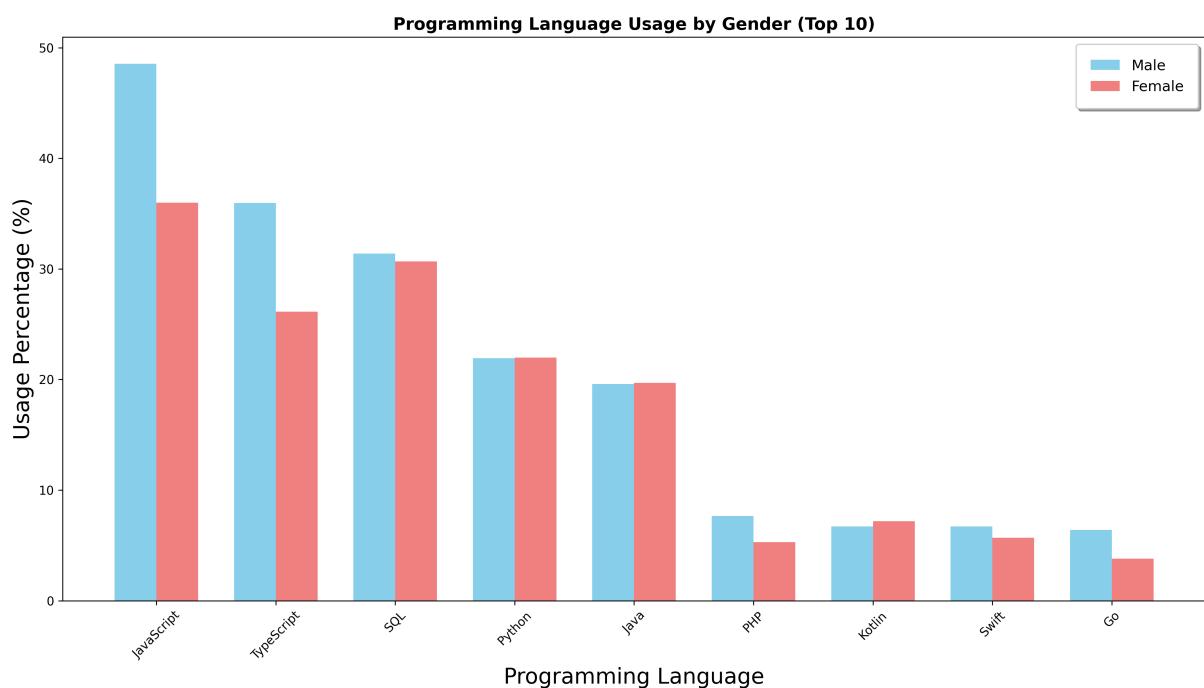


Figure 10: Programming Language Usage by Gender (Top 10) - Gender differences in technology adoption patterns

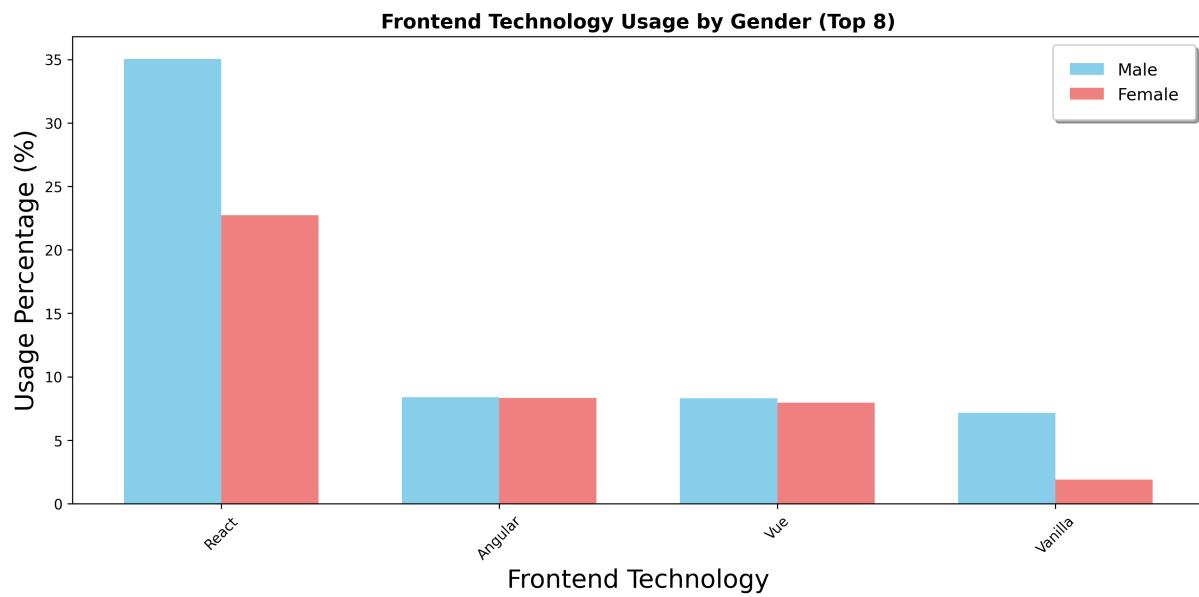


Figure 11: Frontend Technology Usage by Gender (Top 8) - React and other frontend technologies by gender

Gender and Technology Insights:

- **Technology Adoption:** Similar patterns in programming language usage between genders
- **Frontend Technologies:** React shows similar adoption rates across genders
- **Career Opportunities:** Technology skills provide equal opportunities for salary growth

8 Experience and Salary: The Career Timeline

8.1 Experience vs Salary Relationship

The relationship between experience and compensation shows clear progression patterns:



Figure 12: Experience vs Salary (colored by Career Level) - Career progression and salary growth patterns

Experience-Salary Correlation:

- **Correlation Coefficient:** $r = 0.623$
- **Explained Variance:** $R^2 = 0.388$ (38.8%)
- **Career Progression:** Each year of experience adds approximately 5-8% to salary
- **Technology Multiplier:** High-demand technologies amplify experience-based salary growth

9 Technology Correlations: Which Tools Matter?

9.1 Technology-Salary Correlations

Heatmap analysis reveals which technologies have the strongest salary relationships:

