

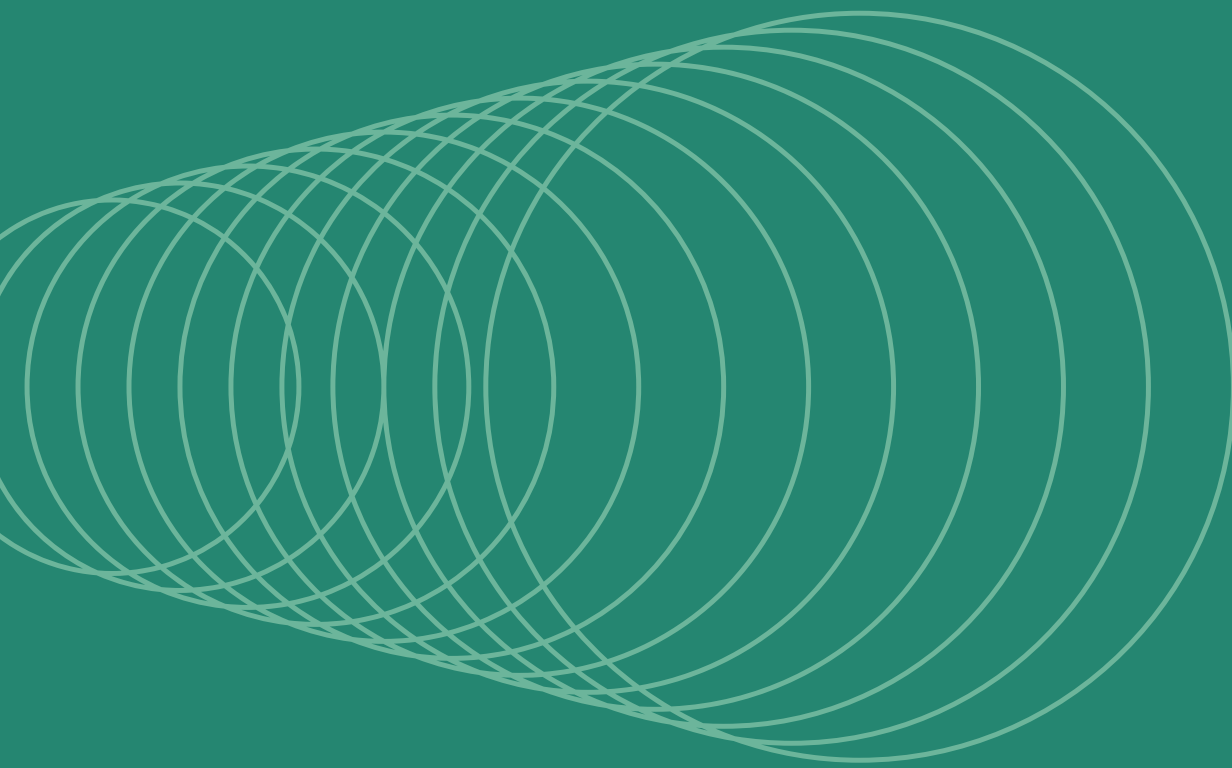
A decorative graphic on the left side of the slide, consisting of a dense, overlapping pattern of thin, light green lines that form a complex, organic shape resembling a stylized leaf or a cluster of branches.

Stack Overflow Developer Trends Case Study

Analyzing Global Developer Preferences on Languages,
Databases & Work Modes

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Problem Statement



In today's rapidly evolving technology landscape, understanding developer preferences is critical for companies, educators, and job seekers. With thousands of developers participating in the annual Stack Overflow Developer Survey, there is a rich opportunity to uncover what technologies developers currently use, which ones they aspire to learn, and how their choices are influenced by work environments, experience levels, and geography.

Organizations, educators, and job seekers need insight into:

- Which programming languages and databases are most used
- What technologies developers want to learn next

Dataset Overview

Source

Source: Stack Overflow Developer Survey 2023 (or 2024).

