Gartner Peer Community™

Generative AI for Synthetic Data

Generative AI is currently in the spotlight with the release of ChatGPT, but it has already been making significant contributions to data and analytics (D&A) through synthetic data. This solution can help fill gaps in real-world data sources and even improve model outcomes. How are data and analytics professionals currently using synthetic data and what challenges do they face?

One-Minute Insights:

- Organizations adopt AI-generated synthetic data because of challenges with real-world data accessibility, complexity and availability
- Partially synthetic data is the most common approach and text-based is the most-used type of synthetic data
- Leaders have seen improvements in model accuracy and efficiency as a result of synthetic data
- Most challenges with synthetic data are inherited from limited, poor quality or biased real-world source data
- To ensure synthetic data quality, most leaders have implemented best practices like using multiple data sources and synthetic dataset validation

One-Minute Insights on timely topics are available to Gartner Peer Community members. Sign up for access to over 100 more, and new insights each week.

Data collection: Apr 1 - 14, 2023

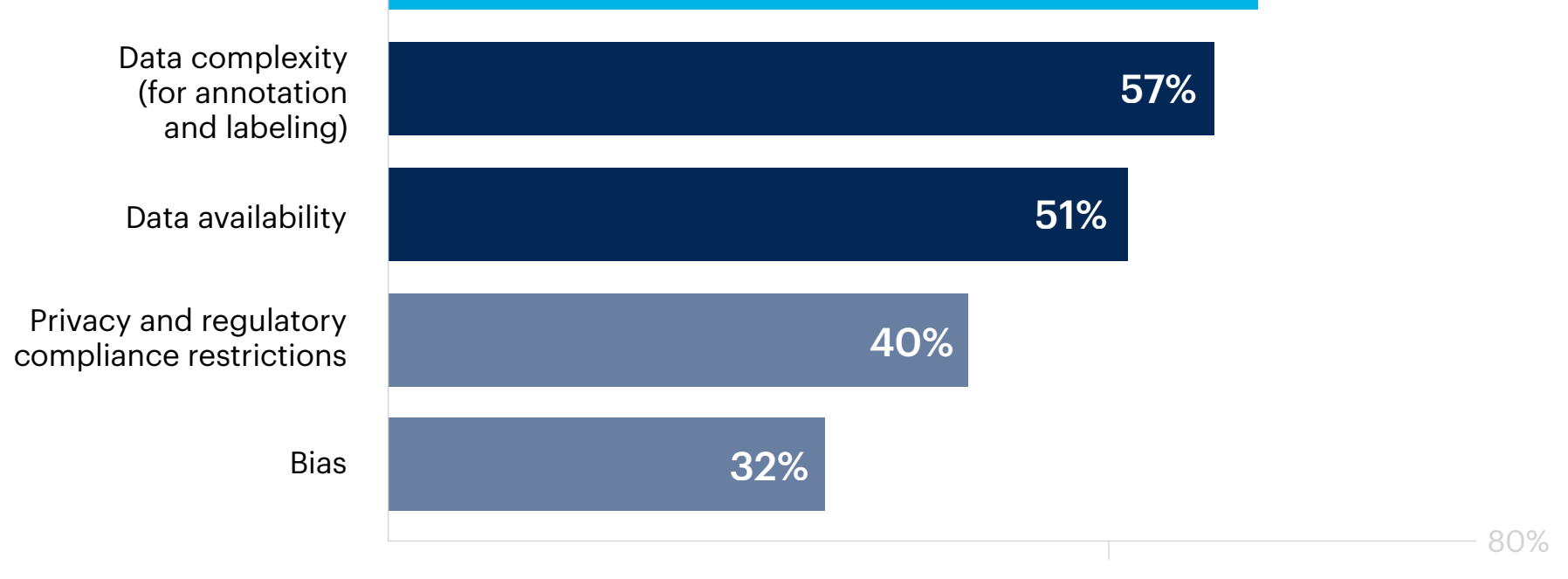
Respondents: 150 IT and D&A leaders who work with or oversee groups that work with AI-generated synthetic data at their organization

Challenges with real-world data accessibility, complexity and availability have led organizations to adopt AI-generated synthetic data

Most IT and D&A leaders surveyed say their organization adopted AI-generated synthetic data because of **challenges with real-world data accessibility (60%)**, **complexity (57%)**, or **availability (51%)**.