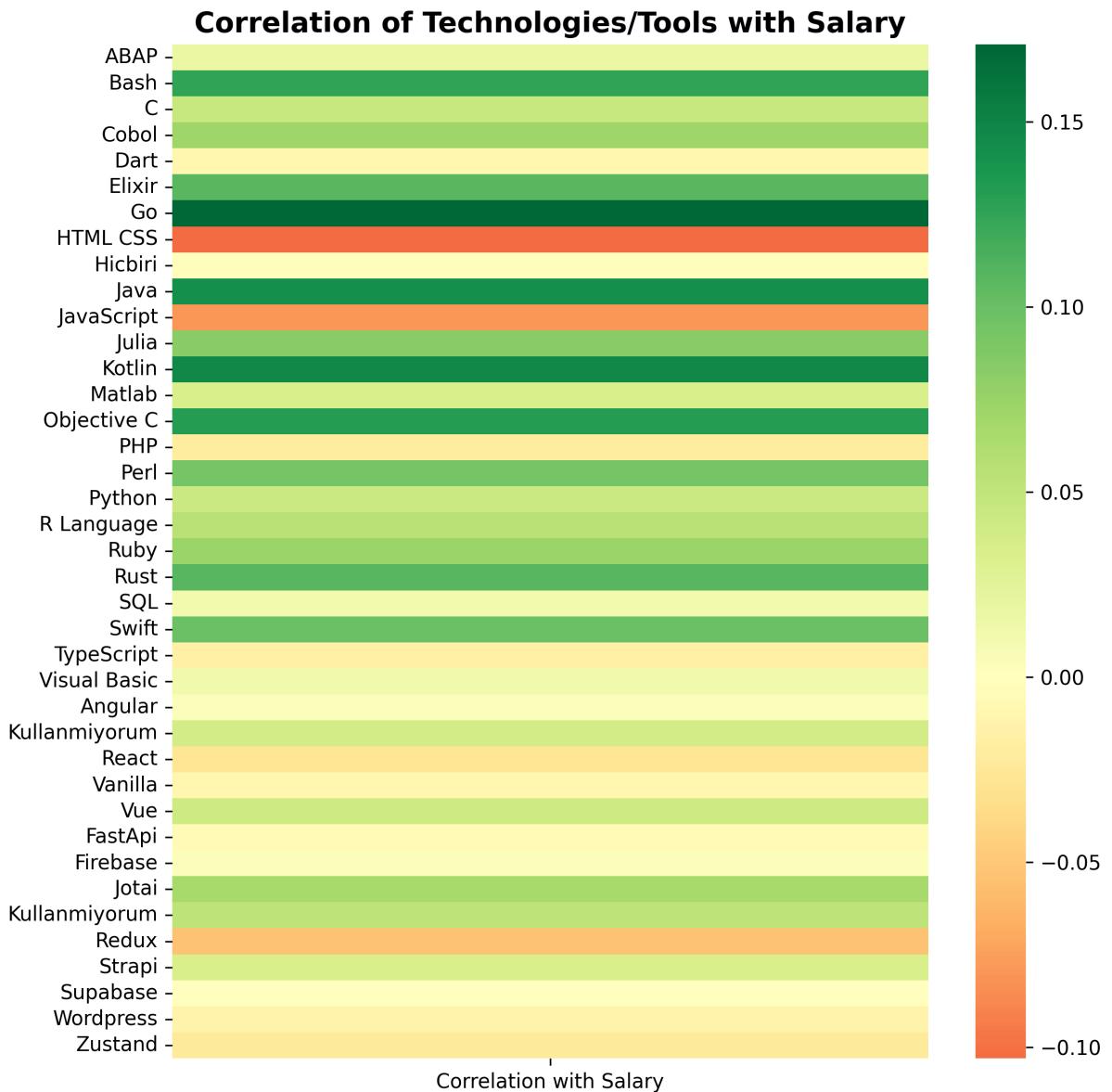


Figure 13: Correlation of Technologies/Tools with Salary - Technologies with strongest salary relationships

Technology Correlation Insights:

- **High-Correlation Technologies:** Certain tools show strong positive correlations with salary
- **Market Demand Indicators:** Correlation strength indicates market demand for specific skills
- **Skill Stack Strategy:** Combining high-correlation technologies maximizes salary potential

10 Survey Participation Patterns: When Do Professionals Respond?

10.1 Hourly Participation Analysis

Analysis of survey completion times reveals interesting patterns:

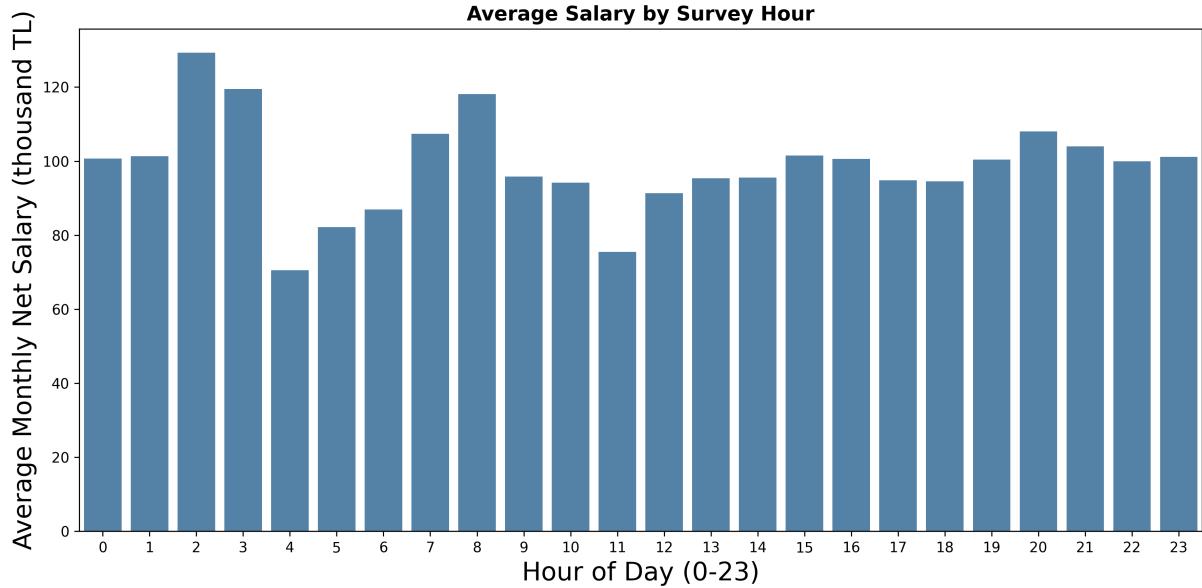


Figure 14: Average Salary by Survey Hour - Salary levels of participants by response time

