DataRobot

2024 SURVEY

Unmet AI Needs

Executive summary

In the race to unlock AI's full potential, organizations are funneling more resources than ever into predictive and generative AI solutions. Yet, despite this surge in investment, AI leaders and practitioners are grappling with a wide range of unmet needs that are undermining productivity and stalling AI initiatives.

To uncover the barriers slowing AI progress, DataRobot partnered with F'inn to conduct an impartial, first-of-its-kind study examining the entire AI lifecycle, and the trends that are emerging.

The study identified four of the most critical challenges AI teams face today despite heavy investment in AI infrastructure and tooling: collaboration, integration, confidence in model outputs, and developing a sound generative AI experience.

To fully realize the potential of generative and predictive AI, organizations must close these gaps, moving beyond incremental fixes and adopting solutions that drive scalable, transformative outcomes.

This report offers a deep dive into these challenges, as well as emerging trends, providing AI leaders and practitioners with actionable insights to better equip their teams, optimize their investments, and accelerate AI initiatives that deliver real business value.

About this survey

The Unmet AI Needs study, conducted by DataRobot in partnership with F'inn, gathered insights from nearly 700 AI practitioners and AI leaders worldwide, using a combination of qualitative and quantitative research.

What makes this survey unique is its scope and objectivity. Unlike other research, this report is not based on DataRobot clients or usage data. It offers a true, unbiased view of the global AI landscape, exploring the end-to-end journey for both predictive and generative AI across all key roles.

The goal was to uncover the genuine frustrations of those responsible for developing, delivering, and governing AI.

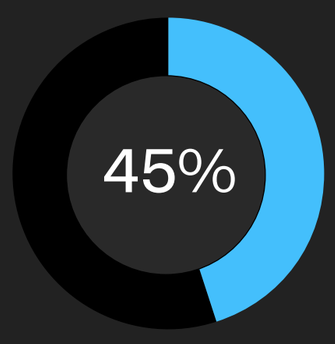
The study captured feedback from a wide range of roles and seniority levels — Data Scientists, ML Engineers, DevOps, IT professionals, and more — across organizations at various stages of AI maturity. It aimed to identify and understand the prevalence of 50 unmet needs that surfaced during interviews.

To ensure accuracy, we employed an indexing analysis that ranked pain points based on how respondents over-or under-ranked them relative to expectations. This index score was used to highlight the severity of each category, providing a clear view of the most critical challenges.

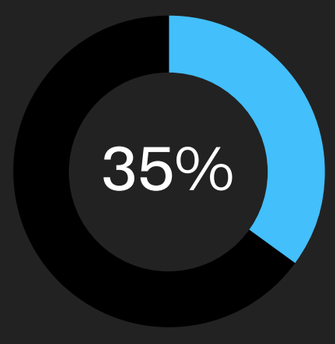
Four primary unmet AI needs

Despite advancements in AI maturity and significant investments in hyper-scaler tools, our study uncovered four critical unmet needs that both AI practitioners and leaders continue to struggle with.

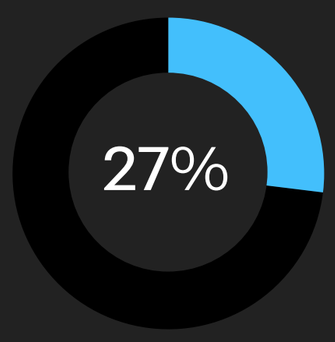
Picked as top pain point by AI professionals



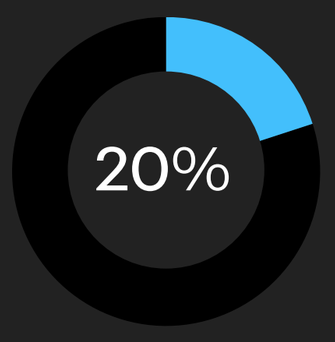
Confidence, monitoring and observability



Implementation and integration



Generative AI app experience



Collaboration

1. Confidence, monitoring, and observability

Nearly half (45%) of respondents reported confidence, monitoring, and observability as the top unmet need. This specific challenge is equally painful for organizations reported to have high AI maturity and low AI maturity.

Even those invested in hyper-scalers cited confidence, monitoring, and observability as a major unmet need. AI practitioners and leaders saw this as a major challenge, particularly regarding the quality of outputs, reliability, and observability.