Key Fields Used:

- LanguageHaveWorkedWith
- LanguageWantToWorkWith
- DatabaseHaveWorkedWith
- DatabaseWantToWorkWith

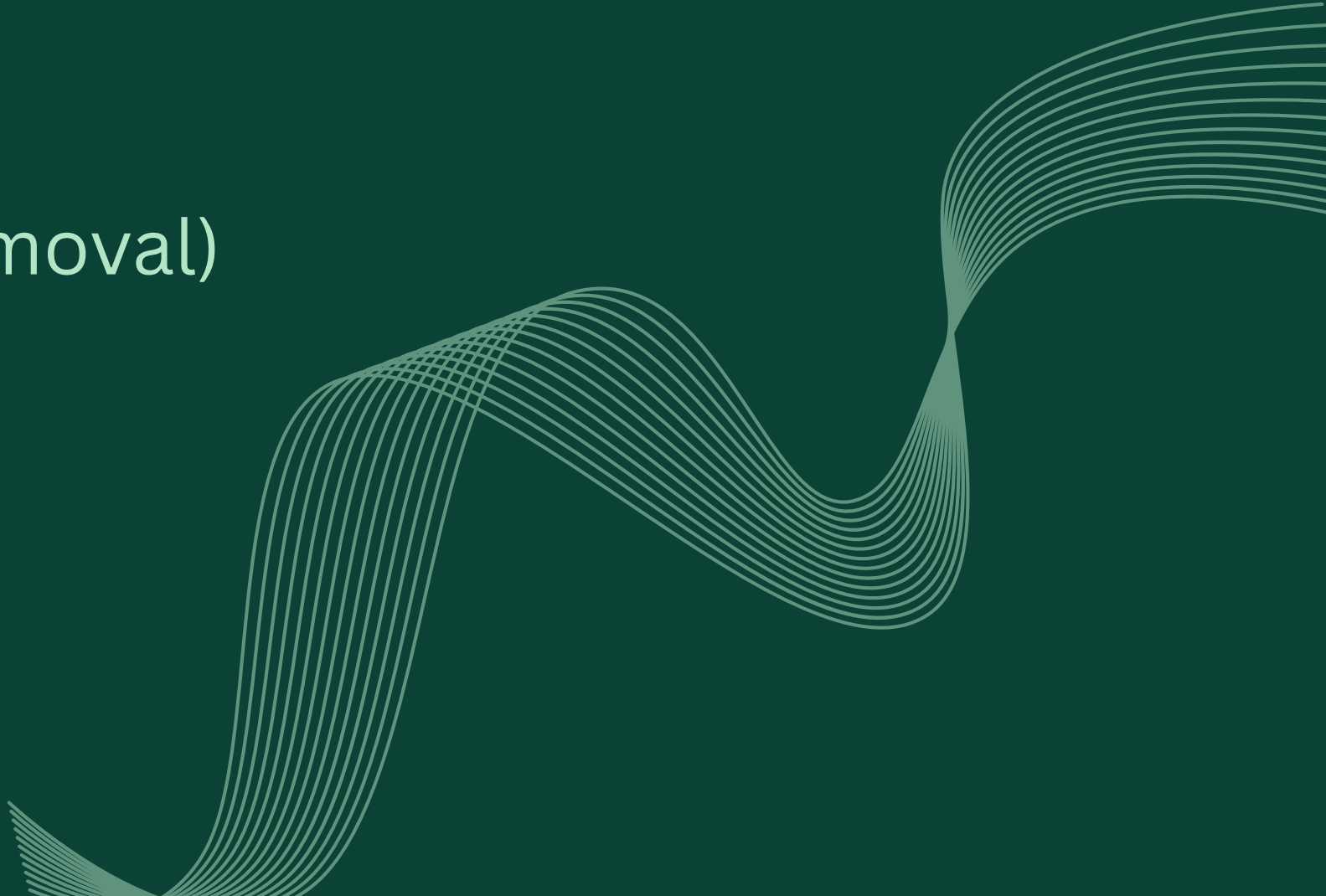
RespondentID	MainBranch	Age	Employment
1	I am a developer by profession	Under 18 years old	Employed, full-time
2	I am a developer by profession	35-44 years old	Employed, full-time
3	I am a developer by profession	45-54 years old	Employed, full-time
4	I am learning to code	18-24 years old	Student, full-time
5	I am a developer by profession	18-24 years old	Student, full-time
6	I code primarily as a hobby	Under 18 years old	Student, full-time
7	I am not primarily a developer, but I write code sometimes as part of my work/studies	35-44 years old	Employed, full-time
8	I am learning to code	18-24 years old	Student, full-time;Not employed, but looking for work
9	I code primarily as a hobby	45-54 years old	Employed, full-time
10	I am a developer by profession	35-44 years old	Independent contractor, freelancer, or self-employed
11	I used to be a developer by profession, but no longer am	35-44 years old	Employed, full-time
12	I am a developer by profession	45-54 years old	Employed, full-time
13	I am a developer by profession	35-44 years old	Employed, full-time
14	I used to be a developer by profession, but no longer am	35-44 years old	Not employed, and not looking for work
15	I am a developer by profession	25-34 years old	Employed, full-time
16	I am a developer by profession	45-54 years old	Employed, full-time
17	I code primarily as a hobby	Under 18 years old	Student, full-time
18	I am a developer by profession	18-24 years old	Independent contractor, freelancer, or self-employed
19	I am a developer by profession	25-34 years old	Employed, full-time
20	I am a developer by profession	35-44 years old	Employed, full-time
21	I am not primarily a developer, but I write code sometimes as part of my work/studies	25-34 years old	Employed, full-time
22	I am a developer by profession	35-44 years old	Employed, full-time
23	I am a developer by profession	45-54 years old	Employed, full-time
24	I am a developer by profession	55-64 years old	Employed, full-time
25	I am a developer by profession	35-44 years old	Employed, full-time;Student, part-time
26	I am a developer by profession	45-54 years old	Employed, full-time
27	I am a developer by profession	35-44 years old	Employed, full-time
28	I am a developer by profession	25-34 years old	Employed, full-time;Independent contractor, freelancer, or self-employed
29	I am a developer by profession	25-34 years old	Independent contractor, freelancer, or self-employed