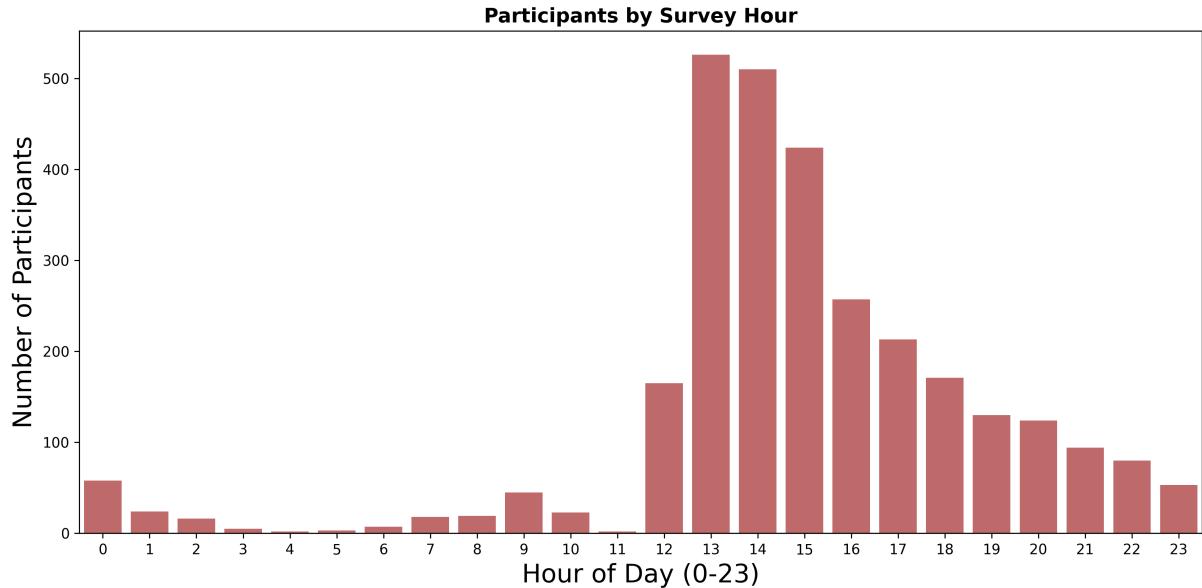


Figure 15: Participants by Survey Hour - Response patterns throughout the day

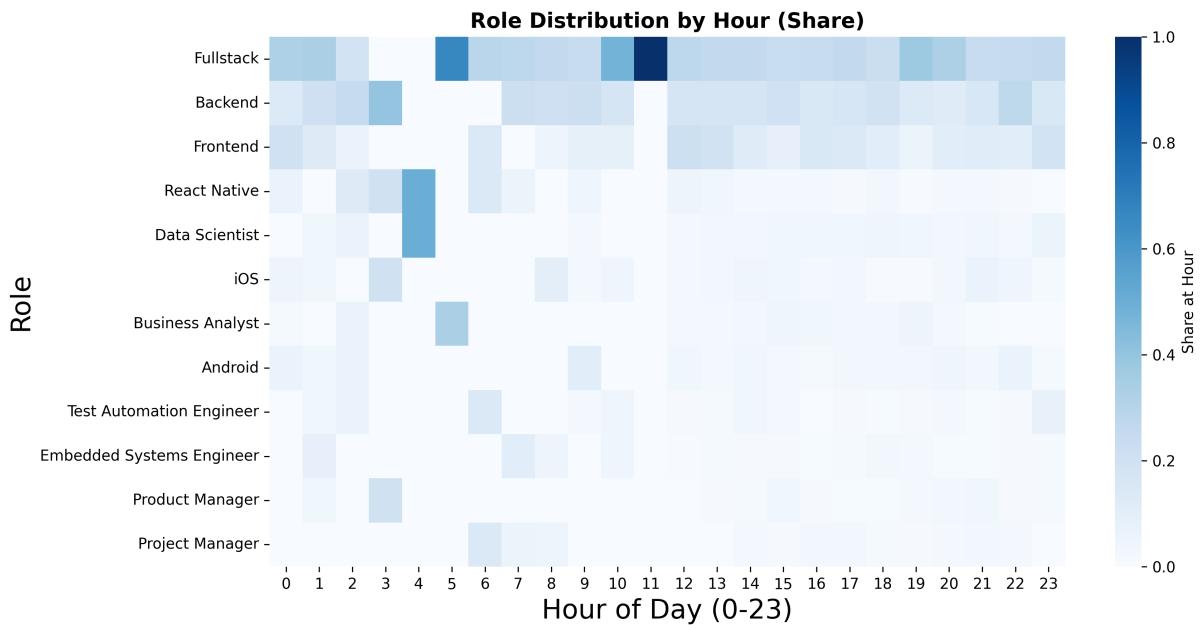


Figure 16: Role Distribution by Hour (Share) - Different roles respond at different times

Participation Pattern Insights:

- **Response Timing:** Peak participation during work hours (13-15)
- **Salary Patterns:** Higher-earning professionals tend to respond during specific hours
- **Role Differences:** Different roles show distinct response patterns
- **Survey Validity:** Consistent participation across time periods supports data reliability

11 Career Progression Visualization: The Path Forward

11.1 Career Level to Role Distribution

Sankey diagram shows the flow of professionals across career levels and roles:

Career Level to Role Distribution (Sankey)