> "We're not up to the same standards other, larger companies are performing at. The reliability of our systems isn't as good as a result. I wish we had more rigor around testing and security."
>
> VP, ML Engineer

Specific pain points within this category that are unmet

10%	The quality, consistency and reliability of generative AI outputs
9%	Ensuring real-time intervention and moderation on generative AI
9%	Observability of all AI outputs
8%	Setting up custom metrics with notification and alerts
9%	Challenges with performance/reliability of ML models in production

% = people who selected as top pain point

2. Generative AI app experience

35% of all respondents ranked the generative AI application experience as the top emerging unmet need. This was consistent across teams that were code-first and those using hybrid code and low-code approaches. There's a pressing need for clearer insights into how models function and better explanations of the expected outputs from generative AI models.

> "Things are moving really fast in the industry. There are major changes before a project is even finished."
>
> Al Engineer

> "We need a generative AI method tomorrow. Something that our business users can trust and that removes the black box factor of, 'How do I know if this generated content is good enough?' "
>
> Functional Lead, ML Engineering

Specific pain points within this category that are unmet

13%	It's difficult to prototype AI solutions and apps
12%	Ensuring real-time intervention and moderation on generative AI
7%	Setting up hosting for generative AI apps
6%	Building out a generative AI app interface

% = people who selected as top pain point

3. Implementation and integration

27% of respondents ranked implementation and integration as the top unmet need. While this obstacle is widespread, it's more prominent in organizations that have invested in hyper-scalers, who cited it 12% more than those without hyper-scalers. AI practitioners, especially code-first practitioners and software developers, experience this pain point most acutely, identifying it as a significant unmet need.

> “We have to go through model risk management, compliance units, and it’s just a bit of a hassle.”
>
> Data Scientist

Specific pain points within this category that are unmet

10%	AI flows and pipelines are intensive
9%	It’s difficult to integrate new toolsets into our process
9%	Too much time spent stitching and troubleshooting too many tools together

% = people who selected as top pain point

4. Collaboration

20% of respondents ranked collaboration as their primary unmet need. As new roles emerge and the gap between idea and production widens, collaboration has become increasingly critical. AI practitioners feel this most acutely during project hand-offs between teams, while AI leaders see it as a major obstacle to delivering value.

Study participants also expressed their concerns about model integrity eroding as it passes through different hands on its way to deployment. Teams with varying skills, toolsets, and coding languages must navigate multiple checkpoints and validation stages, which further complicates the process.

> "There are at least a dozen teams involved that have to checkmark and sign off on the project. It's just the nature of it — the more you iterate and refine things — the more steps you add, unfortunately."
>
> Sr. Director, IT Infrastructure

Specific pain points within this category that are unmet

13% | It's difficult to collaborate with various teams as we push AI use-cases through build, deployment and operation phases

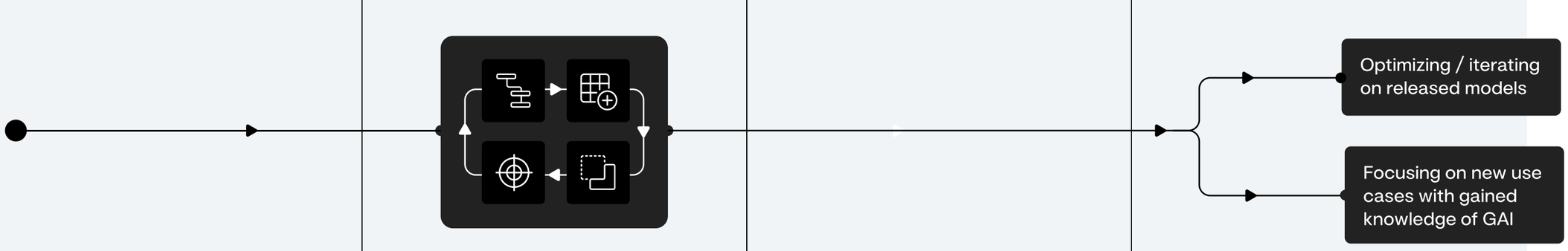
11% | Collaboration on AI projects across teams

% = people who selected as top pain point

How AI maturity fits into unmet needs

AI maturity is less linear and more like an infinite loop. Once in high maturity, teams expand to new use cases and return to the beginning of low maturity.

