

# Title

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# OUTLINE

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- Executive Summary
- Introduction
- Methodology
- Results
  - Visualization – Charts
  - Dashboard
- Discussion
  - Findings & Implications
- Conclusion
- Appendix



# EXECUTIVE SUMMARY

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**Objective:** To automate the collection of real-time job market data for specific technologies (e.g., Python, Java) across major US tech hubs using a REST API.

**Methodology:** Utilized Python (`requests`, `pandas`) to query a Flask-based Job API, processed JSON responses, and aggregated data into an Excel report for analysis.

**Key Outcome:** Successfully created a repeatable data pipeline that extracts job counts by location and technology stack, enabling data-driven career insights.



# INTRODUCTION

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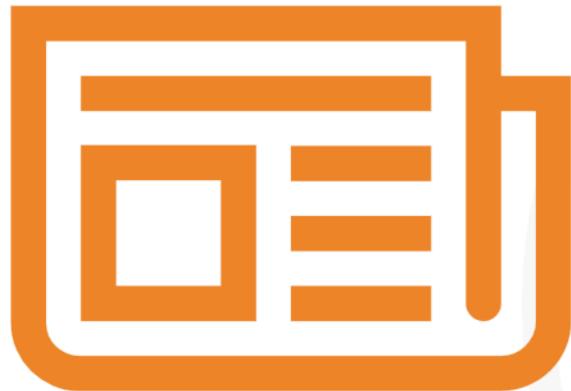


- **Purpose of this Report**
- The primary objective of this analysis is to provide a **data-driven roadmap** for a strategic career transition into the tech industry. By examining real-world data on job demand, compensation, and technological growth, this report identifies the most profitable and sustainable pathways for a professional pivot. It transforms raw market "noise" into actionable intelligence to ensure a high return on investment (ROI) for time spent upskilling.
- **Target Audience**
- This report is specifically designed for **Engineers and professionals** seeking to transition into **Data Analytics** or **Software Engineering**. It serves as a decision-making tool for individuals aiming to secure high-value, remote-first roles within international markets (specifically targeting the **€3,000–€4,000/month** bracket and above).
- **Value of the Analysis**
- Unlike general career advice, this analysis provides:
- **Market Alignment:** Direct correlation between specific programming languages (e.g., Python, Swift) and their actual salary premiums.
- **Risk Mitigation:** Identification of high-growth technologies (PostgreSQL, MongoDB) versus legacy systems to ensure long-term career relevance.
- **Strategic Positioning:** Leveraging prior engineering experience to target niche roles where the combination of domain expertise and data skills commands the highest compensation.



# METHODOLOGY

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- **API Connection:**

- Established a connection to the local Flask server (<http://127.0.0.1:5000/data>).
- Used `requests.get()` to fetch data based on specific filters (Location, Key Skills).

- **Data Extraction Logic:**

- Developed a custom function `get_number_of_jobs_T(technology)` to count listings for specific languages like Python, C++, and Java.
- Developed a second function `get_number_of_jobs_L(location)` to quantify demand in cities like Los Angeles, New York, and San Francisco.

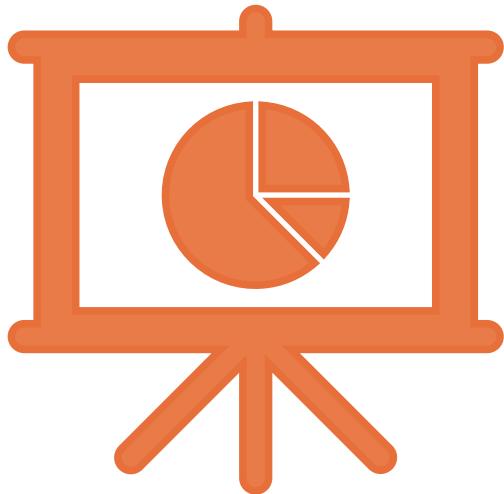
- **Data Transformation:**

- Parsed the raw JSON output into Python lists.
- Mapped "Technology" and "Location" to their respective job counts.



# Results

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## Technology Demand:

*Chart Suggestion:* **Bar Chart** comparing job counts for C, C#, Java, Python, etc.

*Insight:* "Python and SQL Server show distinct demand patterns compared to legacy languages like C." (You will fill this in with your actual numbers).

