Inside the Minds of Scientists: How AI is Changing Life Science Research

Insights from ***"Perceptions of Artificial Intelligence in the Life Sciences"***

May 2025

SCIENCE AND MEDICINE GROUP

BIOINFORMATICS
A SCIENCE & MEDICINE GROUP COMPANY

Presenter

Danyi Wu, PhD
Manager, Scientific Advisory Services

Study Overview and Objectives

Study Overview

BioInformatics, part of Science and Medicine Group, initiated a market research study to better understand the perceptions and usage of artificial intelligence (AI) in the life sciences.

Specific objectives included:

- Gather the general sentiment towards adoption of AI into current workflows
- Understand the applications in which AI is most commonly used and where there is a need for AI
- Understand AI workflows, pain points with current AI, etc.
- Identify key organizations developing AI or actively employing AI in their workflows
- Evaluate how AI has impacted purchasing behavior and hiring behavior

BioInformatics designed an online quantitative survey to address the objectives. This study is longitudinal in nature and this report discusses selected data trends compared to the 2023 study.

- The survey contained 47 questions (including demographic and screening questions) and took a median time of about 16 minutes to complete.
- In 2025, it was fielded to 408 respondents.

The qualification criteria for this survey in brief:

- Must work in Academic, Government, or Industry segments of the life science industry within North America, Europe, and Asia Pacific.

A selection of the results is presented in this webinar. The full report will be available on the Knowledge Center.

Definitions

- Artificial Intelligence (AI) is the use of computer systems to simulate the human cognitive process for analysis or processing of data, such as interpretation of images, analyzing language, and identifying patterns.

- Artificial intelligence for personal tasks refers to the usage of AI for your own convenience and/or entertainment (e.g., managing your daily schedule, virtual assistants, control of smart home devices, creating content via generative AI, personalized entertainment/fitness/learning, etc.)

- Artificial intelligence for work-related tasks refers to the usage of AI in your laboratory to improve your research efficiency (e.g., identifying trends, processing large data sets, etc.)

Executive Summary

Usage of AI for Life Science Workflows

AI for Work and Life

87% of respondents currently use AI for work-related tasks, rising from 75% in 2023. 90% of current users also leverage AI for personal tasks.

Document preparation and technical writing are the most common tasks assigned to AI in the life sciences.

Value of AI

57% of current users indicate that AI has brought at least some value to their workflows.

Respondents continue to agree that AI can speed up workflows and assist with select tasks in 2025. However, more respondents in 2025 agree that humans can offer insights that AI cannot.

Concerns around AI

99% of respondents indicate they have concerns about the usage of AI. Data validity and trust, cybersecurity, and ethics are top concerns.

More users are hesitant to trust AI in 2025.