LEVEL ONE	LEVEL TWO	LEVEL THREE	LEVEL FOUR
Newbies	Proving ground	Demonstrable value	Defining next



- Predictive AI models in place and tuned to org needs
- GenAI model experimentation underway, far from production
- Steep learning curve for both

- Steps forwards and backwards
- GenAI model behaviour offers surprises and new possibilities
- Aiming for more stability and accuracy
- Often as a team isolated from other parts of the org to allow space to experiment - like an incubator

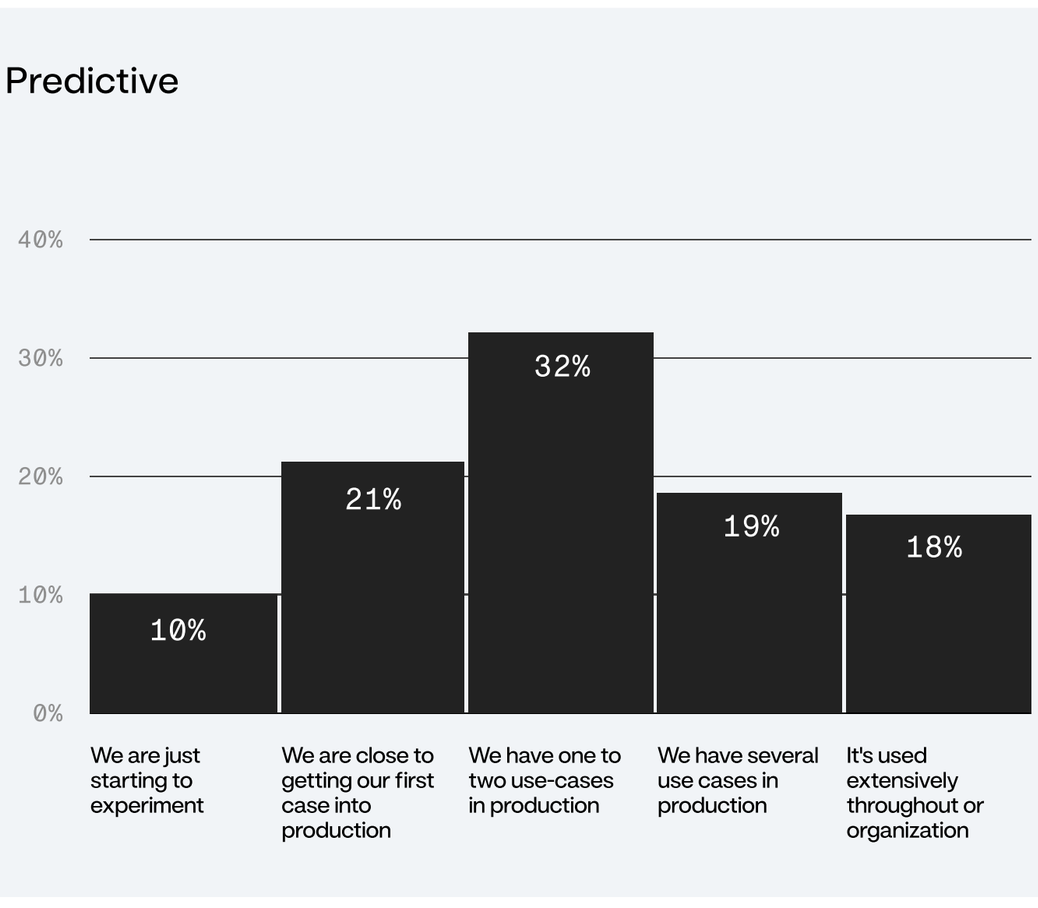
- Extensive testing prior to production / release
- Piloting internally with select stakeholders, or externally with select clients
- Model(s) released and outputs utilized once confident in robustness in model(s)