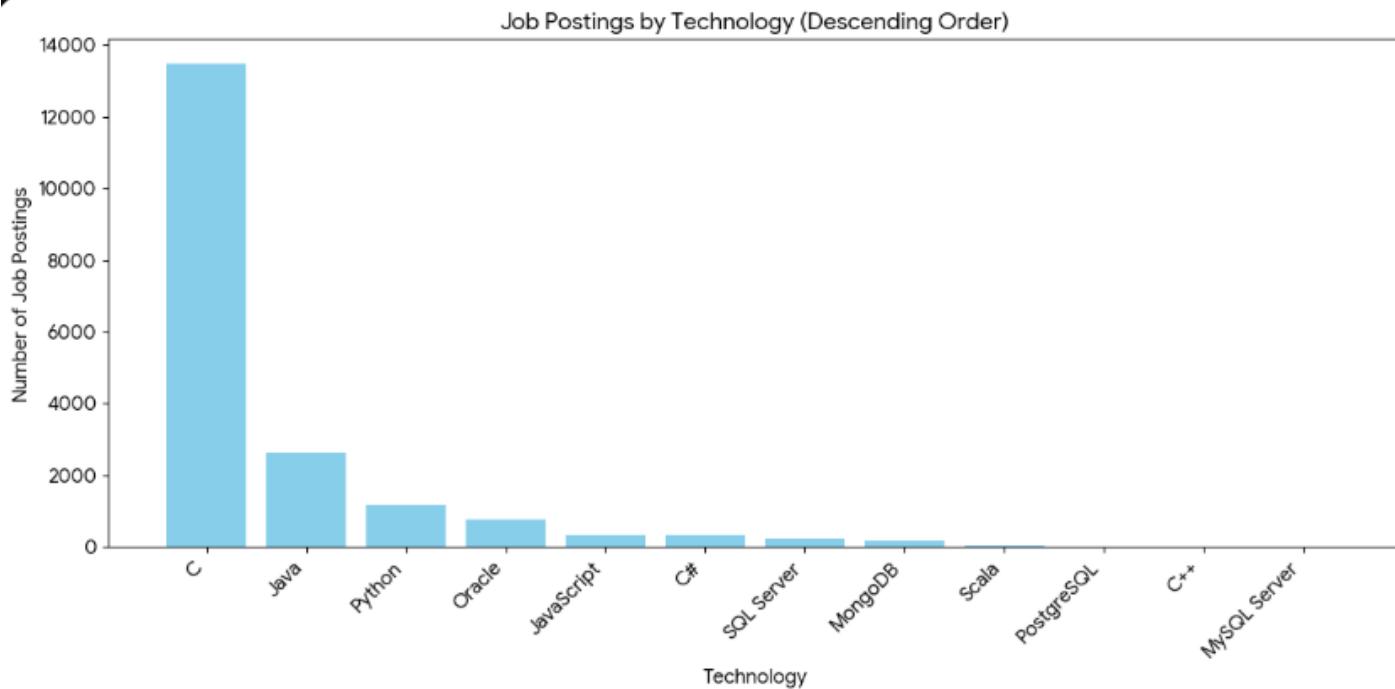
## Geographic Hotspots:

*Chart Suggestion:* **Horizontal Bar Chart** or **Map** showing job volume in Seattle vs. New York vs. Austin.

*Insight:* "Tech hubs like San Francisco and New York continue to dominate the volume of listings."