Tools & Methodology

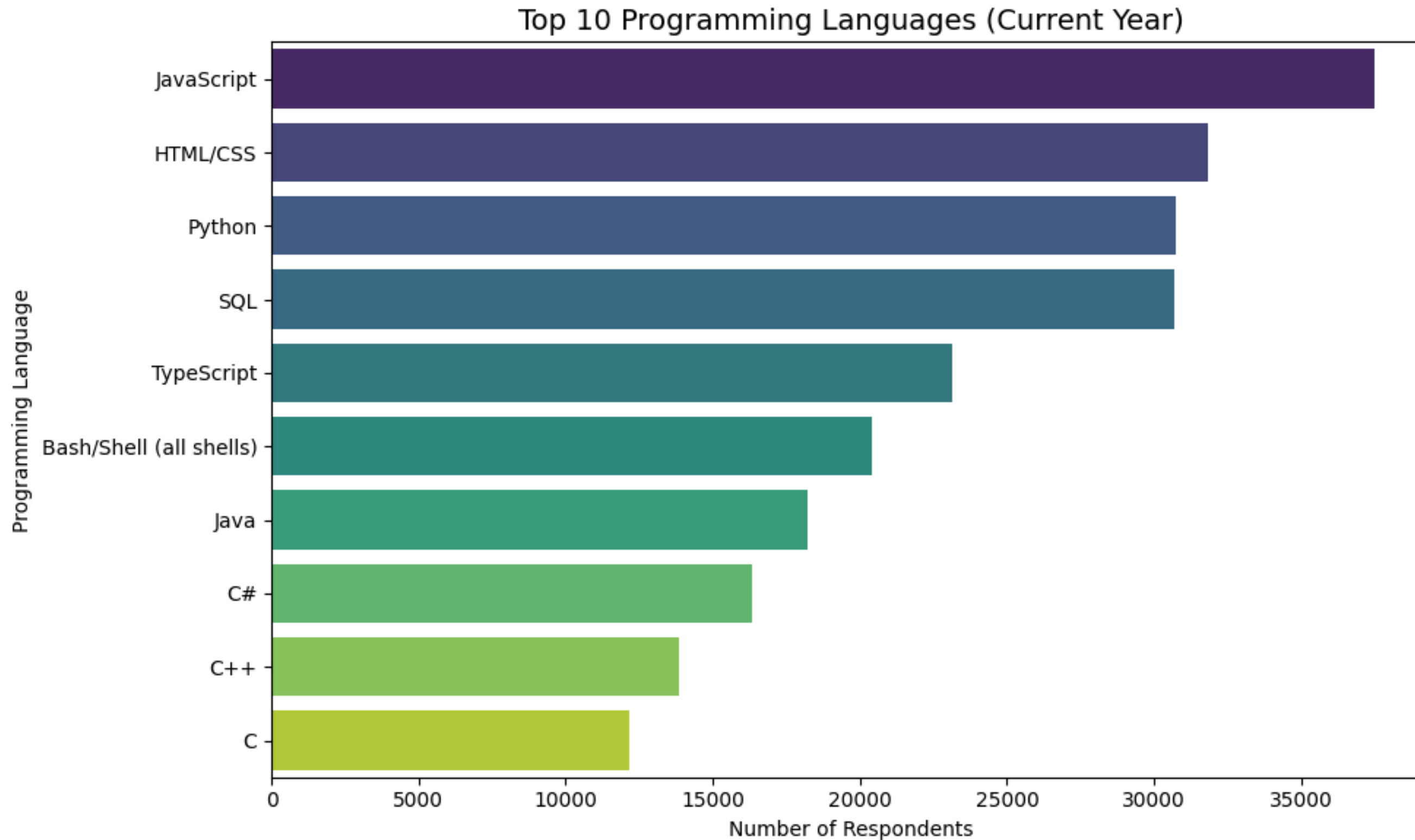
TOOLS USED

Python (Pandas, Seaborn, Matplotlib), Power BI

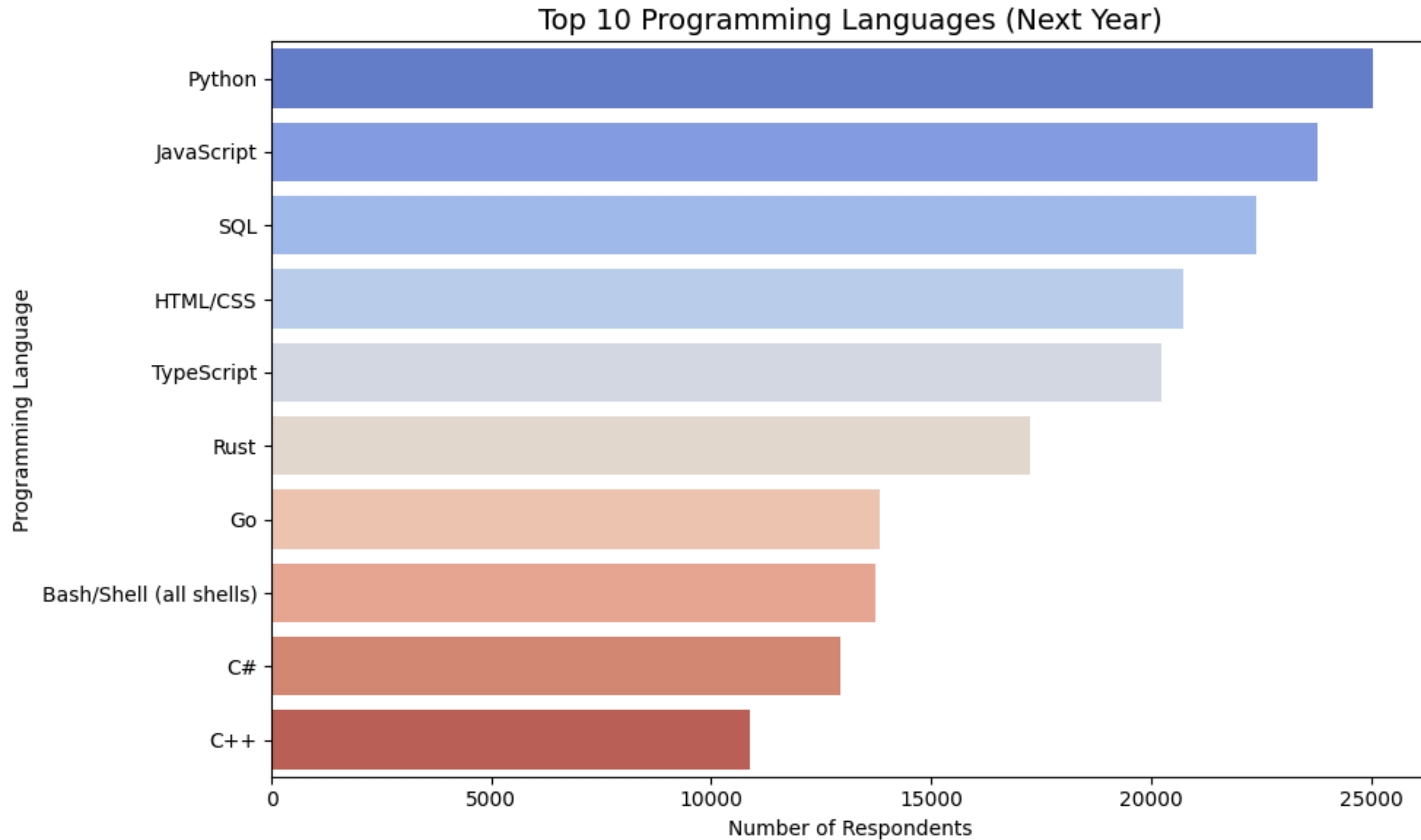
Steps:

- Data Cleaning (multi-select splits, null removal)
 - Grouping & filtering
 - Visualization & Insight extraction
 - Dashboard creation
- 
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Top 5 Programming Languages