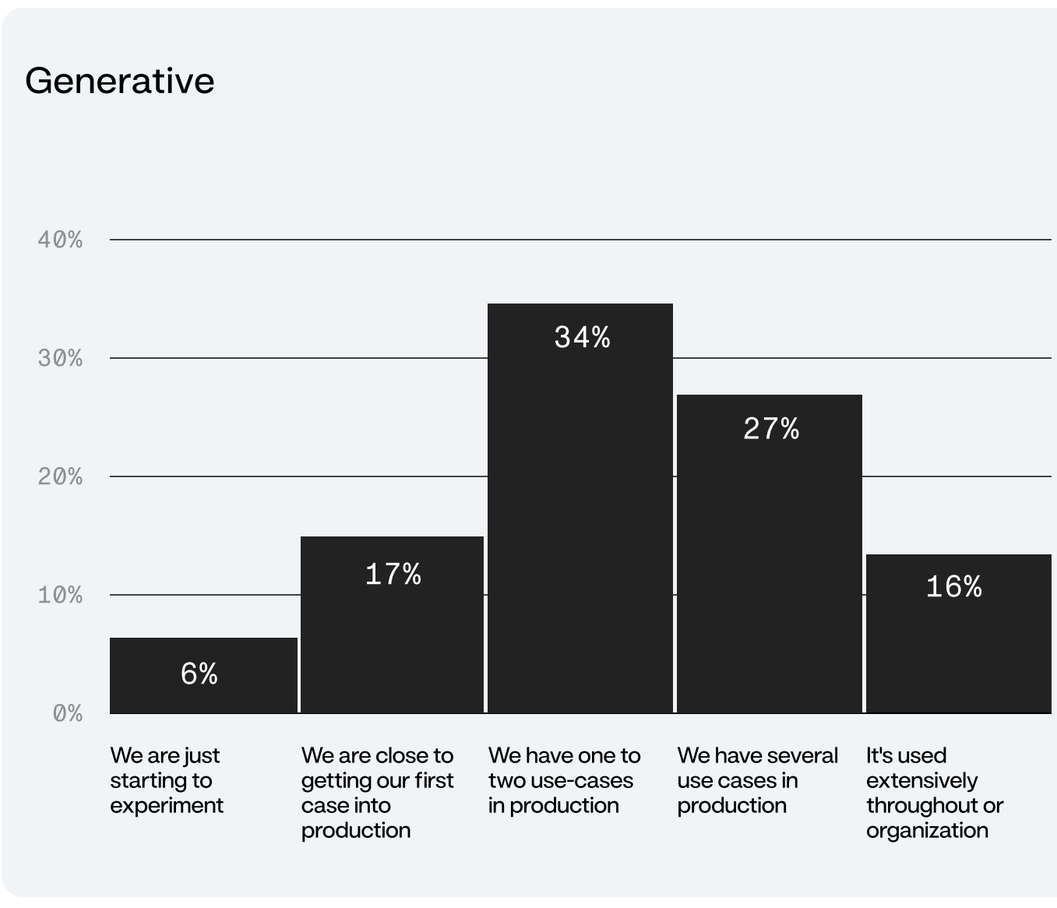
- Scaling established models / tools
- Gaining buy-in / acceptance within org
- Tackling new challenges with GenAI, and continuing to build expertise
- Staying up to date with latest development

77% of organizations have at least one generative AI model in production, and 69% have at least one predictive model. While generative AI remains challenging for most, the research shows that organizations are eager to expand its use, bringing generative AI to more areas of the business and tackling more use-cases.

77% of organizations have at least one generative AI model in production and 69% have at least one predictive model in production.

Models Currently In Production





For AI leaders and practitioners, it takes seven and a half months for AI models to reach production, regardless of AI maturity.

While more models are making it into production, the process takes nearly half a year from the moment an idea is identified to when AI is in the hands of business users. The majority of AI leaders and AI practitioners don't feel like they have the right tools to get models into production.