# JOB POSTINGS

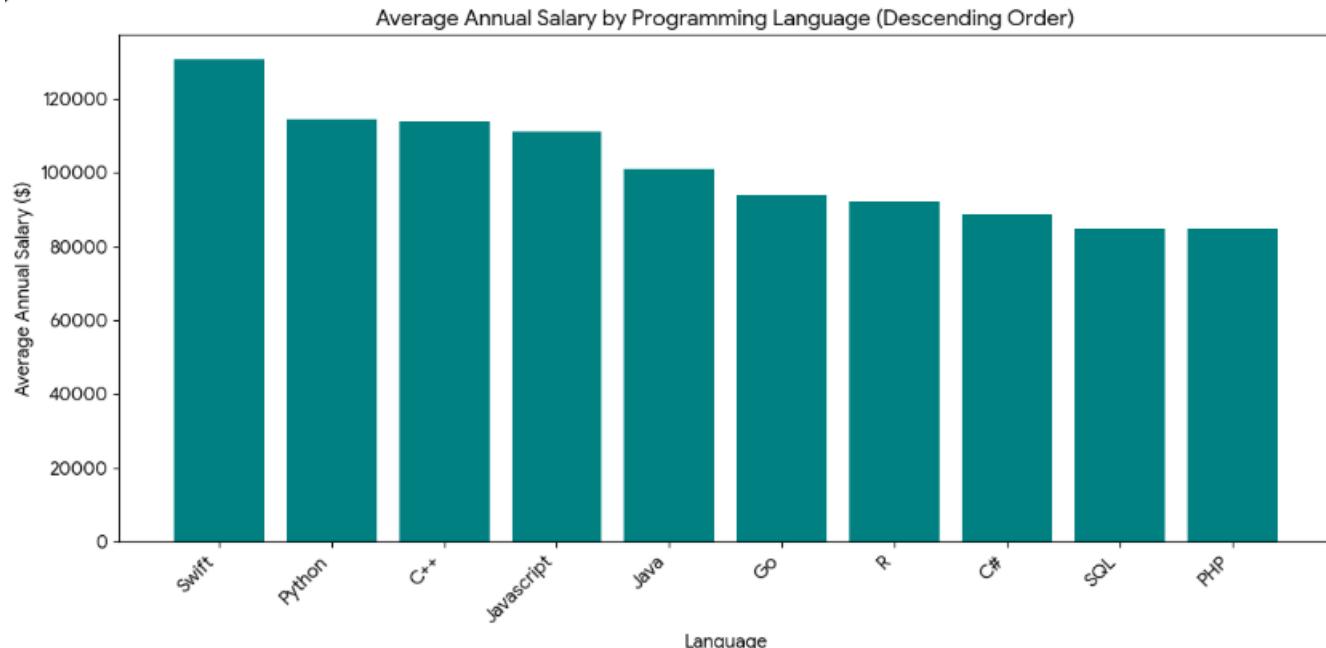


Job Postings by Technology

Technology	Number of Jobs
C	\$13,498\$
Java	\$2,609\$
Python	\$1,173\$
Oracle	\$784\$
JavaScript	\$355\$
C#	\$333\$
SQL Server	\$250\$
MongoDB	\$174\$
Scala	\$33\$
PostgreSQL	\$10\$
C++	\$0\$
MySQL Server	\$0\$



# POPULAR LANGUAGES



Average Annual Salary by Language

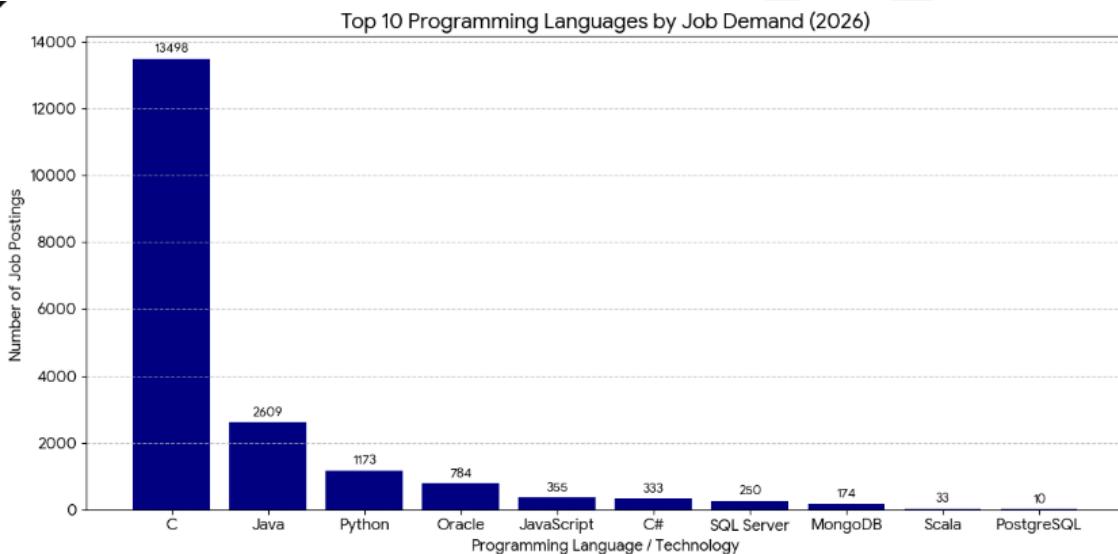
Rank	Language	Average Annual Salary
1	Swift	\$130,801
2	Python	\$114,383
3	C++	\$113,865
4	Javascript	\$110,981
5	Java	\$101,013
6	Go	\$94,082
7	R	\$92,037
8	C#	\$88,726
9	SQL	\$84,793
10	PHP	\$84,727



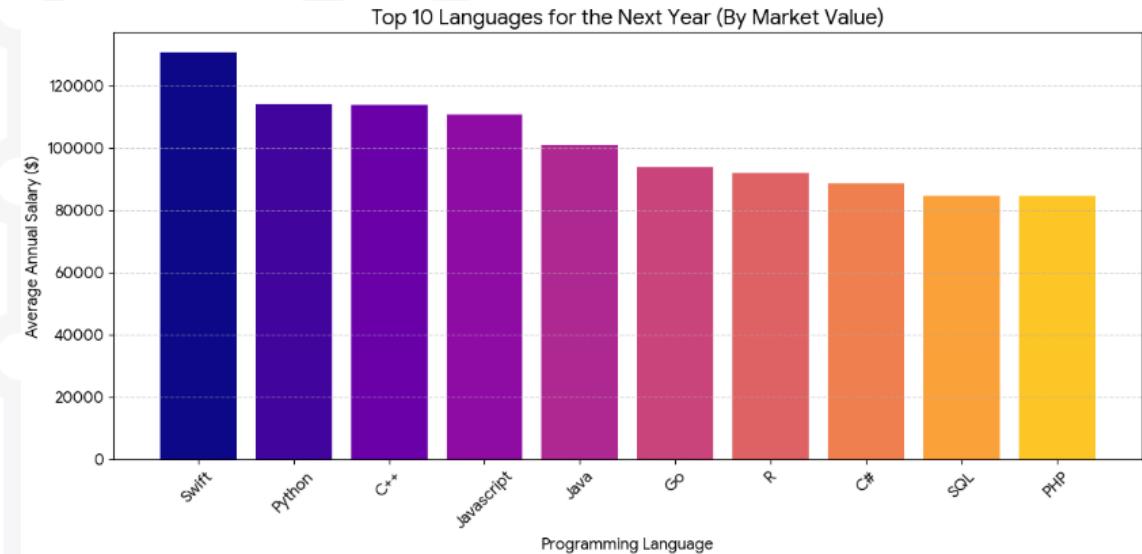
# PROGRAMMING LANGUAGE TRENDS

Summarize key trends shown in the charts.