3% of respondents say their organization **did not face any challenges with real-world data**.

Which challenges has your organization faced with real-world data that led to adopting AI-generated synthetic data? Select all that apply.



Unbalanced data **31%** | We haven't faced any challenges with real-world data **3%** | Other **0%**

n = 150

Thoughts on using and creating AI-generated synthetic data

> "Models have to be continuously trained and synthetic data is helping us very much."
>
> - C-suite, professional services industry, <1,000 employees

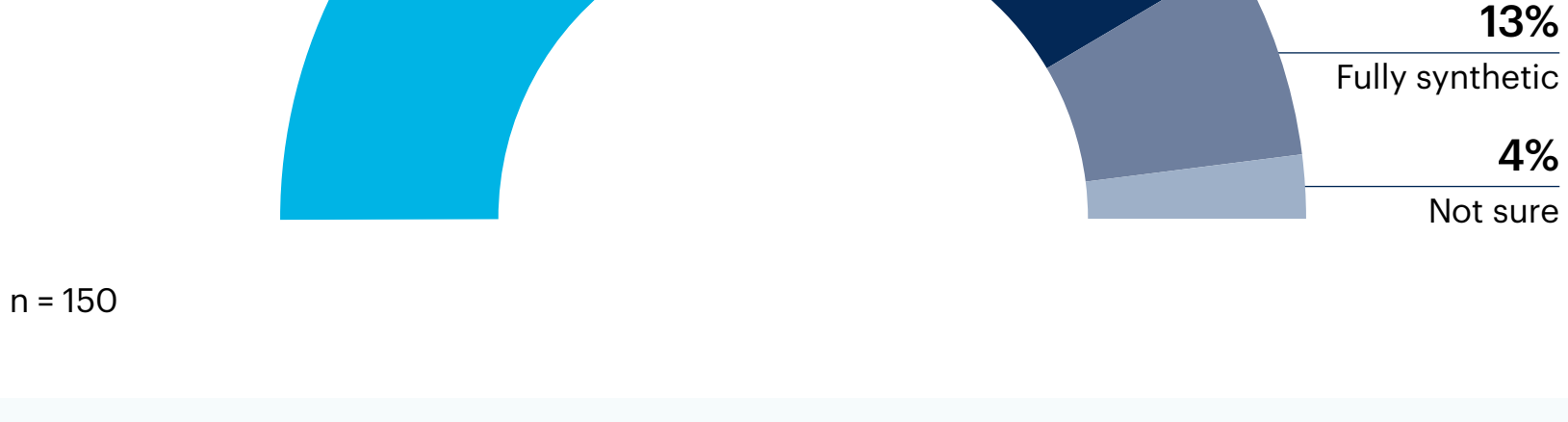
> "This is one area where AI can really help."
>
> - VP, consumer goods industry, 10,000+ employees

Question: Do you have any final thoughts to share on AI-generated synthetic data?

Fully synthetic data is less likely to be used than partially synthetic data; text-based is the most common type

Most respondents say their organization uses **partially synthetic data (63%)** or a combination of partially and fully synthetic data **(20%)**.

Does your organization use fully or partially synthetic data?