It's a long 7.5 months for AI models to reach production, irrespective of AI maturity

Survey Question

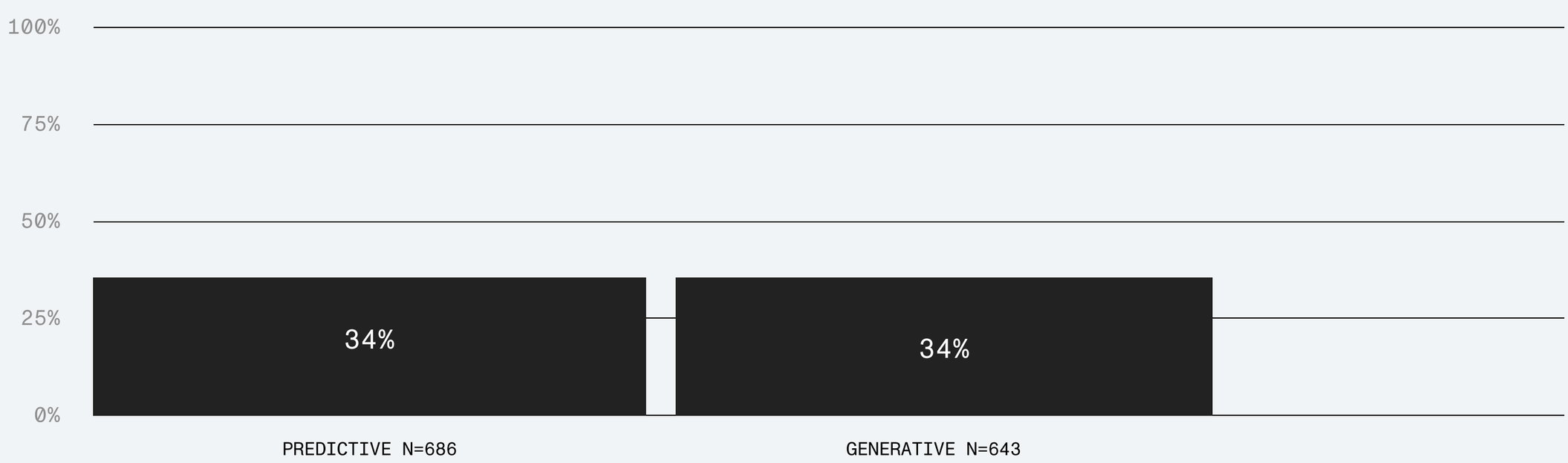
On average, how long does it typically take to get each of the following AI types of AI projects from idea to production within your organization?

	Predictive AI	Generative AI
Average time from idea to production	6.9 months	7.9 months
From idea to production (7 months or longer)	42%	52%
From idea to production (12+ months)	7%	10%

Only ⅓ of participants feel they have the right tools to get models into production

Survey Question

How confident do you feel you that the tools you re using to build AI solutions today will deliver on what you need to get models into production?



While organizations are moving more models into production, the proportion of those extremely confident in any aspect of the predictive AI lifecycle is low — and it's even lower for generative AI, with less than 30% expressing high confidence at any stage of the generative AI lifecycle.

The proportion of those extremely confident in any facet of the predictive AI lifecycle is low, and even lower for generative AI

Survey Question

How confident are you in each of the following related to your role in developing/managing predictive or generative AI solutions at your company?

What the AI landscape shows us

The scope of roles involved in the AI lifecycle has become incredibly diverse, with an average of seven groups having hands-on involvement.

It's not a one-size-fits-all situation when it comes to user needs. In our study alone, we observed the emergence of new titles and functions, with 19 distinct titles represented, highlighting the growing range of AI-related positions.

Infrastructure

IT Infrastructure
AI Infrastructure

Data Teams

Data Infrastructure
Data Engineers
Data Quality Analysts

Developers

Software Developers
Software Engineers
Application Developers
Application Engineers

ML Engineers/DevOps

ML Engineers
AI Engineers
AI DevOps
MLOps Engineers

Analysts

Data Analysts
Statisticians

Architects

AI Architects
AI Solutions Architects

Data Scientists

ML Developers
Data Scientists

This doesn’t include new functions that generative AI is driving, such as legal and privacy teams, along with model risk management teams, which are taking a more active role in the AI process.