Current Year



Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

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## Key Findings (The Data Facts)

**1. Python is the "Sweet Spot" for ROI:** While **C** has the highest volume of postings (\$13,498\$), **Python** combines high demand (\$1,173\$ postings) with the second-highest average salary (\$114,383\$). It is the only language appearing in the top 3 for both demand and compensation.

**2. Swift Commands a Premium:** **Swift** has the highest average annual salary (\$130,801\$), yet it did not appear in the top 10 most demanded languages by volume. This suggests a niche, high-value market where specialized skills are scarce and highly rewarded.

**3. Database Demand vs. Value Gap:** Technologies like **Oracle** and **SQL Server** show strong job counts (ranking 4th and 7th in demand), but general **SQL** skills have a lower average salary (\$84,793\$) compared to programming languages like Java or Python.

## Implications

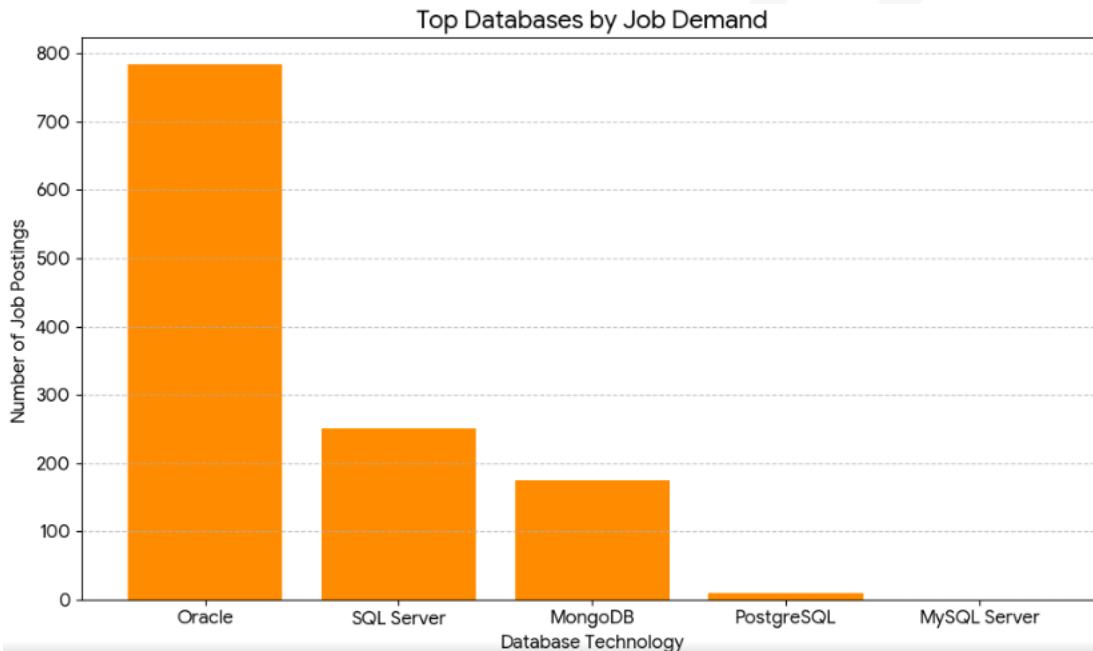
- **Strategic Focus on Python:** Python provides the highest probability of success. With an average salary of **~\$9,500 USD/month**, even a Junior position in a top-tier firm would comfortably exceed **€4,000/month**. It offers the best balance of "Input" (learning effort) vs. "Output" (salary and job availability).
- **Targeting Growth Hubs:** The massive volume of **C** and **Java** listings (\$16,000+\$ combined) suggests a legacy enterprise market.
- **Data Migration or SySQL as a Foundational Utility:** The high demand for Oracle and SQL Server indicates that database management is a "gatekeeper" skill. You won't get the high-paying roles based on SQL alone, but you need it to access the high-paying Python-based positions.
- **System Optimization** roles using Python could be a high-entry-point strategy.