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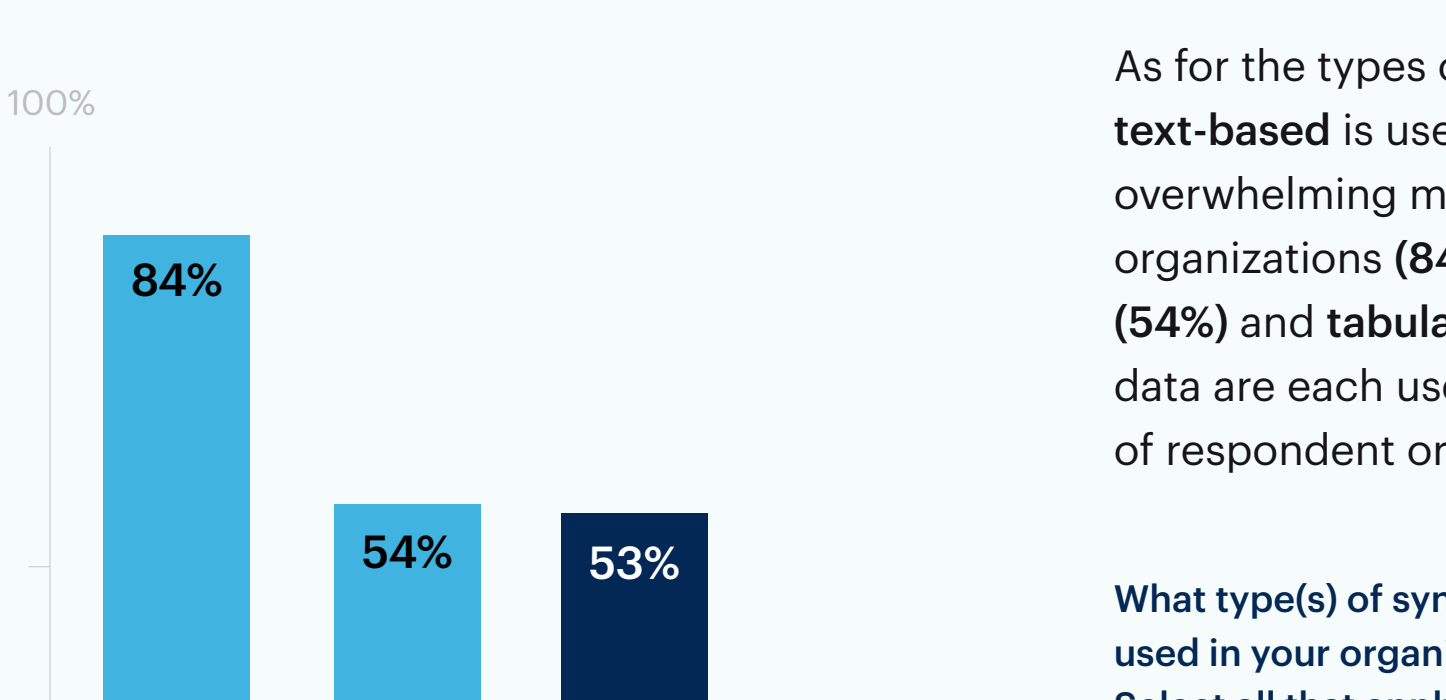
As for the types of synthetic data, **text-based** is used by an overwhelming majority of respondent organizations **(84%)**. **Image-based (54%)** and **tabular (53%)** synthetic data are each used at more than half of respondent organizations.

What type(s) of synthetic data are being used in your organization? Select all that apply.