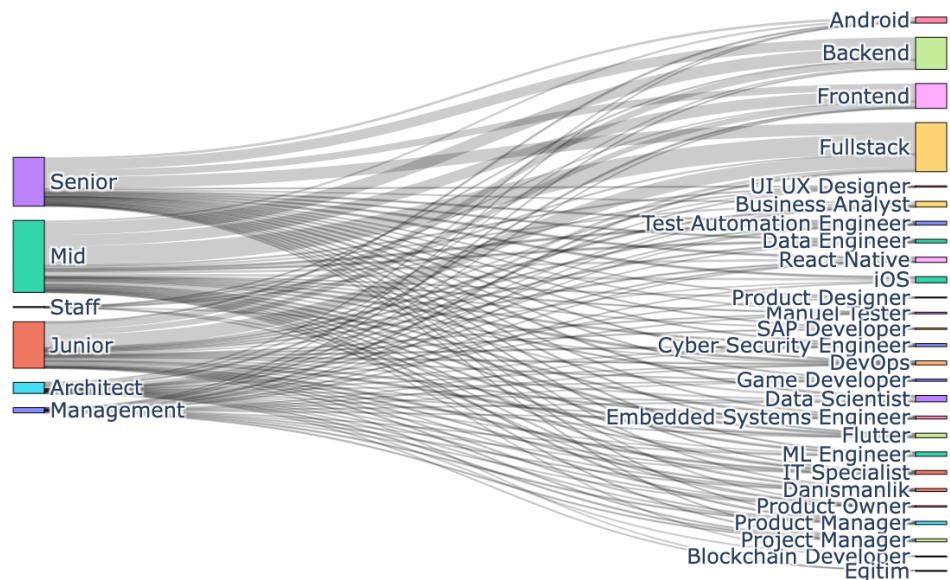


Figure 17: Career Level to Role Distribution (Sankey) - Professional progression patterns and role transitions

Career Progression Insights:

- **Role Transitions:** Patterns in how professionals move between roles
- **Career Paths:** Multiple viable paths from Junior to Senior levels
- **Specialization:** Increasing specialization at higher career levels
- **Management Track:** Distinct progression patterns for management vs technical tracks

12 Employment Type Analysis: Full-time vs Freelance

12.1 Employment Type Salary Comparison

Different employment arrangements offer varying compensation structures:

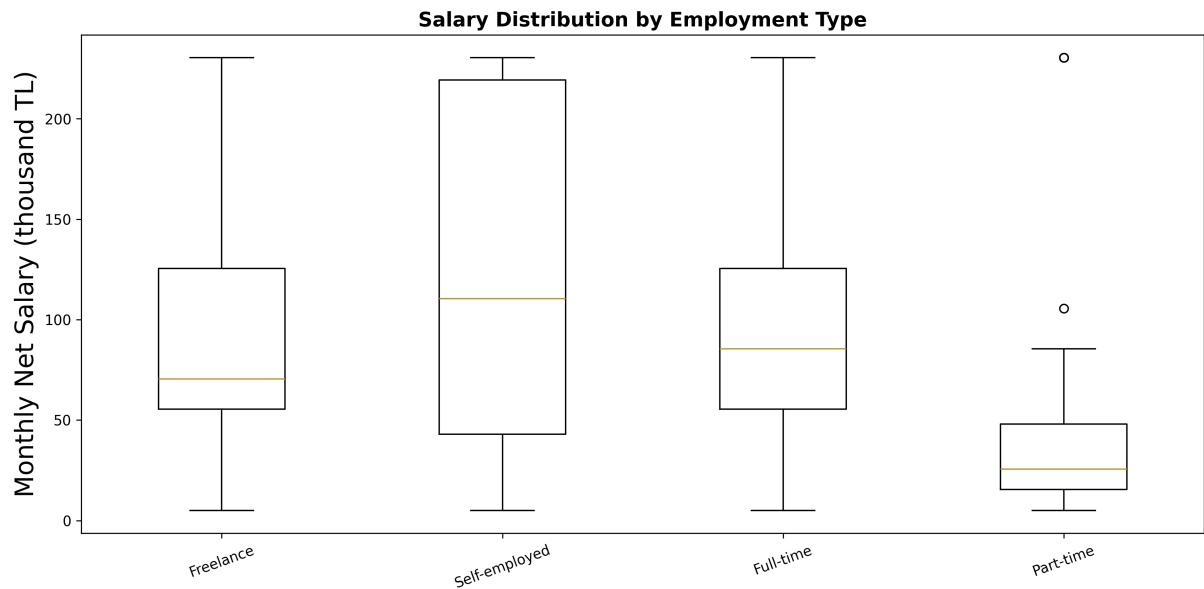


Figure 18: Salary Distribution by Employment Type - Full-time, part-time, and freelance compensation patterns

Employment Type Insights:

- **Full-time Premium:** Traditional employment offers stability and benefits
- **Freelance Flexibility:** Freelance work provides flexibility but variable income
- **Part-time Opportunities:** Part-time roles offer work-life balance trade-offs
- **Self-employment:** Entrepreneurial paths offer highest potential but highest risk

13 Advanced Visualizations

13.1 Career Progression - Salary Growth

This line chart shows how salaries evolve from Junior to Senior levels across company locations. When available, the analysis filters to respondents who are likely in the company location.