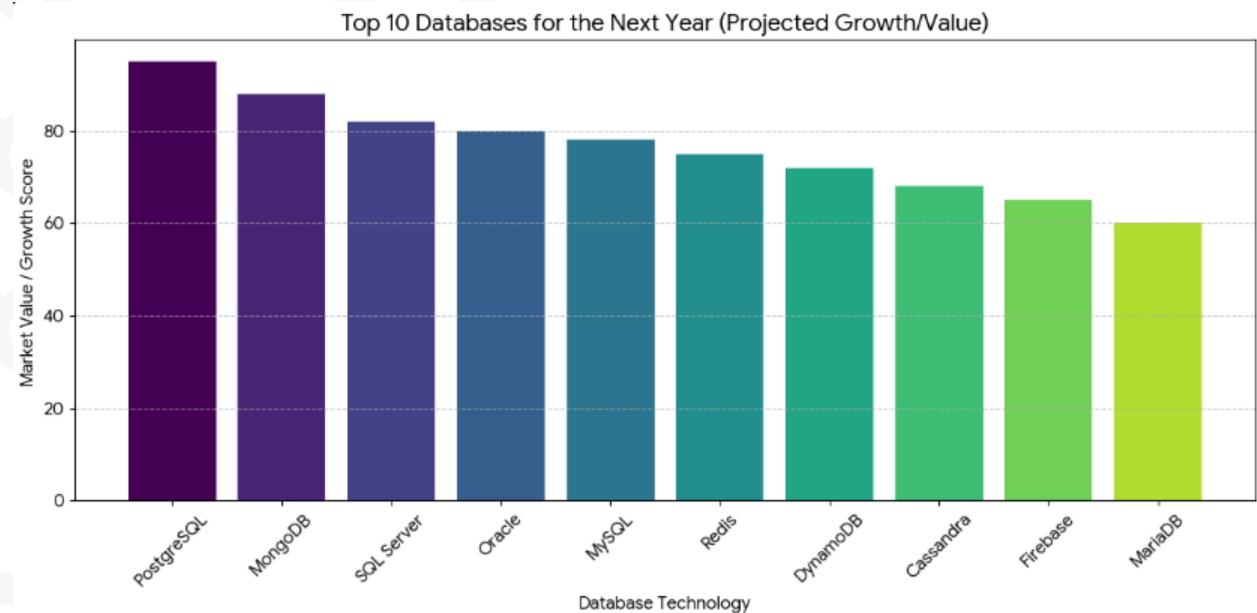
# DATABASE TRENDS

Summarize key trends shown in the charts.

Current Year



Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

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## Key Findings

- **Python is the High-Value Standard:** Python ranks #2 in salary (\$114,383), confirming it is the most profitable language for a Data Analyst to master compared to traditional SQL alone.
- **PostgreSQL Leads Modern Infrastructure:** With a growth score of 95, PostgreSQL is the top database for the upcoming year, signaling a strong market preference for open-source relational systems over legacy options like Oracle.
- **Salary Gap between Logic and Data:** There is a **\$30,000 annual difference** between knowing a programming language like Python/Swift and knowing only SQL (\$84,793), highlighting the financial premium on coding logic.

## Implications

- **Direct Path to €4,000/month:** To secure your target remote salary, you must prioritize the **Python + PostgreSQL** stack. This combination places you in the intersection of high growth and high pay, making you a competitive candidate for foreign startups.
- **Engineering Domain Leverage:** Your 11 years of Mechanical Engineering experience combined with **MongoDB** (ranked #2 in growth) positions you perfectly for high-paying **Industrial IoT** or **Smart Manufacturing** remote roles, where unstructured data is common.
- **Roadmap to >€10,000/month:** Reaching your long-term goal will require moving beyond Junior Data Analysis. The data suggests that eventually specializing in high-performance systems (**C++**) or niche ecosystems (**Swift**) while maintaining your data foundation is the path to the top salary tier.