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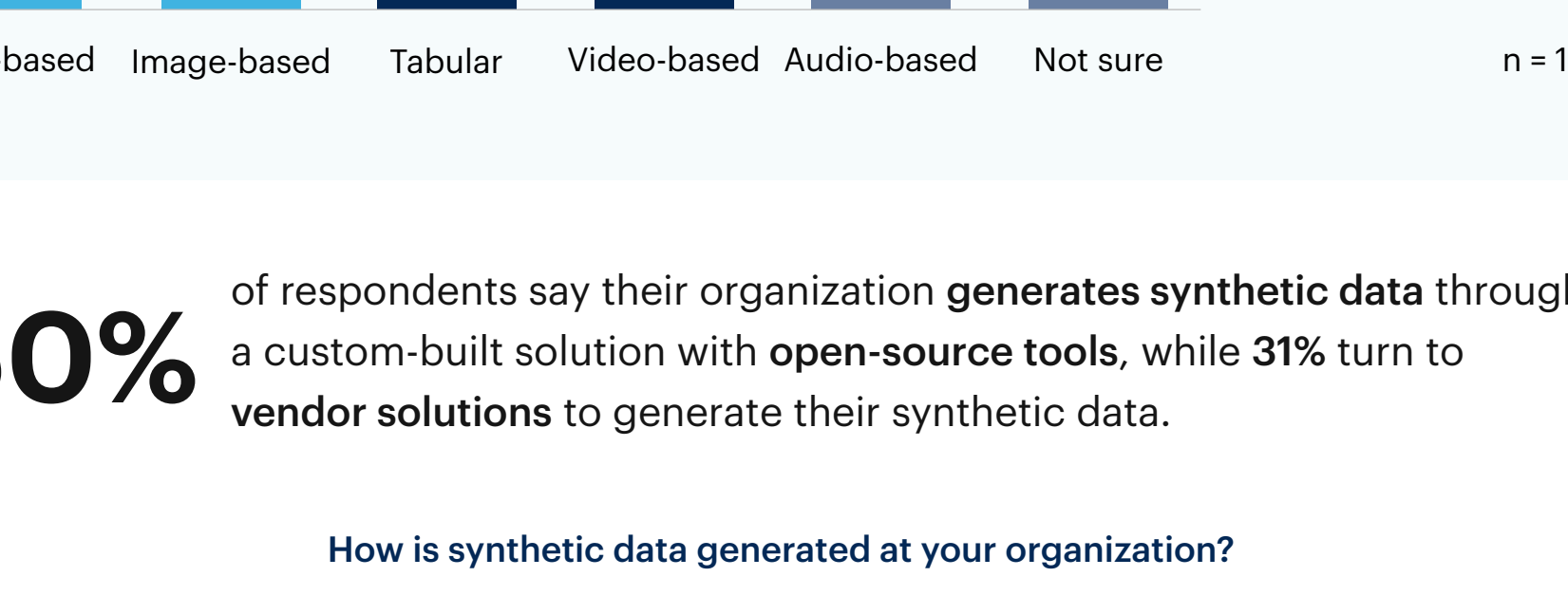
50% of respondents say their organization **generates synthetic data** through a custom-built solution with **open-source tools**, while **31%** turn to **vendor solutions** to generate their synthetic data.

How is synthetic data generated at your organization?



Other **0%**

n = 150

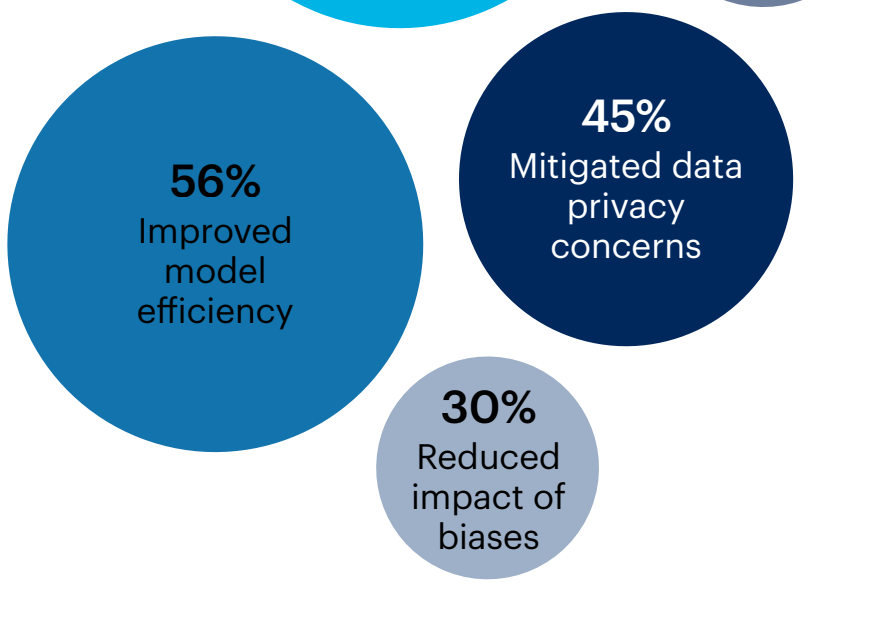
Concerns and challenges with AI-generated synthetic data

> "It is in [an] early stage and will be tough to adopt across [the] entire organization and also ROI cannot be [easily] calculated. Regulatory issues are a major concern."
>
> - C-suite, finance industry, 10,000+ employees

> "AI generated [techniques have] a high level of myopic bias, selecting the right vendor for data remains a challenge."
>
> - Manager, finance industry, 1,000 - 5,000 employees

Question: Do you have any final thoughts to share on AI-generated synthetic data?