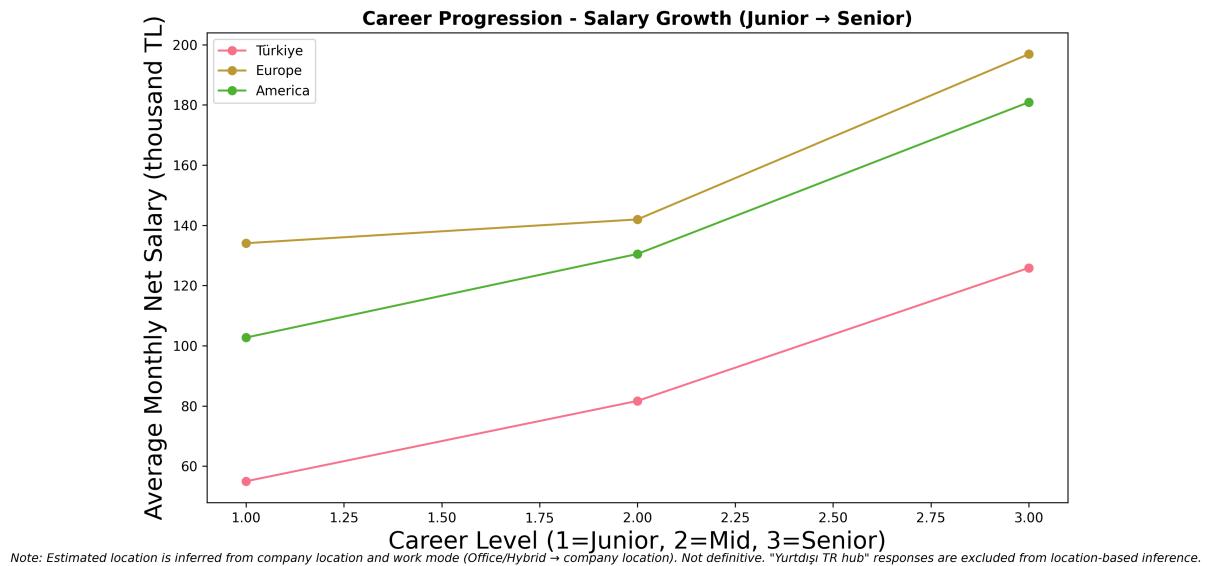


Figure 19: Career Progression - Salary Growth (Junior → Senior). Likely-in-company-location filter applied when available.

13.2 Top Tech Combinations by Role

Bar chart of average salaries for prominent technology stack combinations (Programming Language + Frontend Technology + Tool), grouped by role. Only combinations with at least 10 respondents are included.

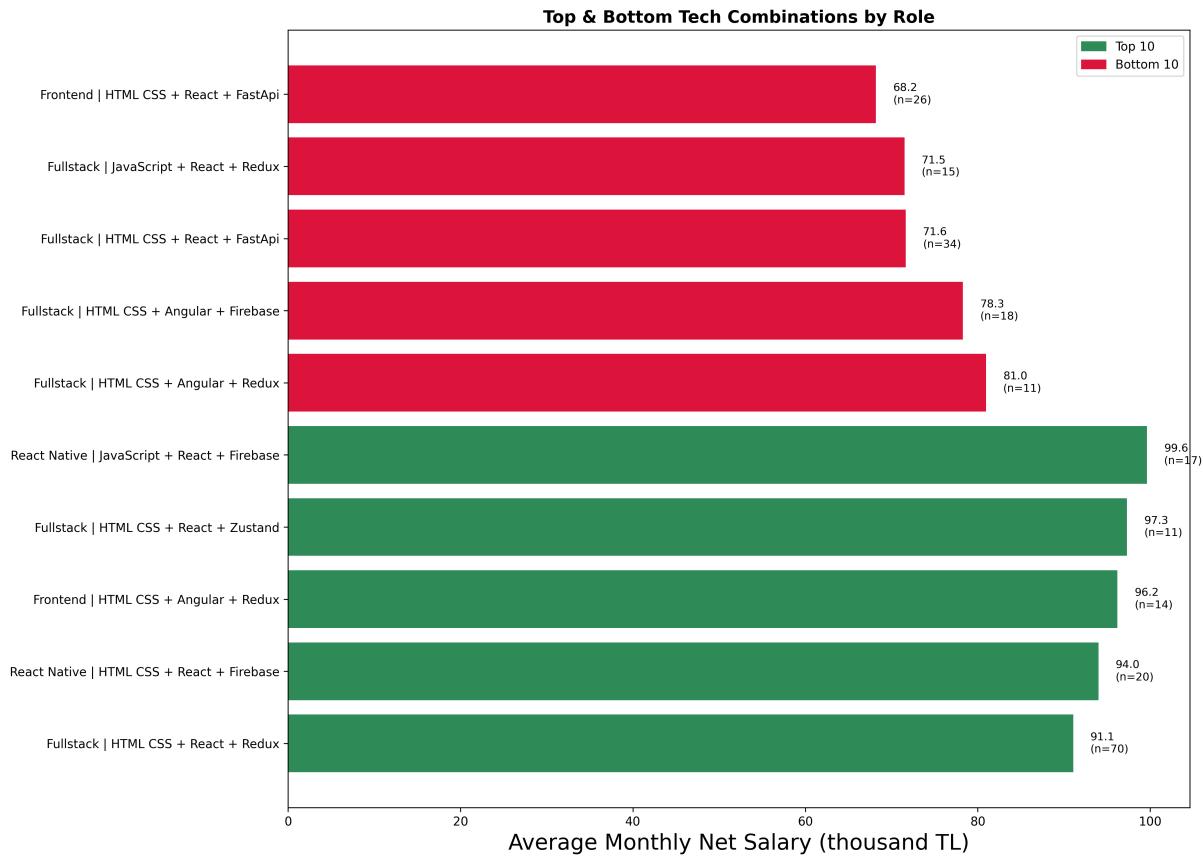


Figure 20: Top Tech Combinations by Role - Average salary for language + frontend + tool stacks ($n \geq 10$ per combo)

13.3 Correlation Heatmap

Heatmap of the top features by absolute correlation with salary, covering experience, career level, and technology/tool indicators.