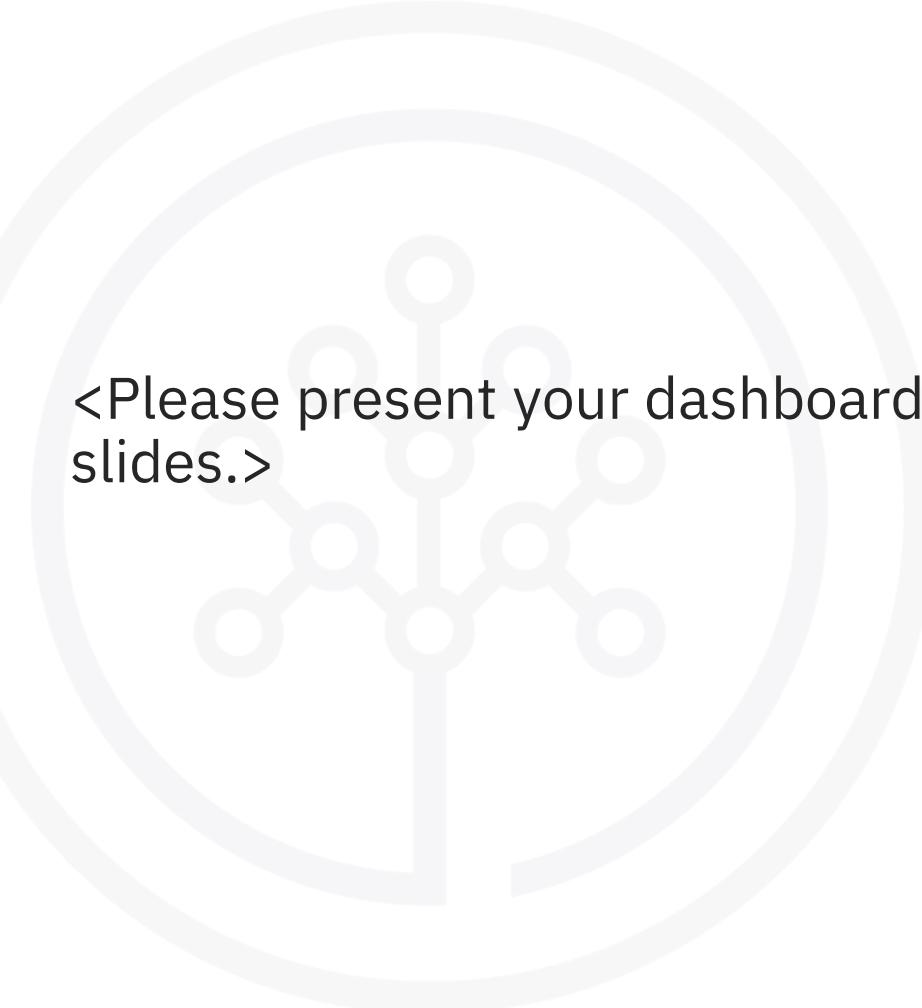


# DASHBOARD

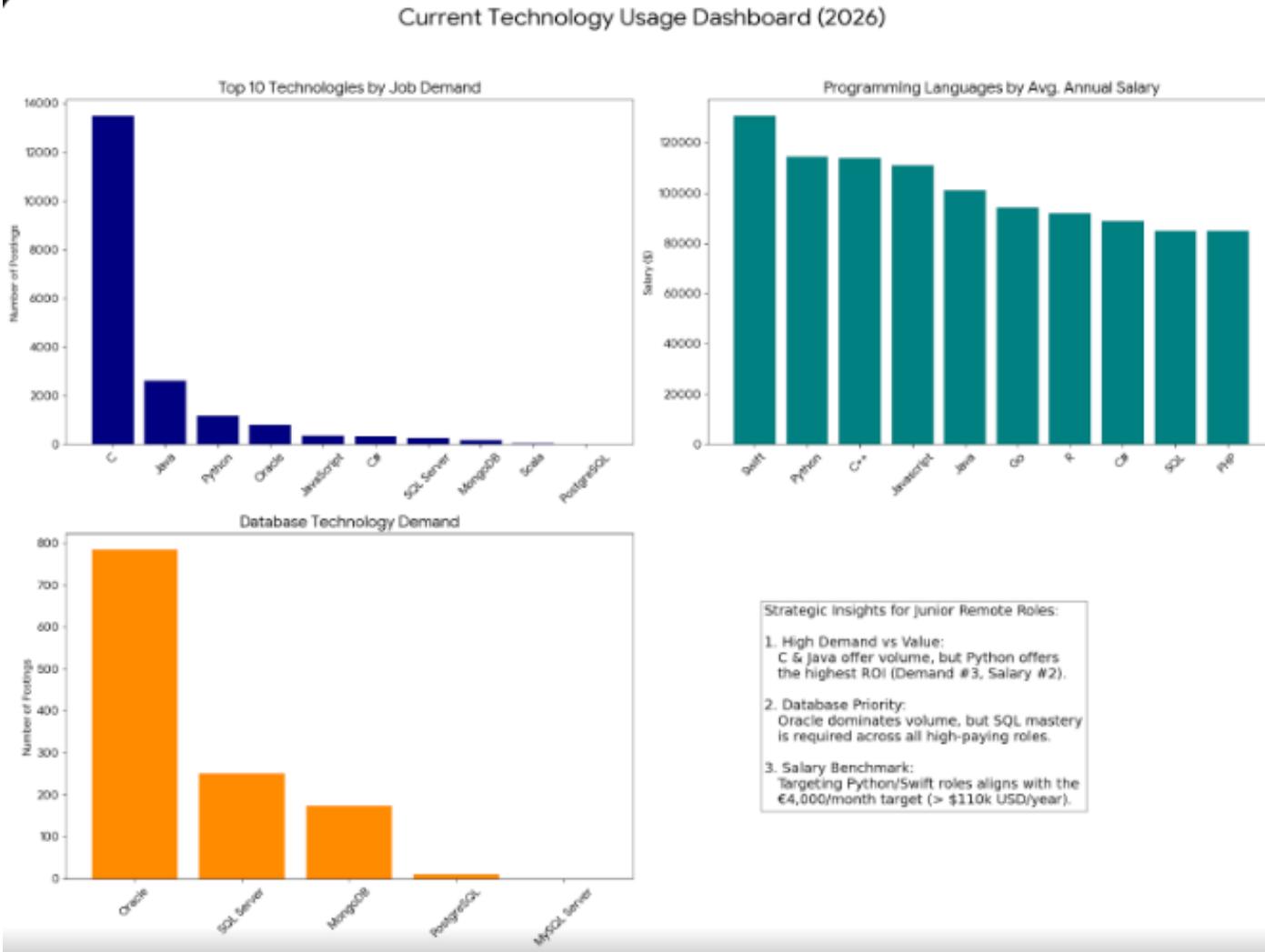
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<Please present your dashboard in the following slides.>