Synthetic data can improve model accuracy and efficiency, but many have faced challenges with lack of or low quality real-world source data



The most often realized benefits of synthetic data at respondents' organizations are **improved model accuracy (60%)**, **improved model efficiency (56%)** and **mitigated data privacy concerns (45%)**.

How has synthetic data benefited your organization? Select all that apply.

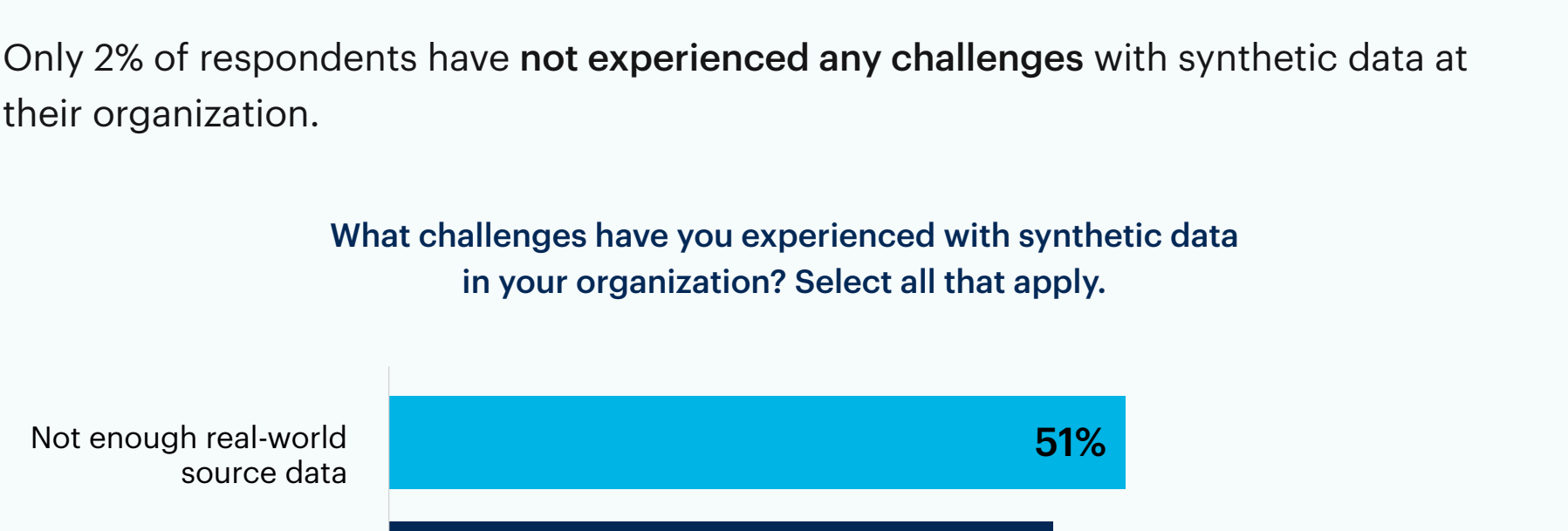
Increased efficiency of data teams **25%** |
Rebalanced datasets **23%** |
Reduced data breach risks **19%** |
Reduced overfitting **14%** |
None of these **3%** | Other **0%**

n = 150

About half **(51%)** of respondents have dealt with a **lack of real-world source data** for the synthetic data at their organization. More than one-third have experienced challenges with **inherited bias in synthetic data (46%)**, **low quality real-world source data (41%)** or **inaccuracy caused by statistical noise (34%)**.

Only 2% of respondents have **not experienced any challenges** with synthetic data at their organization.

What challenges have you experienced with synthetic data in your organization? Select all that apply.