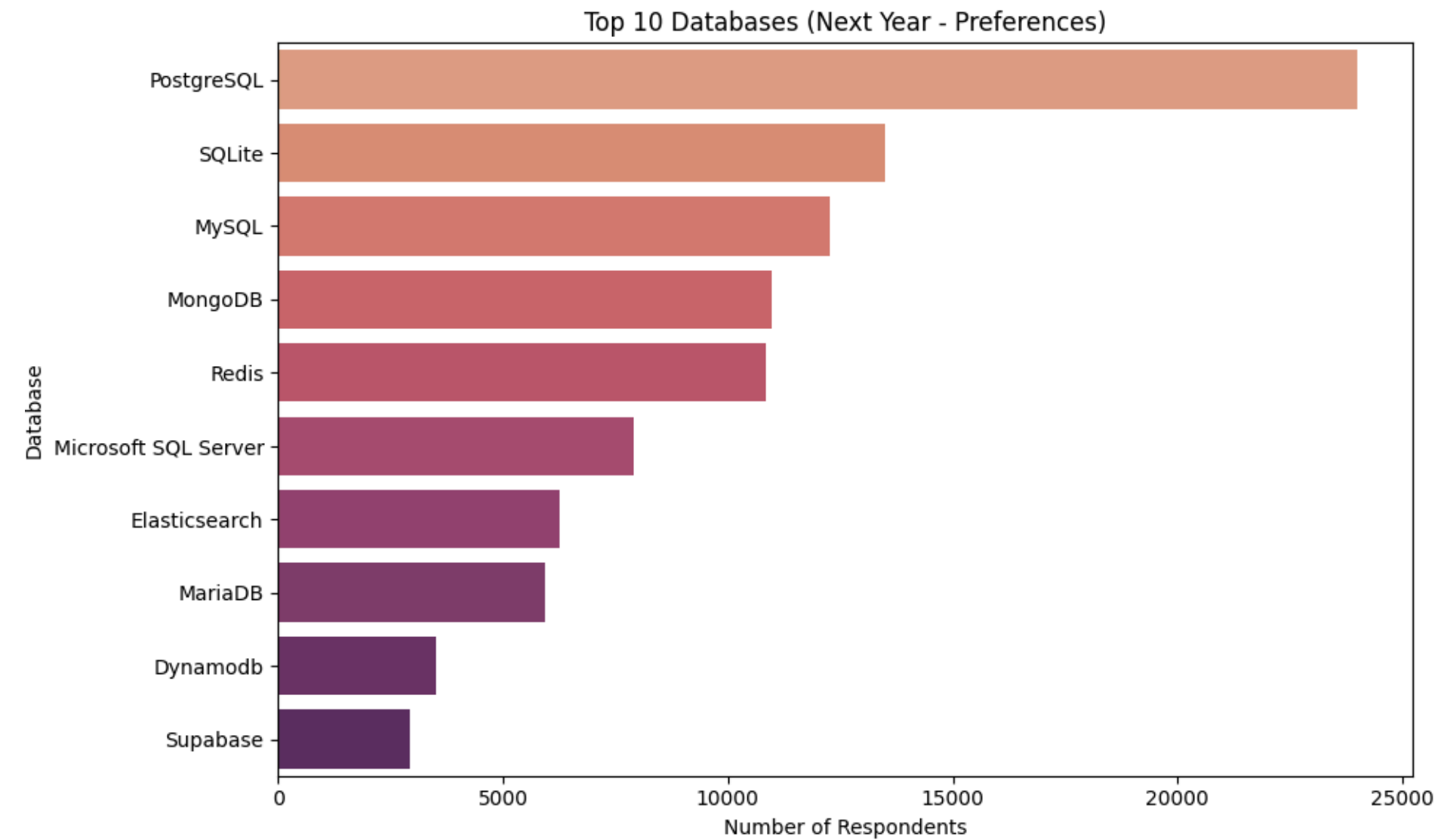