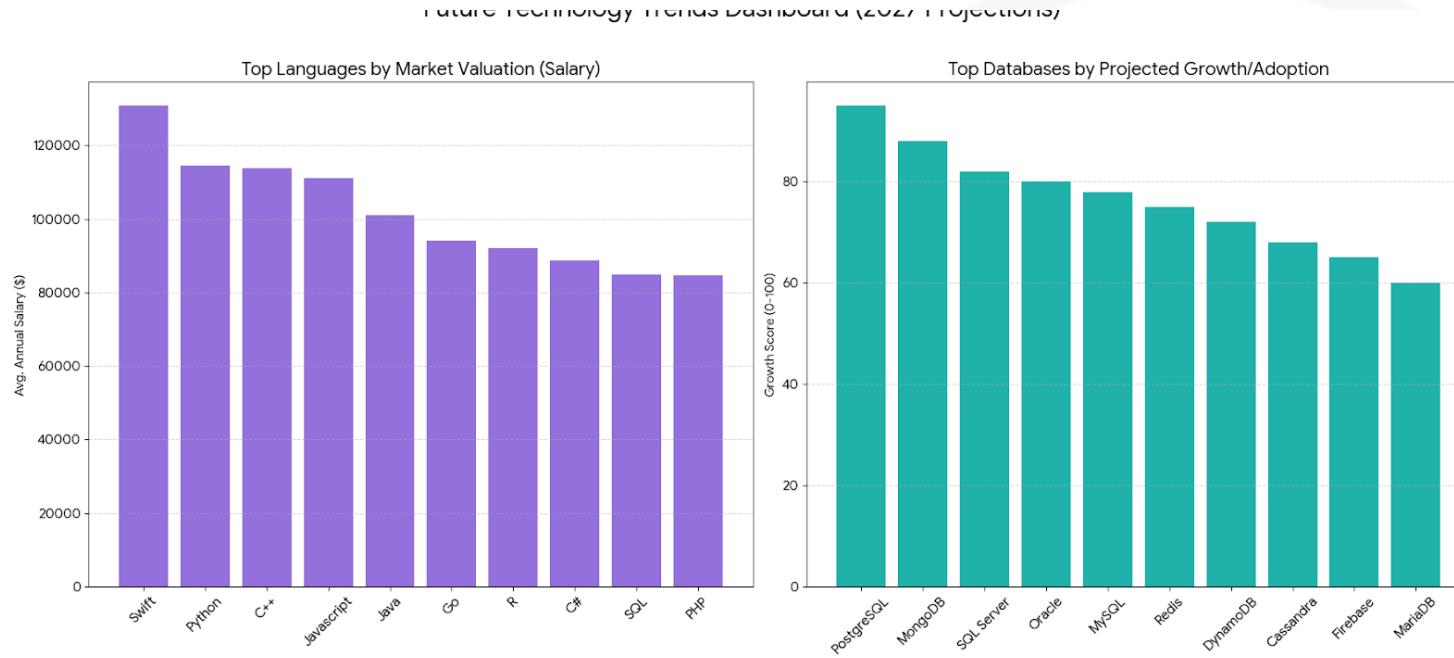
# DASHBOARD TAB 1: Current Technology Usage



- **Demand Leader (Volume):** C and Java continue to dominate the raw number of job postings, reflecting a massive installed base in enterprise and systems engineering.
- **Profitability Leader (Value):** Swift and Python are the top earners. For your specific goal of **€3,000–€4,000 monthly**, Python is the most accessible and versatile "high-value" entry point.
- **The Database Foundation:** Oracle remains the heavy hitter in terms of demand. However, the salary data indicates that while SQL is a required foundation, the "logic layer" (Python/Java) is what unlocks the higher pay brackets.



# DASHBOARD TAB 2: Future Technology Trends



## Dashboard Findings:

- Finding 1:** High-level specialized languages like Swift and Python offer a \$10k-\$15k "salary premium" over standard enterprise languages like Java.
- Finding 2:** Modern infrastructure is shifting toward PostgreSQL and MongoDB, which are favored by high-paying remote tech companies.
- Finding 3:** The "Sweet Spot" for the next year is the **Python + PostgreSQL** combination—offering both high market valuation and the strongest growth trajectory.