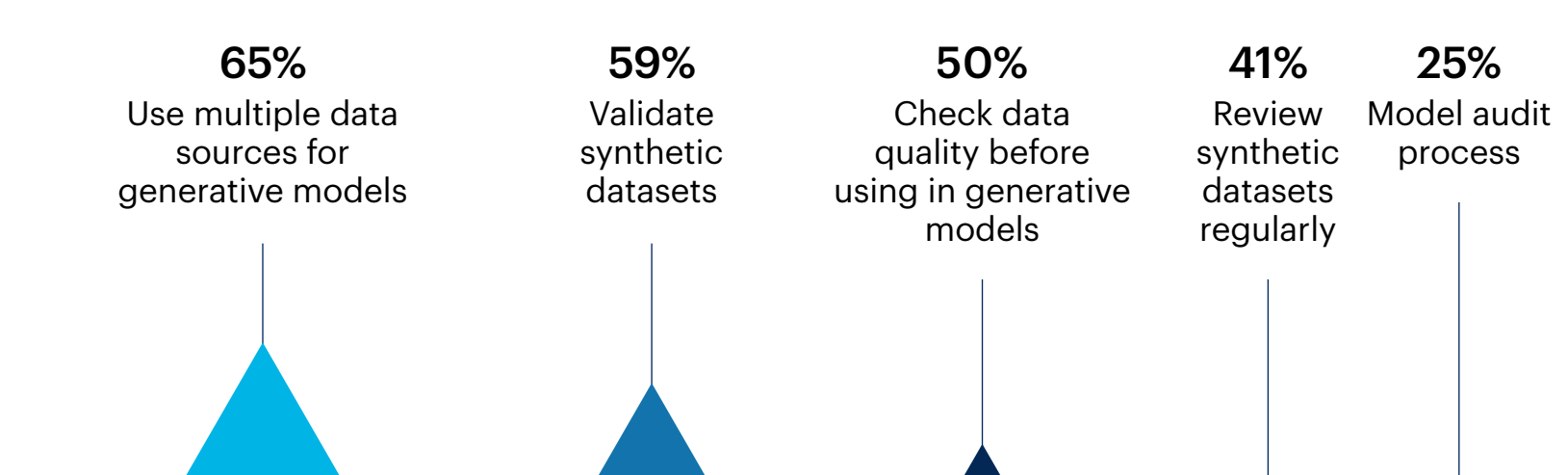
Lack of expertise **25%** | Insufficient resources **24%** | Accuracy degradation **23%** |
Integration with existing data systems **14%** | Cost of computing power **12%** |
Selecting the right vendor **11%** | Determining appropriate utility metrics **11%** |
Legal/ethical concerns (e.g., re-identification risk) **10%** |
We haven't experienced any challenges with synthetic data **2%** | Other **0%**

n = 150

Most have implemented best practices to ensure quality of their synthetic data

65% of respondents use **multiple data sources for generative models** to ensure their synthetic data **quality is high**. Synthetic dataset validation **(59%)** and data quality checks before use in generative models **(50%)** are also common best practices among respondents.

What best practices have you implemented to ensure the quality of your synthetic data is high? Select all that apply.



Evaluate synthetic data quality **24%** |
We haven't implemented any best practices **7%** | Other **0%**

n=150

Risks and considerations for AI-generated synthetic data

> "AI generated synthetic data is quite sensitive and needs to be handled securely."
>
> - Manager, education industry, 10,000+ employees