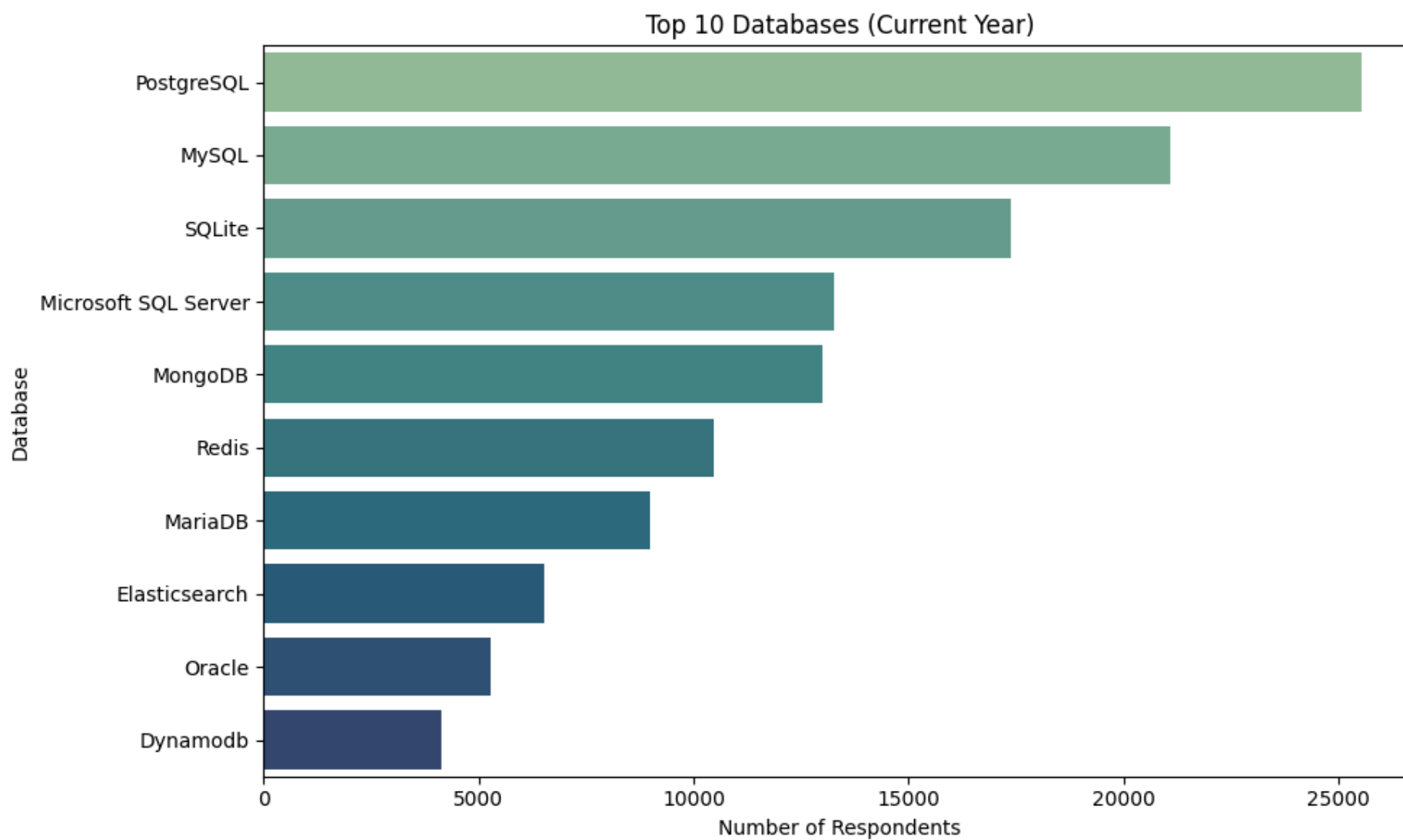
Future Language Interests



