



Python vs. JavaScript/Java



*Do developers who primarily use Python
earn significantly different salaries than
those who primarily use JavaScript and or
Java?*

By: Timothy Myers, Harden Gage, and Anthony Stribling

Why This Matters?



- Tech firms need competitive and fair pay to attract and keep developers.
- Python, JavaScript, and Java are three of the most widely used programming languages.
- They are used in different roles:
 - Python: data science, automation, backend.
 - JavaScript: front end and web.
 - Java: enterprise systems, Android, large backend systems.
- If salaries differ by language and experience, it affects:
 - Hiring budgets
 - Training and upskilling decisions
 - Long term talent strategy

Data Overview



Developer Survey

Source: *Stack Overflow Annual Developer Survey 2025.*
Raw data: about 49,000 developer responses and 170 variables.

Cleaned sample for this project:

- United States only
- Employed respondents only
- Salary between \$30,000 and \$500,000
- 1–30 years of coding experience

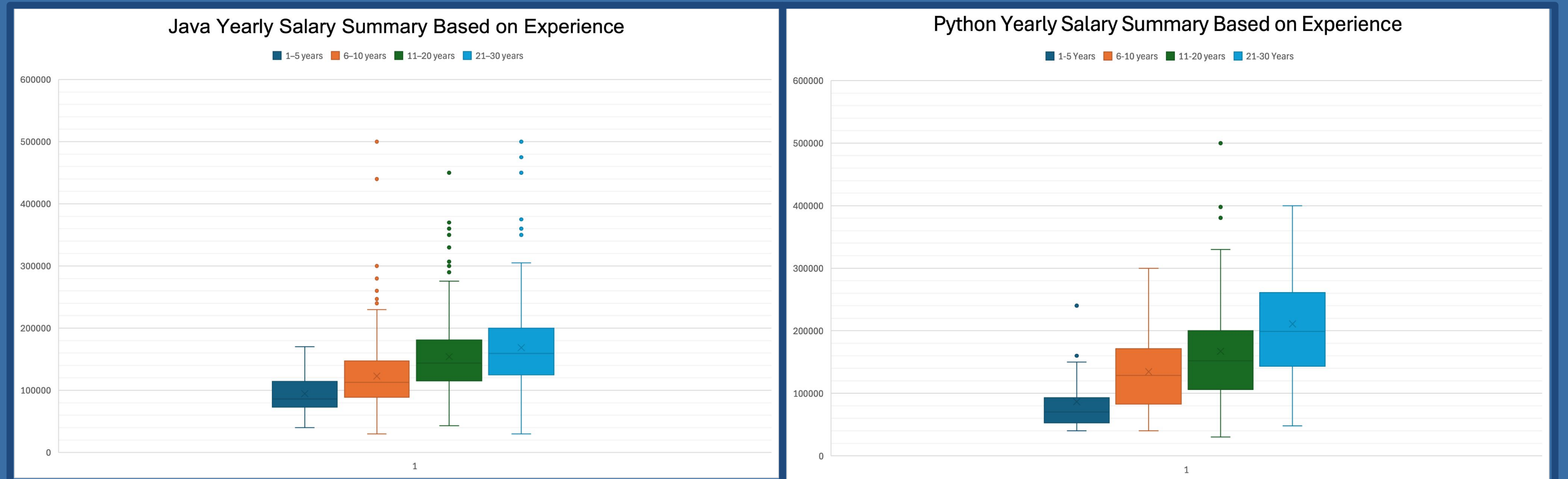
Final analysis groups:

- Python-focused developers (no JavaScript or Java in the same row)
- JavaScript/Java developers (combined comparison group)
- Cleaned counts:
 - Python: 558 developers
 - JavaScript/Java: 998 developers

Key variables:

- Annual salary (ConvertedCompYearly)
- Years of coding (YearsCode or YearsCodePro)
- Languages used (LanguageHaveWorkedWith)