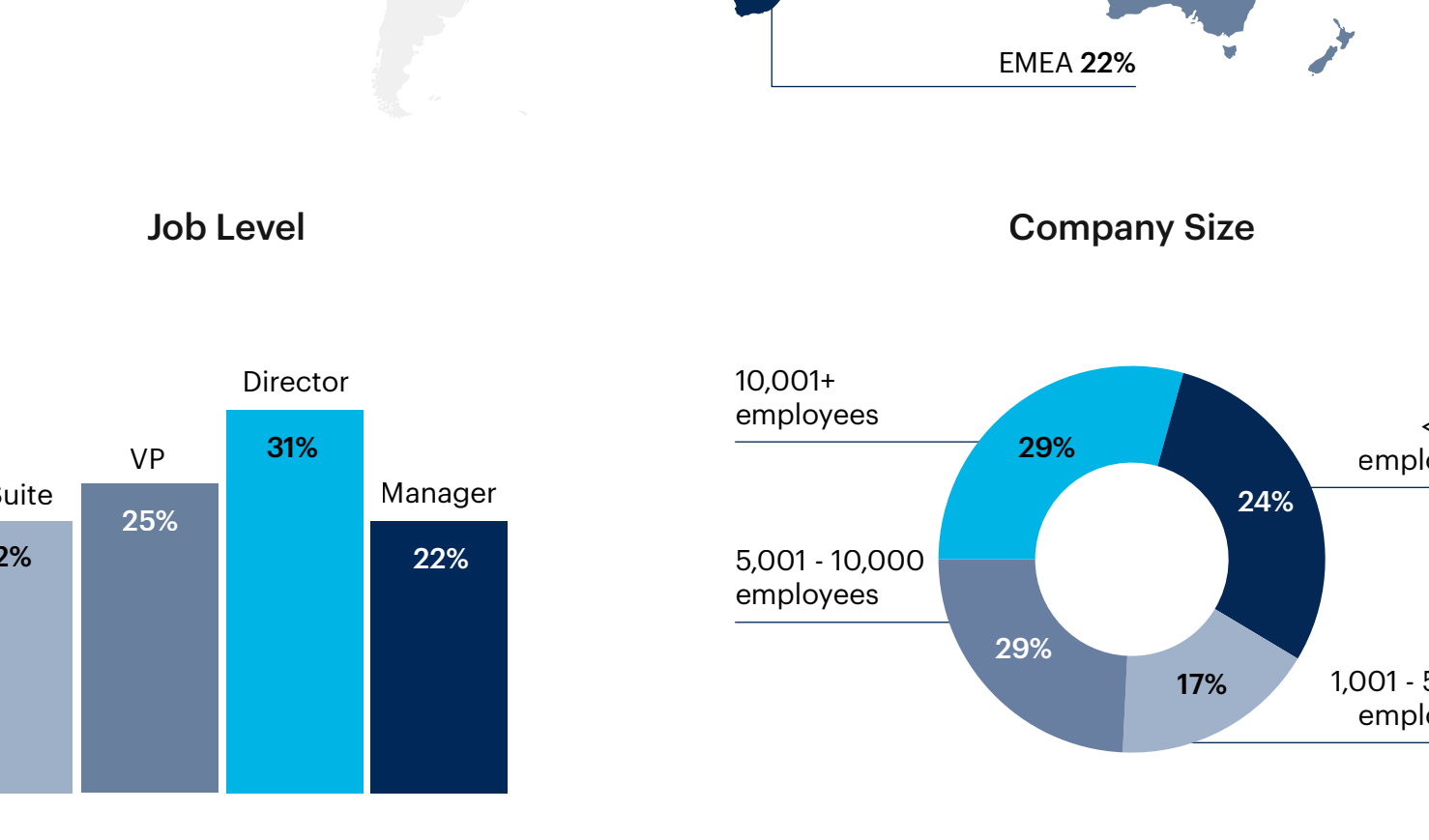
> "AI-generated synthetic data has potential benefits, but ethical considerations and limitations in accuracy and usefulness must be considered."
>
> - Manager, finance industry, 5,000 - 10,000 employees

> "There has to be [an] integration of Human Resource insights along with AI generated synthetic data to improve the utmost effectiveness."
>
> - Manager, professional services industry, 5,000 - 10,000 employees

Question: Do you have any final thoughts to share on AI-generated synthetic data?

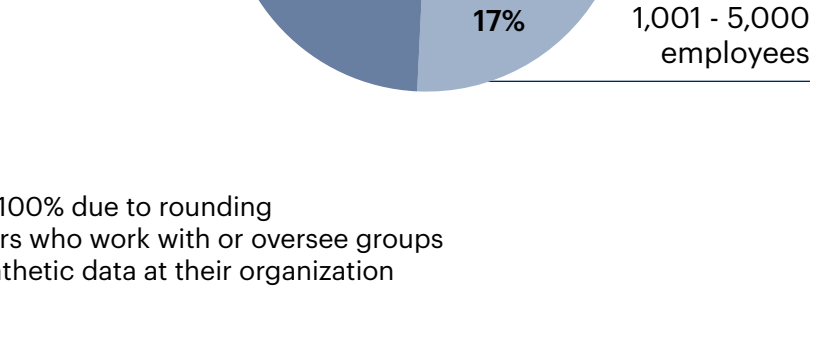
Respondent Breakdown

Region



Job Level

Company Size



Note: May not add to 100% due to rounding
Respondents: 150 IT and D&A leaders who work with or oversee groups that work with AI-generated synthetic data at their organization

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Source: Gartner Peer Community, Generative AI for Synthetic Data survey