Predictive and generative AI are converging

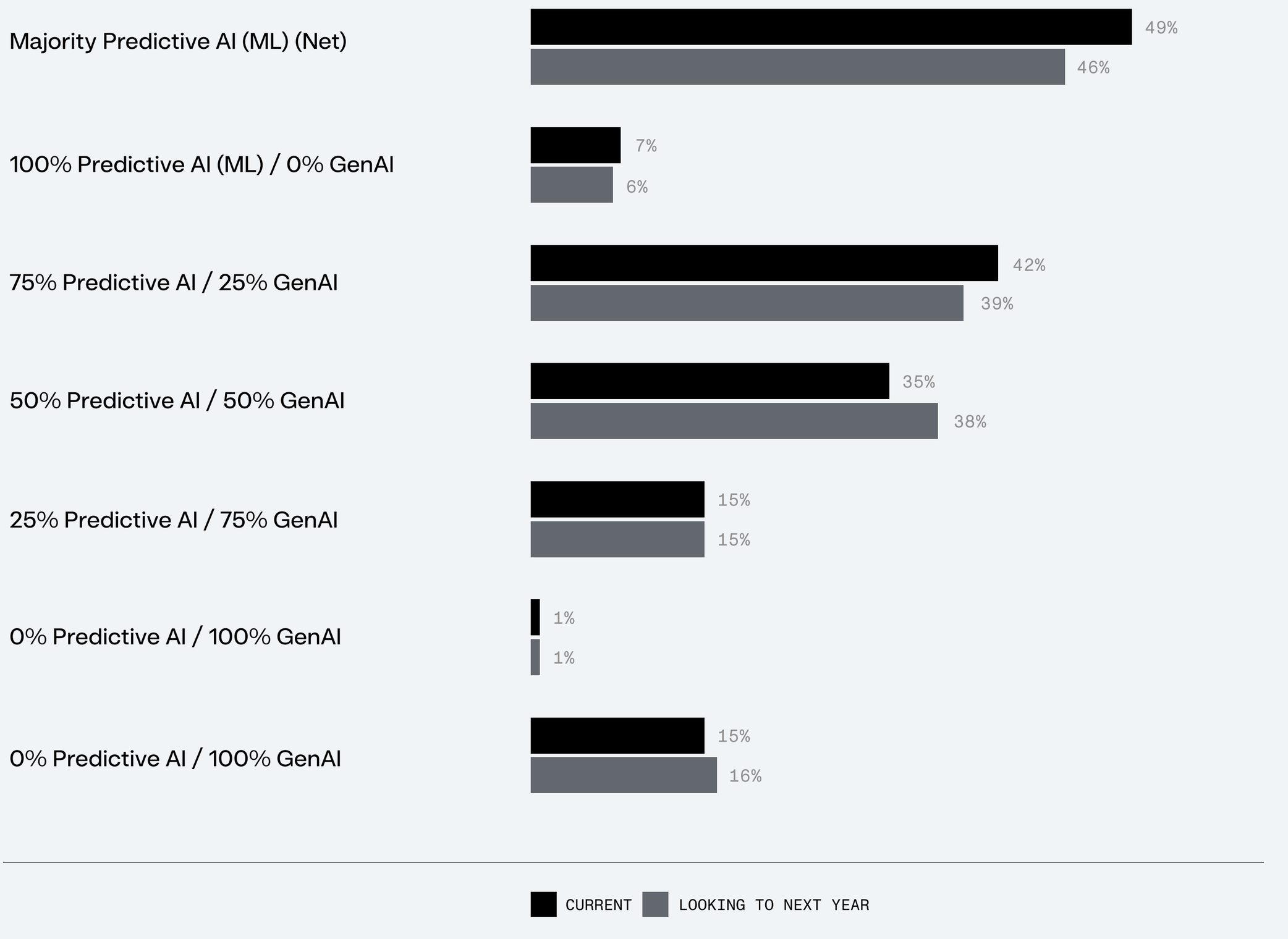
Most AI leaders and practitioners already see how predictive and generative AI complement each other. However, only a third feel fully prepared to work across both disciplines in the coming year, indicating the need for significant improvements in readiness and confidence.

Survey Question

Roughly how much of your role is focused on Predictive AI vs. GenA! workstreams, if any?