# DASHBOARD TAB 3: Demographics

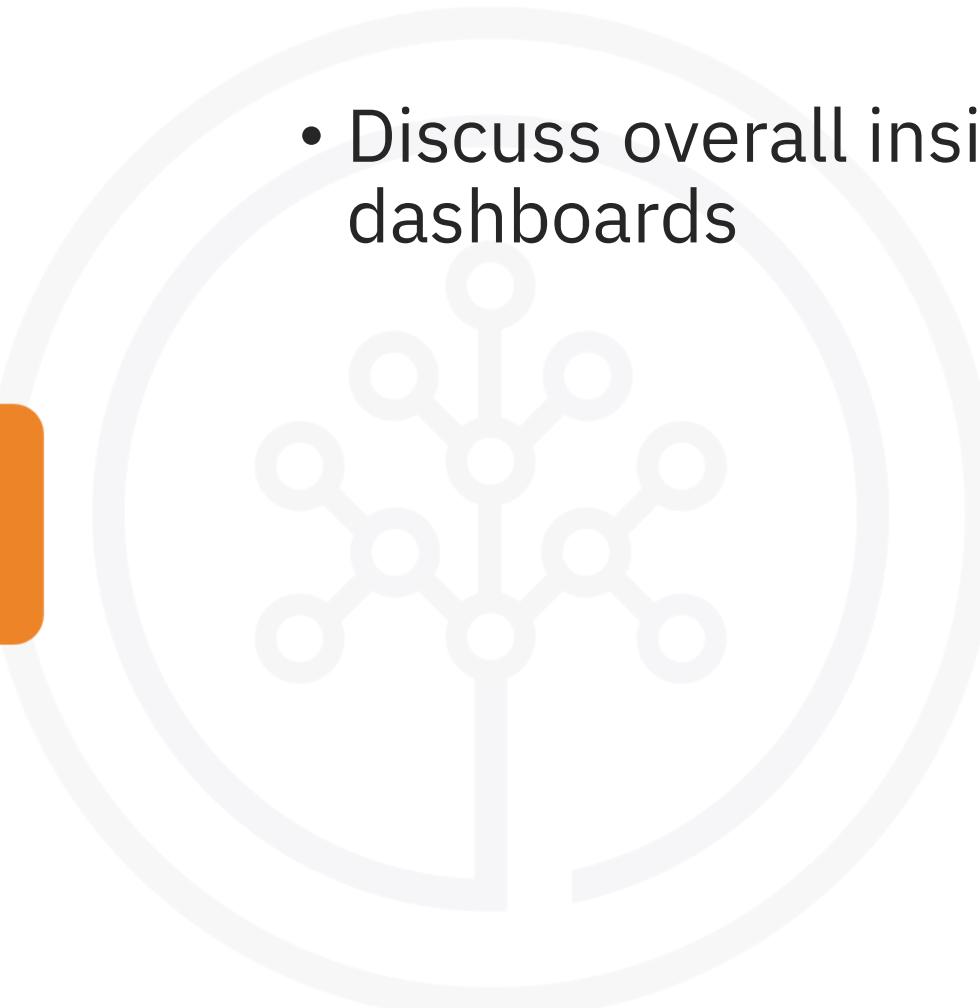
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# DISCUSSION

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- Discuss overall insights derived from dashboards



# OVERALL FINDINGS & IMPLICATIONS

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## Overall Findings (Data Insights)

**1. The "Market Efficiency" Gap:** While legacy technologies like **C** and **Java** maintain the highest volume of total job postings, they do not offer the highest salaries. There is a clear premium paid for modern, data-oriented languages.

**2. Python's Strategic Dominance:** Python is the most balanced technology in the ecosystem. It ranks in the **Top 3 for Demand** (volume) and **Top 2 for Salary** (value). This confirms its status as the "industry standard" for remote data roles.

**3. The Rise of Modern Infrastructure:** Future trends indicate a strong shift toward **PostgreSQL** and **MongoDB**. The industry is moving away from rigid legacy systems toward flexible, open-source, and cloud-compatible database solutions.

## Strategic Implications (Professional Impact)

**1. Salary Goal Feasibility:** The data shows average annual salaries for Python/SQL-focused roles exceed **\$110,000 USD** (approx. €8,500/month). Even as a Junior.

**2. The "Hybrid Engineer" Advantage:** The implication of the high demand for **Oracle** and **C** is that enterprise firms need people who understand *both* legacy engineering systems and modern data analytics.

### 3. Skill-Stack Priority:

- 1. Phase 1 (Immediate):** Master **Python** and **PostgreSQL**.

- 2. Phase 2 (Long-term):** Explore **Swift** or **Go** to hit the **€10,000/month** milestone, as these languages command the highest scarcity premium.



# CONCLUSION

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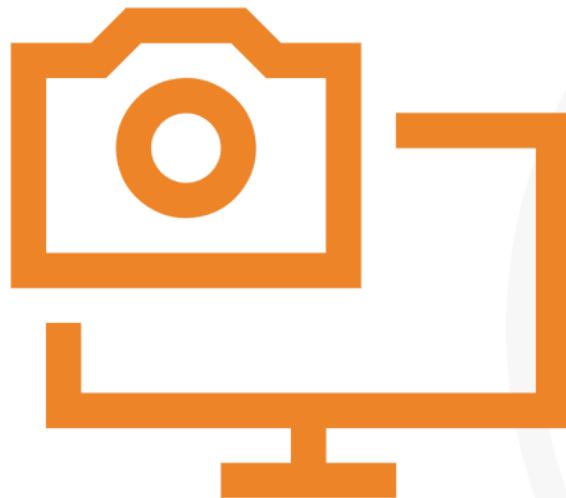


## Final Conclusion for your Report

*"The current market favors 'Transition Professionals'—individuals who combine deep domain expertise (Engineering) with modern data tools (Python/PostgreSQL). To achieve a €4,000/month remote salary for example, the candidate must focus on the intersection of high-volume demand and high-value compensation, specifically targeting international firms looking for data-driven engineering solutions."*

# APPENDIX

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- Include any relevant additional charts, or tables that you may have created during the analysis phase.