Salary by Language and Experience



Overall Mean Salary: \$150,340.13

Overall Median Salary: \$140,000

Overall Mean Salary: \$162,279.16

Overall Median Salary: \$150,000

Statistical Results



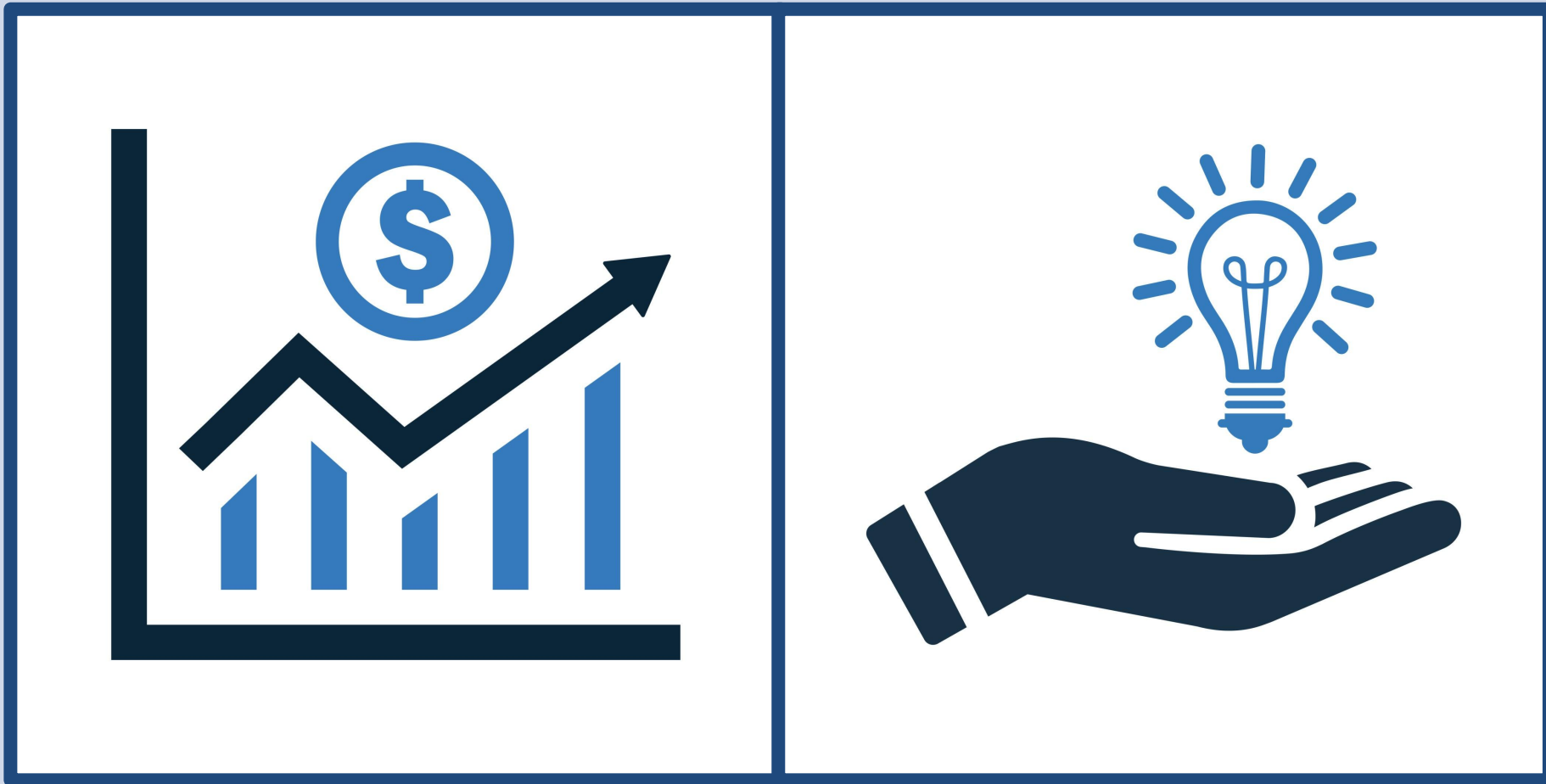
Experience Group	P-Value	Significant
1-5 Years	0.2003	No
6-10 Years	0.5987	No
11-20 Years	0.0135	Yes
21-30 Years	0.000051	Yes

- Used **Welch's t-test** (two sample, unequal variances) in Excel.
- Compared Python salary vs JavaScript/Java salary within each experience group.
 - At 1–5 and 6–10 years, p-values are greater than 0.05 → no significant difference.
 - At 11–20 years, Python developers earn about 9 percent more, $p \approx 0.0135$ → significant.
 - At 21–30 years, Python developers earn about 17 percent more, $p \approx 0.000051$ → very strong evidence.
- Overall, Python developers earn about \$11,700 more on average, and the overall p-value is significant.

Business

Recommendations:

What Should Companies Do with This?



For Companies:

- At 1–10 years, pay ranges for Python, JavaScript, and Java can be similar.
- For 11–30 years, plan higher salary bands for experienced Python roles, especially in:
 - Data analytics
 - Machine learning
 - Automation and backend systems
- Invest in **Python training** for developers in data and backend teams.

Limitations and Caution



Limits of Our Analysis:

- Self reported survey data means some salaries or experience values may be off.
- This is a single survey of a one year time frame and may not represent every developer or future years.
- Did not control for:
 - Location (State/City Wage Differences)
 - Company size
 - Industry
 - Job title
- Results show patterns in this dataset, not a guarantee for every firm.

Q & A



Thank You!