Survey Question

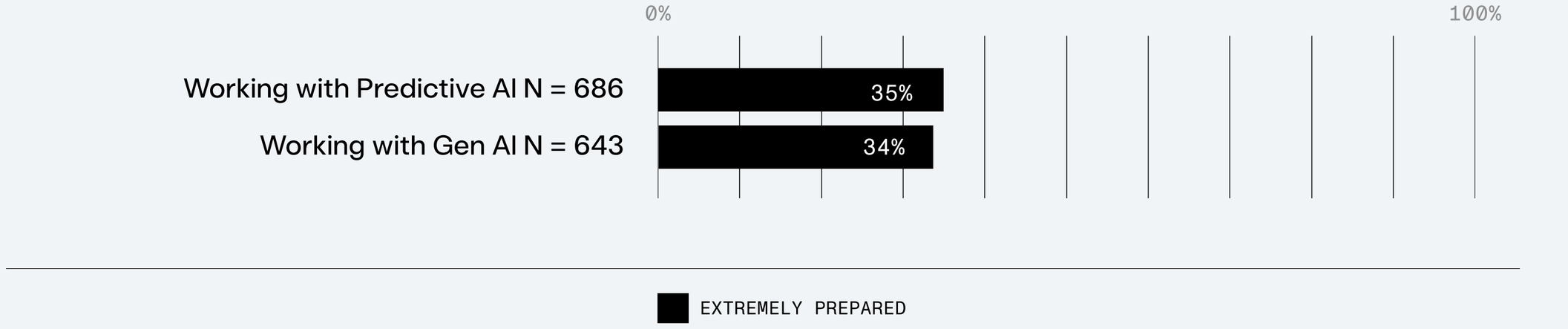
Looking to the next year, how do you envision the split of Predictive AI vs. Gen AI workstreams evolving in your role specifically, if at all?



"I see the lines blurring between Predictive and Generative AI over time."

Sr. Director, IT Infrastructure

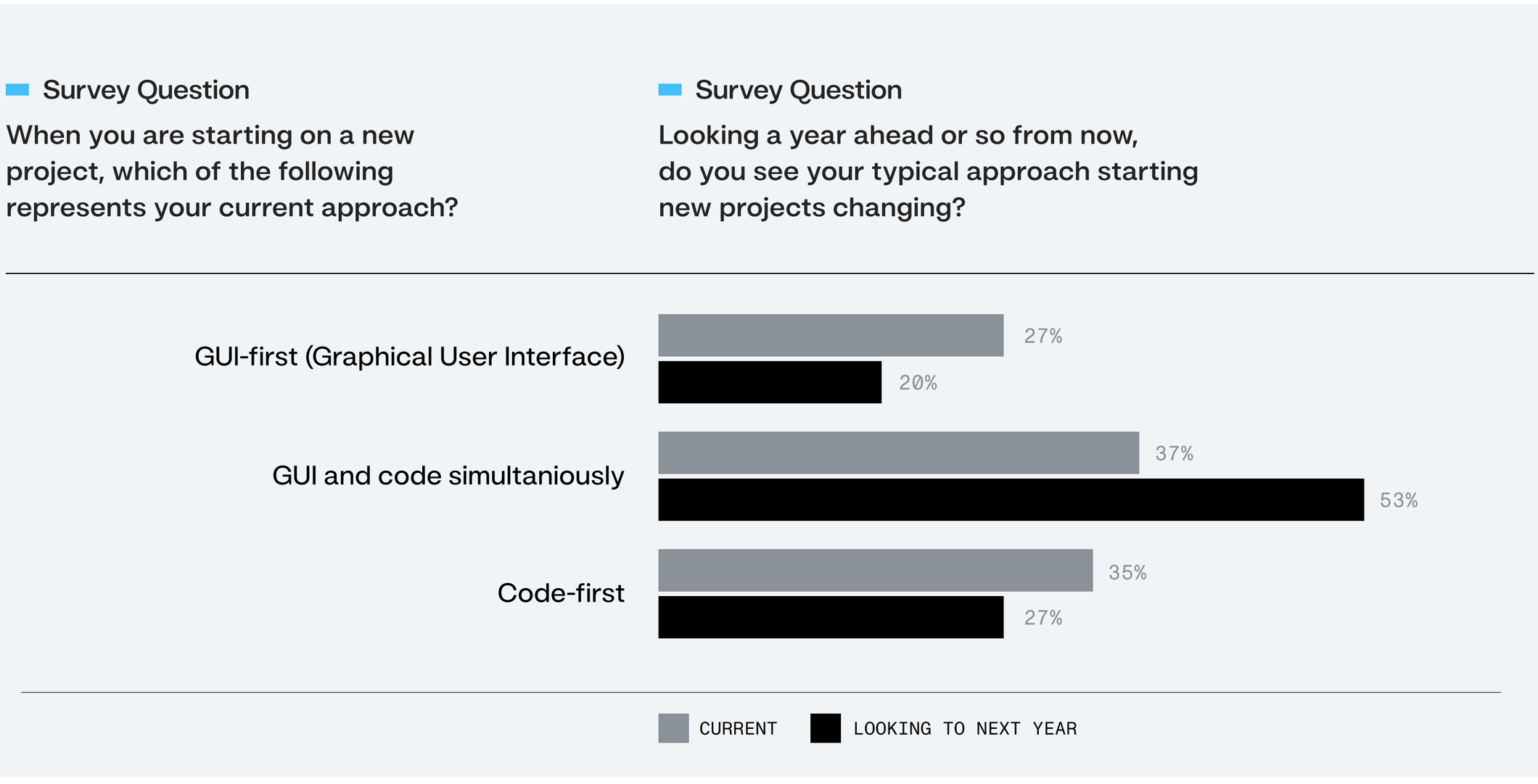
Only ⅓ of AI practitioners and AI leaders feel extremely prepared to work across predictive and generative AI