Programming Language Trends – Key Insight

Rank	Most Used (Current Year)	Most Wanted (Next Year)	Key Insight
1	JavaScript	Python	Python is gaining future momentum and surpasses JavaScript in interest
2	HTML/CSS	JavaScript	JavaScript stays highly relevant in both present and future
3	Python	SQL	SQL continues to be critical for data-related work
4	SQL	HTML/CSS	Web dev skills like HTML/CSS remain core for most developers
5	C#	Bash/Shell	Bash still useful, but less focus for future learning
6	C++	C#	C# remains stable; still in demand, though not rising
7	C	C++	C and C++ are declining in future appeal compared to newer languages

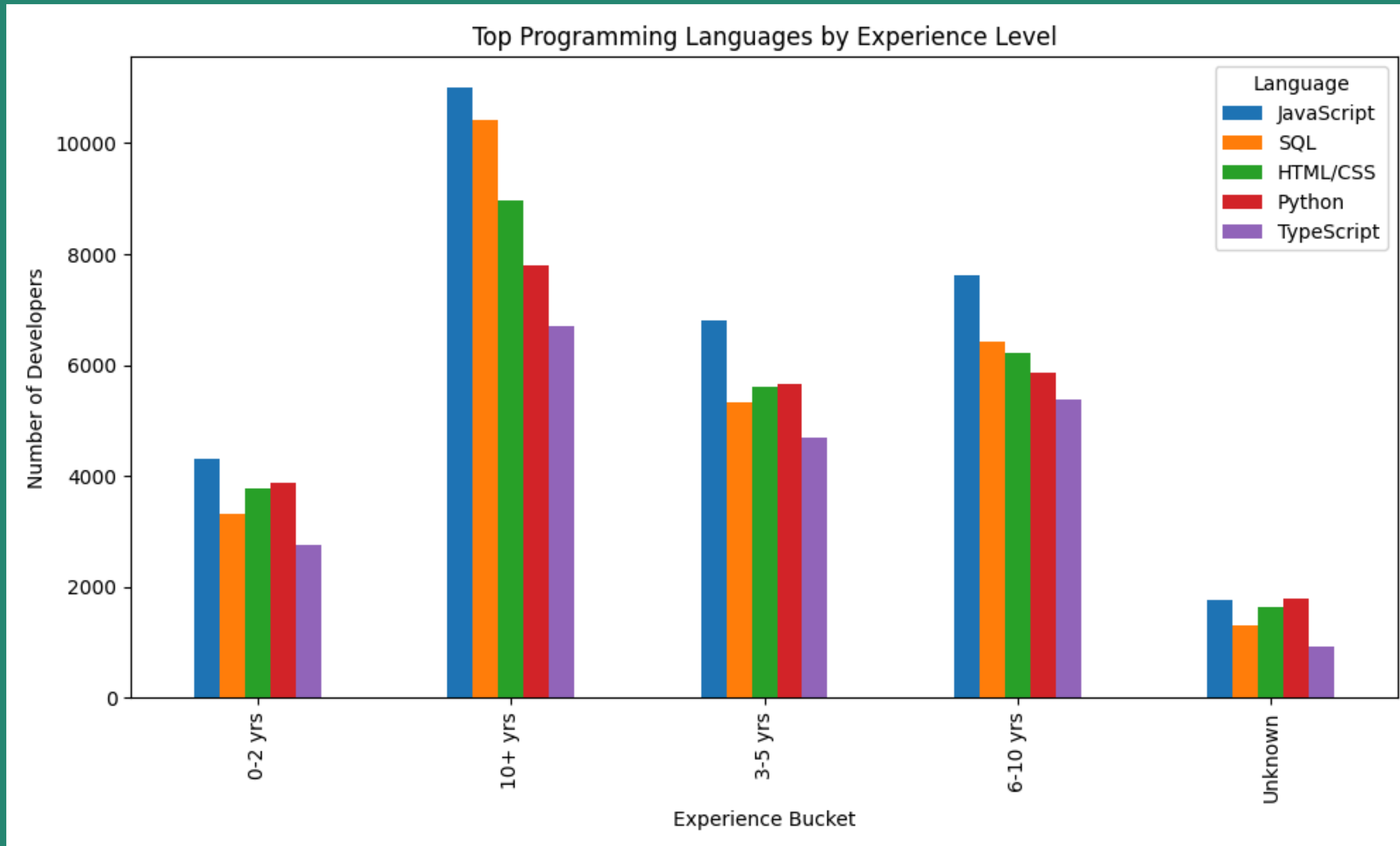
Top 5 Databases Used & Wanted



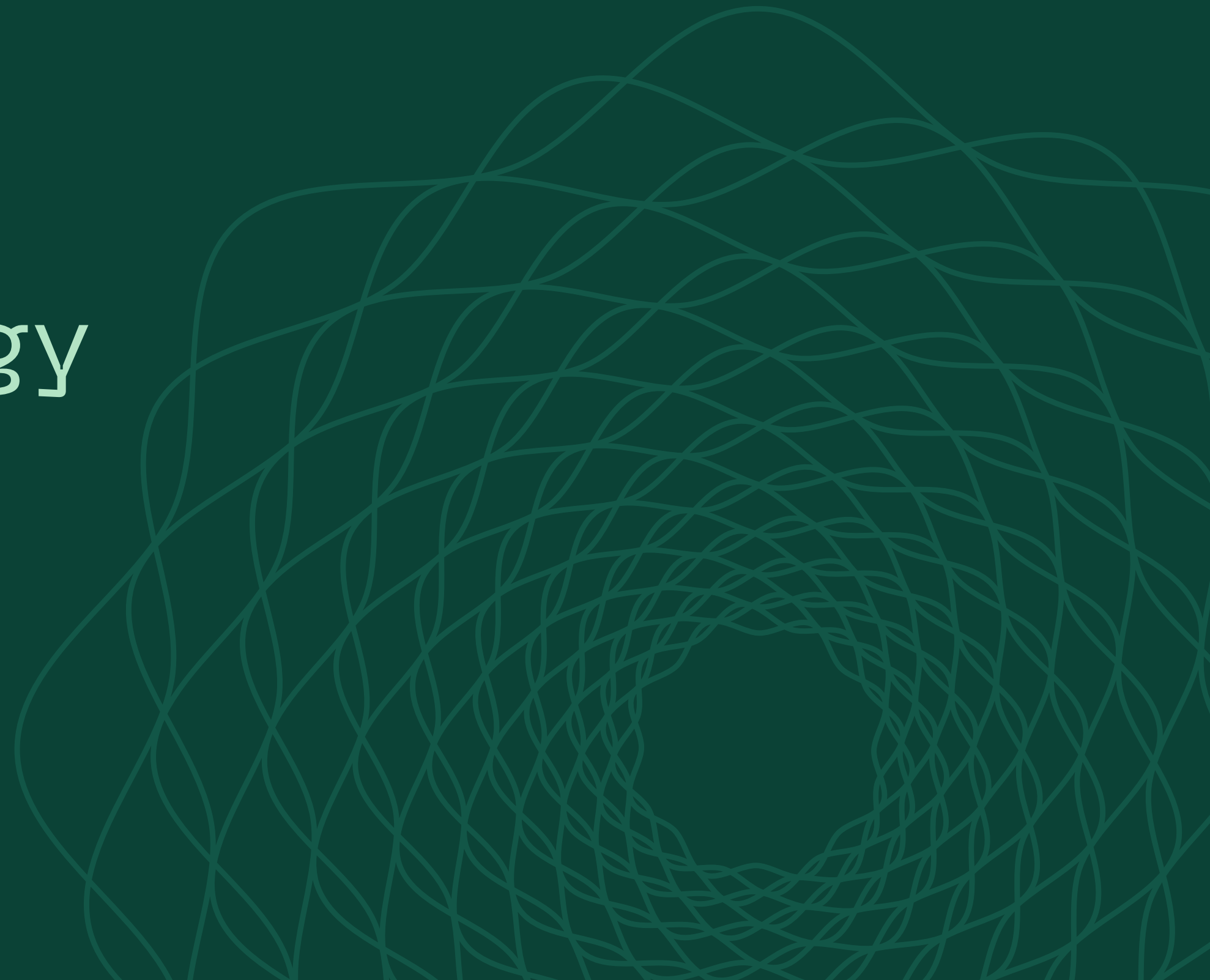
Database Trends – Key Insight

Rank	Most Used (Current Year)	Most Preferred (Next Year)	Key Insight
1	PostgreSQL	PostgreSQL	PostgreSQL is the top choice now and in future – solidifying its popularity
2	MySQL	SQLite	SQLite climbs to 2nd in future preference – lightweight, easy adoption
3	SQLite	MySQL	MySQL still widely used, but slightly less preferred for the future
4	Microsoft SQL Server	MongoDB	MongoDB rising in future interest – popular for flexible NoSQL use
5	MongoDB	Redis	Redis is gaining popularity for high-speed, in-memory use cases
6	Oracle	DynamoDB	DynamoDB demand rising – likely due to AWS/cloud-native usage
7	DynamoDB	Supabase	Supabase enters top 10 future interest – strong open-source Postgres backend

Top Programming Languages by Experience Level



Impact on Hiring, Learning & Strategy



Implications of Programming Language Trends

1. For Employers & Tech Teams:

- Popular languages like Python and JavaScript are essential to retain and attract talent.
- Increasing interest in Go and Rust suggests a shift toward performance-focused, scalable back-end systems.
- Tech teams may need to consider upskilling programs to support internal transitions to modern stacks.

2. For Educators & Course Creators:

- Curriculum updates should reflect both current usage (SQL, Python) and future interests (Go, Rust, TypeScript).
- There's a clear demand for multi-paradigm skills, so offering full-stack or systems-focused training is valuable.

3. For Career Planning / Job Seekers:

- Learning widely-used languages ensures job availability.
- Exploring trending languages (e.g., Rust, TypeScript) can offer a competitive edge in future-ready roles.

Implications of Database Trends

1. For Organizations & DevOps Teams:

- PostgreSQL's popularity in both current use and future interest suggests it's becoming the industry standard for relational databases.
- High interest in MongoDB and Redis points toward a growing demand for NoSQL and in-memory solutions for scalable and real-time applications.

2. For Technical Decision-Makers:

- Choosing the right mix of databases (e.g., PostgreSQL + Redis) can help future-proof products while aligning with developer familiarity.
- Investment in PostgreSQL training or migration may yield long-term ROI in performance, scalability, and hiring ease.

3. For Learners:

- MySQL remains foundational but PostgreSQL is more modern and powerful — ideal to learn for long-term relevance.
- Exploring MongoDB can unlock specialized roles in analytics, IoT, or real-time web apps.

Thank YOU

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Vivacious-s