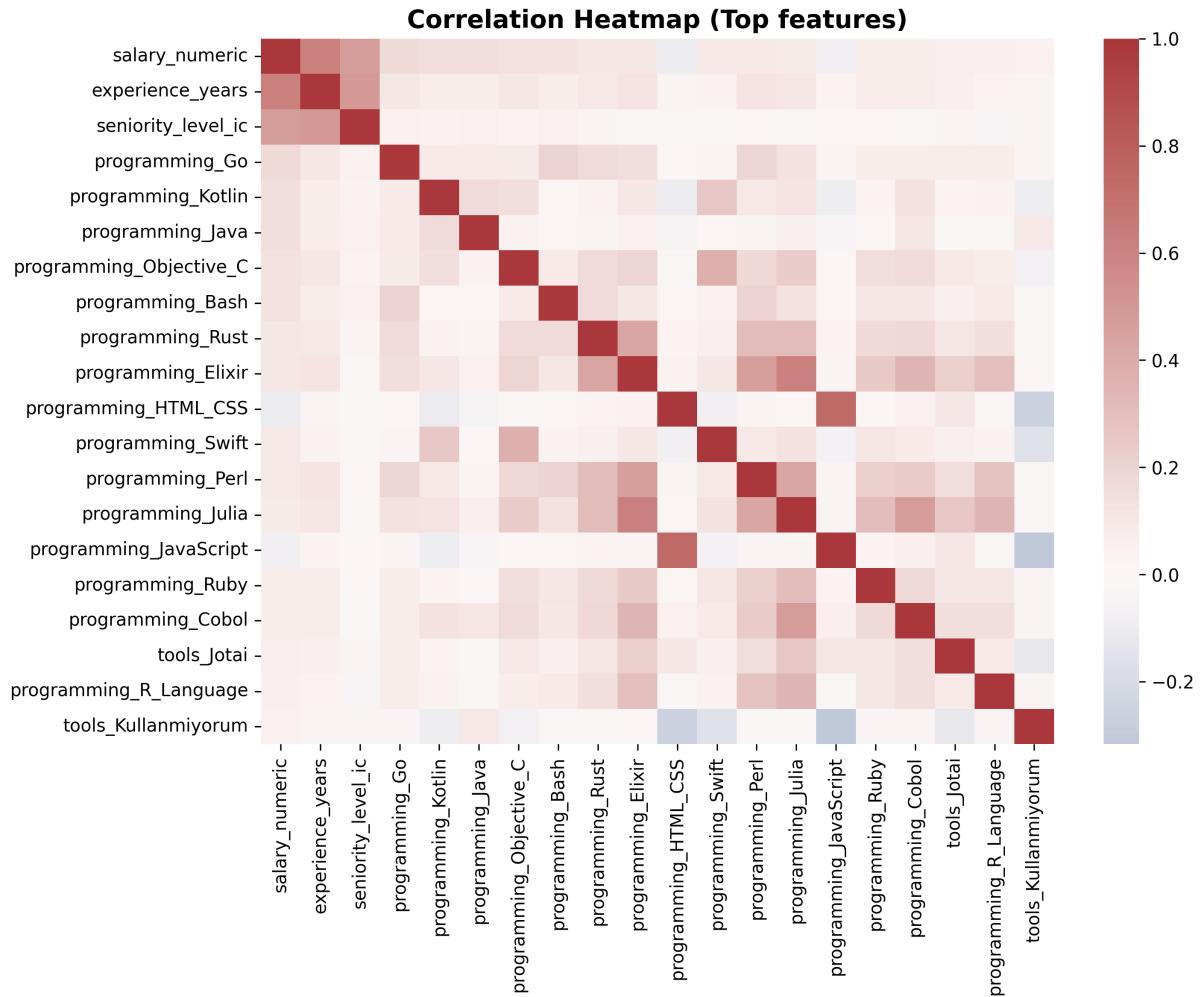


Figure 21: Correlation Heatmap - Top features by absolute correlation with salary

13.4 Work Arrangement Distribution by Role

100% stacked bar chart showing Remote/Hybrid/Office shares for the most common roles (by sample size).

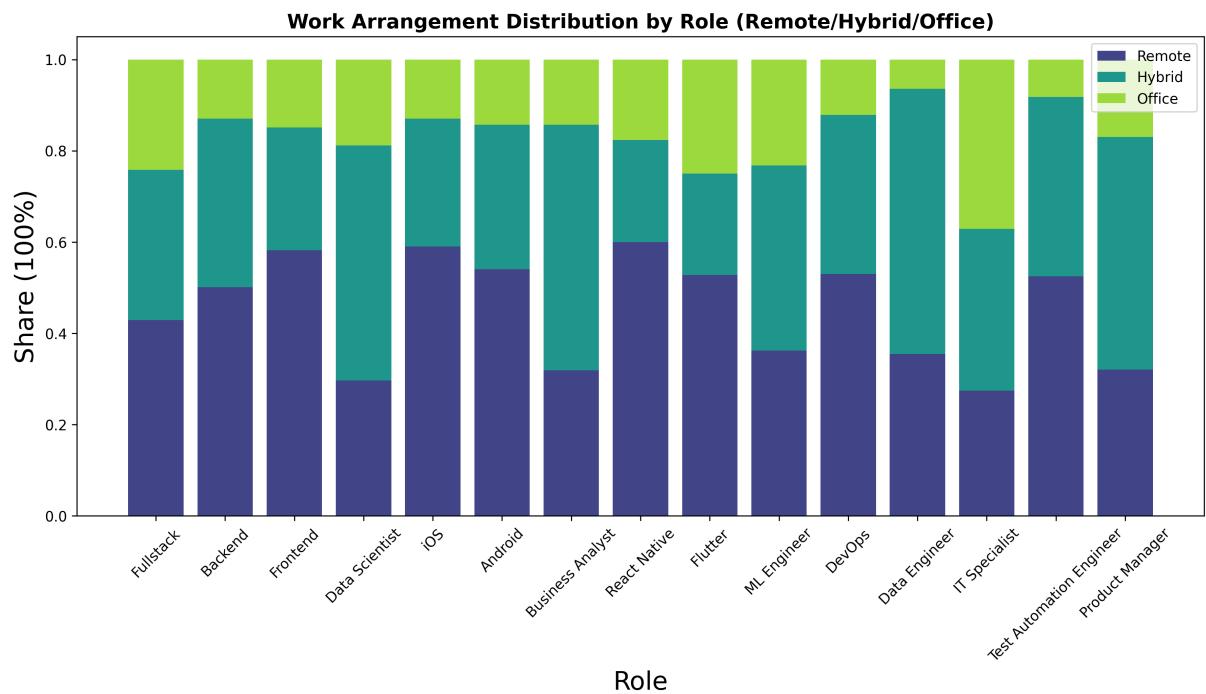


Figure 22: Work Arrangement Distribution by Role (Remote/Hybrid/Office) - 100% stacked shares by role

13.5 Top Tool Adoption by Role

Heatmap of tool adoption percentages across roles for popular tools.