Today, AI leaders and practitioners often take a hybrid approach when starting new projects — it's not just code-first or GUI (graphical user interface); it's both. In fact, 53% of AI practitioners prefer using both code and GUI together.

When asked why they favor this hybrid approach, participants highlighted ease of use (49%), scalability (40%), and seamless end-to-end integration (40%) as the top reasons.

53% of AI practitioners want the ability to use both code and GUI simultaneously



> “The GUI aspect is really important to me for explainability. I feel it's even more important for GUI to be considered in the back-end and not just the front-end as both are equally important.”
>
> Data Scientist Team Lead

Conclusion

Success in predictive and generative AI hinges on solving critical challenges in collaboration, integration, the generative AI experience, and confidence — gaps that current mainstream AI infrastructure investments are failing to close.

The way forward? A focus on outcomes. Organizations set themselves up for success by adopting an open, integrated AI suite that fills these gaps by centralizing collaboration, streamlining AI pipelines and workflows, and adapting to all users — whether code-first, GUI, or hybrid. Breaking free from walled gardens is essential to fully maximize investments and drive widespread adoption.

Specifically, AI leaders must focus on augmenting their existing AI infrastructure investments with solutions that offer the following capabilities:

- **Open architecture** that enables fast, composable AI workflows, allowing key elements like LLMs and vector databases to be hot-swapped without downtime, preventing obsolete technology components
- **Fully customizable** AI app-building frameworks with pre-built, autoscaling pipelines to handle intense workloads and support your organization's unique needs
- **Robust assessments and evaluation metrics** — both qualitative and quantitative — to validate and ensure model quality from end to end
- **Flexible, reusable CI/CD pipelines** designed for the AI lifecycle, replacing single-use, point-to-point code with fast, scalable workflows.
- **Deep observability, real-time intervention, and moderation** to protect your data and business against evolving risks.
- **Seamless collaboration** across multiple roles, enabling users to switch effortlessly between code and GUI, predictive and generative AI, a gentic flows, and AI applications, accelerating teamwork and project sharing.

Incremental fixes won't cut it anymore. AI teams need a transformative approach that breaks down barriers and unleashes the full potential of AI.

Audience & Methodology

Fieldwork for this study was conducted via a qualitative and quantitative study from May 1, 2024, to August 13, 2024, among a total of 707 AI leaders and AI practitioners. The study included two phases: a qualitative interview consisting of a mix of AI leaders and AI practitioners to help inform themes and pain points, and a quantitative survey with AI leaders and AI practitioners to validate the themes, and quantify and size the importance of the unmet needs and pain points. The survey sample featured a nearly equal number of respondents from AI leaders and AI practitioners. Respondents were all full-time employees, actively involved in building, deploying and/or maintaining predictive and/or generative AI solutions, and had at least 3 years of experience. All participants worked in 'data rich' sectors (automotive/aerospace, manufacturing, energy mining and utilities, retail, transportation and logistic, hospitality, IT/technology, banking and financial services, professional services, life sciences, healthcare, pharmaceuticals, media and entertainment.)