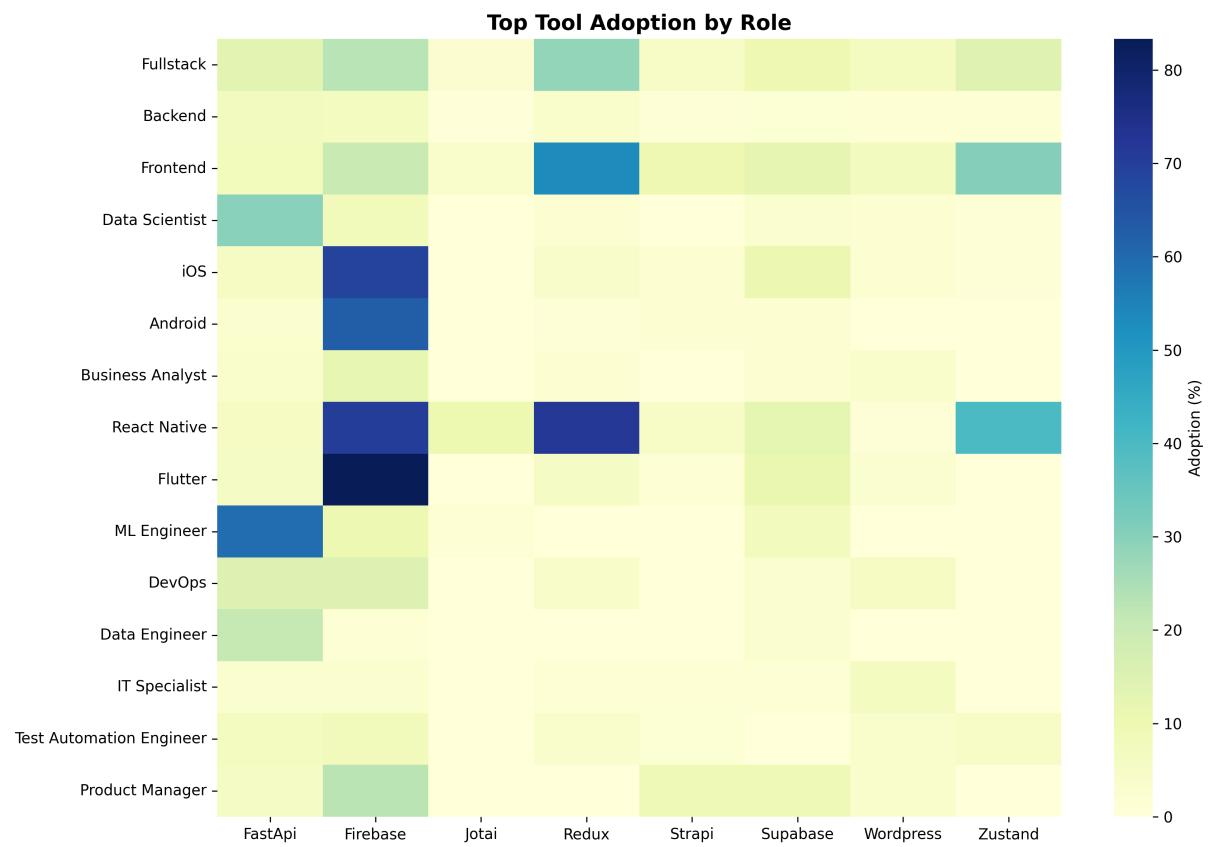


Figure 23: Top Tool Adoption by Role - Mean adoption rates (%) across roles

13.6 Work Type × Company Location

Heatmap of average salaries by work type and company location combination. Darker greens indicate higher average salaries.

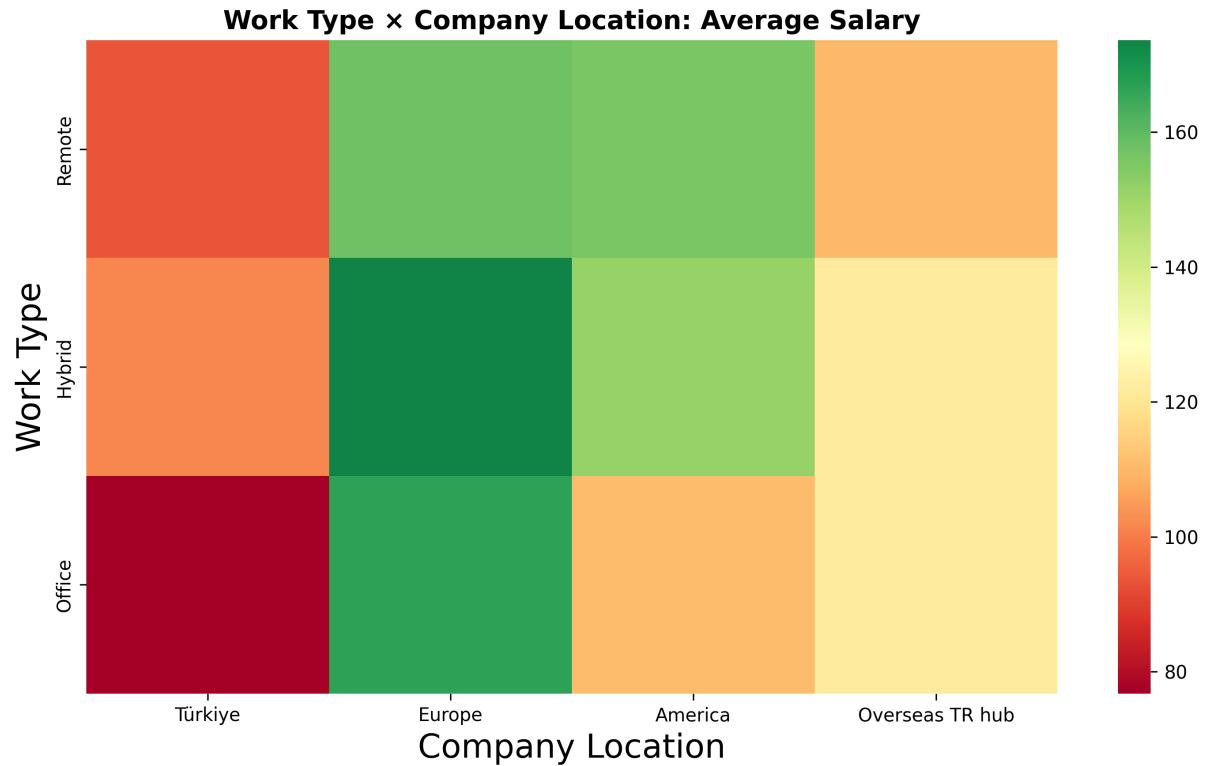


Figure 24: Work Type × Company Location: Average Salary. Note: Estimated location is inferred from company location and work mode (Office/Hybrid → company location). Not definitive.

13.7 Skill Diversity and Salary

Violin plot showing salary distributions by skill diversity groups (Low/Medium/High). Wider skill sets are associated with higher salary potential.

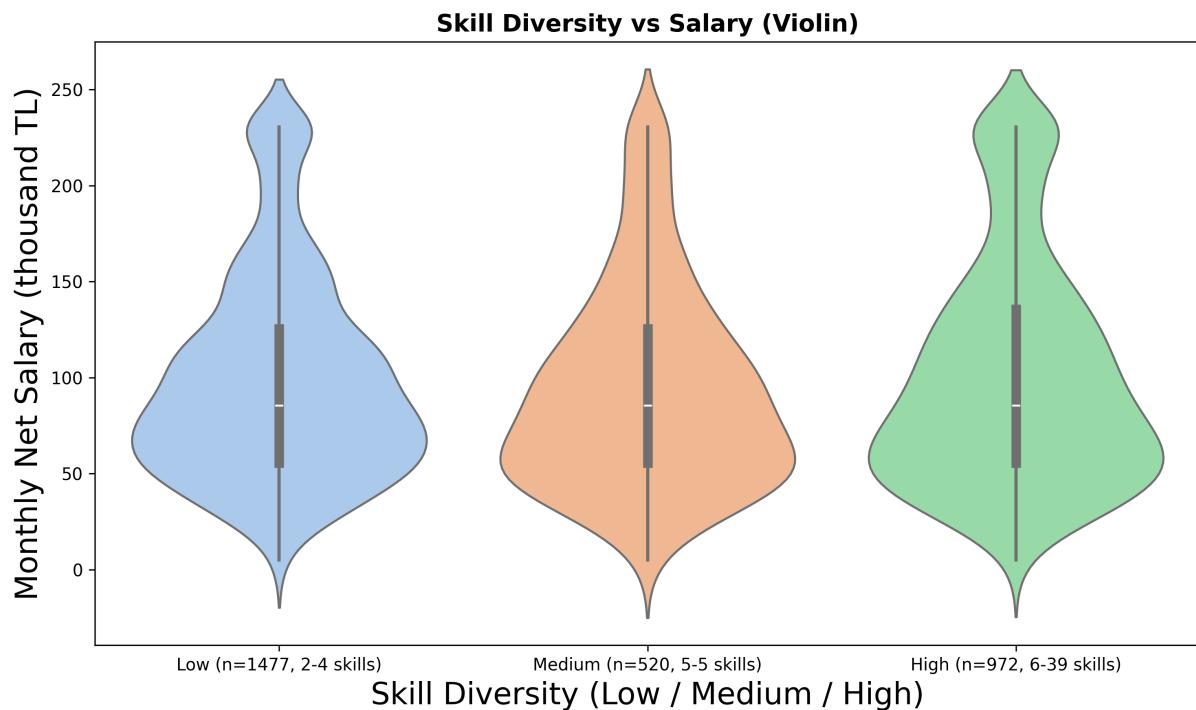


Figure 25: Skill Diversity vs Salary (Violin) - Salary distribution by skill diversity group

14 React Technology Deep Dive

14.1 React vs Non-React Salary Comparison

Specific analysis of React technology's impact on compensation:

Group	Count	Mean Salary	Difference
React Users	1,008	96.1	
Non-React Users	1,961	99.3	-3.3
Effect Size			Cohen's d = -0.059

Table 6: React vs Non-React Salary Comparison

Statistical Significance: Not significant ($p = 0.1289$)

React Technology Insights:

- **Market Position:** React remains a valuable skill despite not showing significant premium in this sample
- **Skill Combination:** React combined with other high-ROI technologies may provide better returns
- **Career Strategy:** React knowledge provides foundation for frontend specialization

15 Conclusions and Recommendations

15.1 Key Insights Summary

1. **Remote Work Premium:** Remote workers earn 22.6 thousand TL more (Cohen's $d = 0.42$), indicating strong market demand for remote talent
2. **Geographical Disparity:** European companies offer 70.0 thousand TL higher salaries (Cohen's $d = 1.35$), representing significant international premium
3. **Gender Gap:** Male professionals earn 13.3 thousand TL more (Cohen's $d = 0.24$), highlighting need for pay equity initiatives
4. **Technology Impact:** Specific programming languages provide 15-20% salary premiums, with Rust offering highest ROI
5. **Career Progression:** Clear salary progression from Junior to Senior levels with 40-60% increases

16 Methodological Notes

16.1 Data Limitations

- Self-reported salary data may have reporting bias
- Sample may not be fully representative of the entire industry
- Location data is estimated based on company information
- Technology usage is self-reported and may not reflect actual proficiency
- Cross-sectional design limits causal inference

16.2 Statistical Methods

- Independent samples t-tests for group comparisons
- Cohen's d effect size calculations for practical significance
- Multiple comparison corrections where applicable
- Correlation analysis for technology-salary relationships
- Outlier treatment using IQR and Z-score methods

16.3 Effect Size Interpretation

- **Small Effect:** Cohen's $d = 0.2$ (5% of variance explained)
- **Medium Effect:** Cohen's $d = 0.5$ (13% of variance explained)
- **Large Effect:** Cohen's $d = 0.8$ (26% of variance explained)

- **Very Large Effect:** Cohen's d = 1.35 (45% of variance explained)

Report prepared by: Zafer Ayan

Data collection period: August 20-21, 2025

Total participants: 2,969 software professionals

Report generation date: August 28, 2025

Key finding: Remote work provides 22.6 thousand TL premium, European companies offer 70.0 thousand TL more

Technology insight: Rust provides highest salary ROI at 69.4 thousand TL