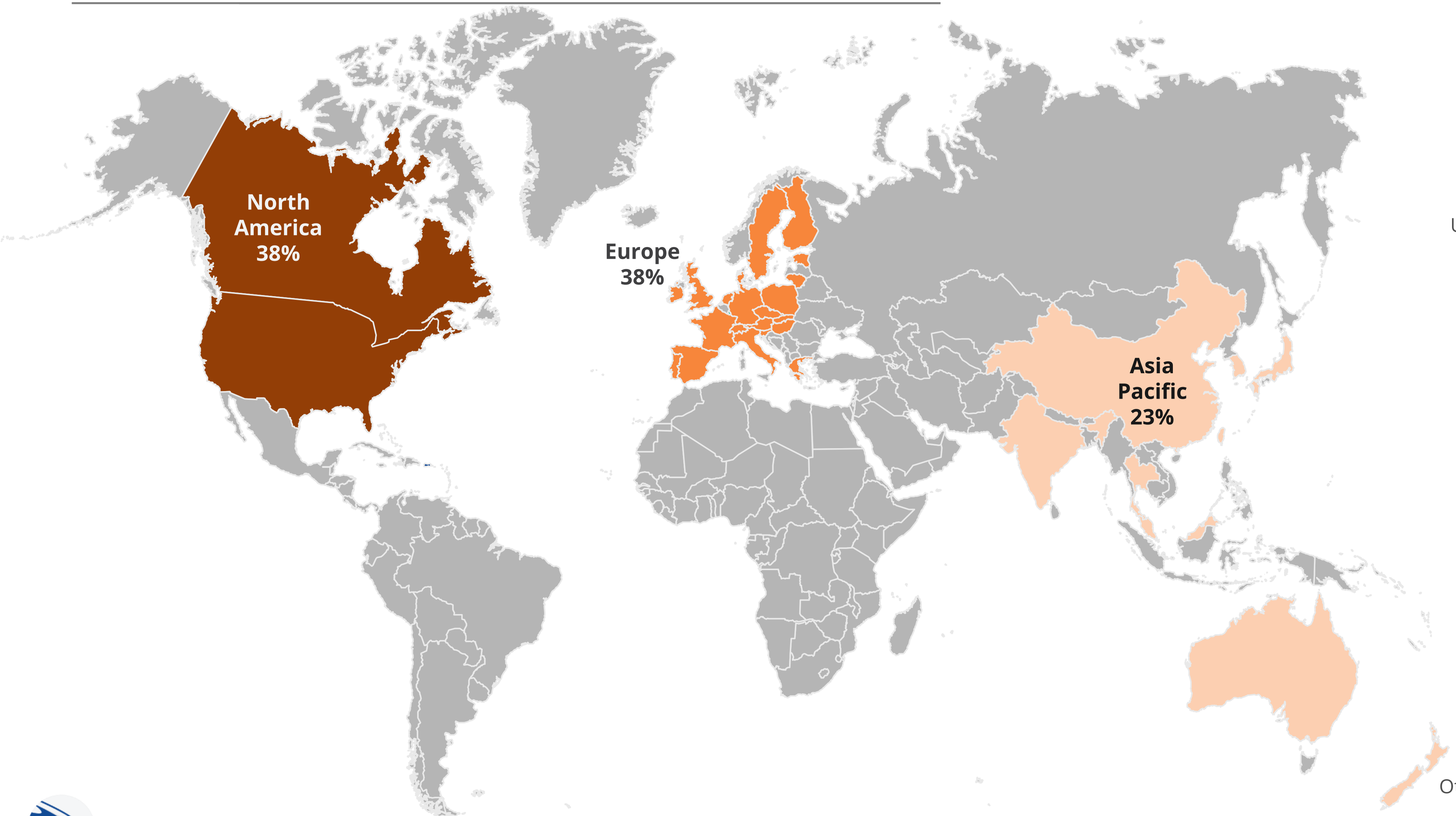
Improving AI

New AI solutions must address concerns around security risks. Regulatory agencies must catch up to protect data privacy and meet GxP standards.

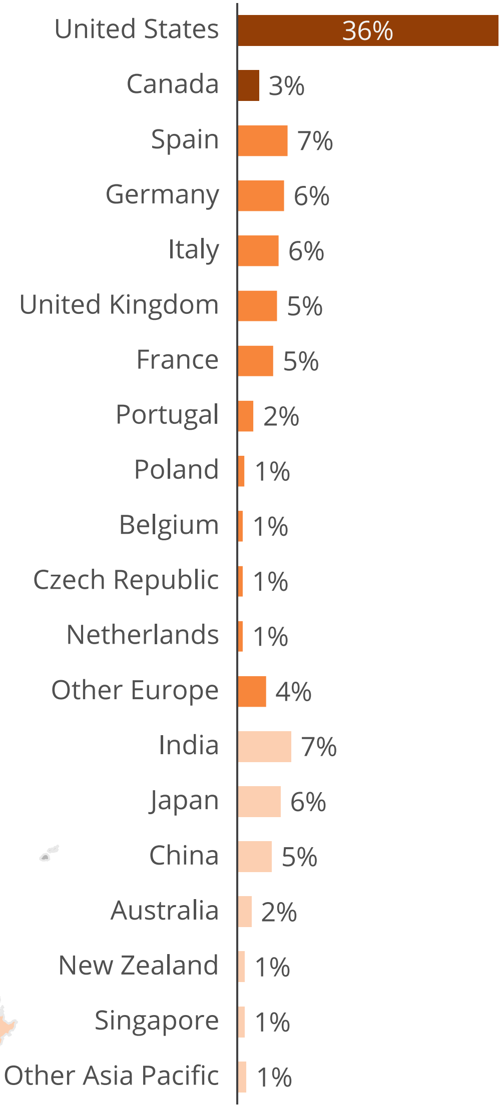
Simplifying training and developing expertise will resolve the most frequently occurring pain points with AI tools. Demonstrating data validity and providing application-specific solutions would meet current needs in the laboratory.

Demographics

Region (n=408)

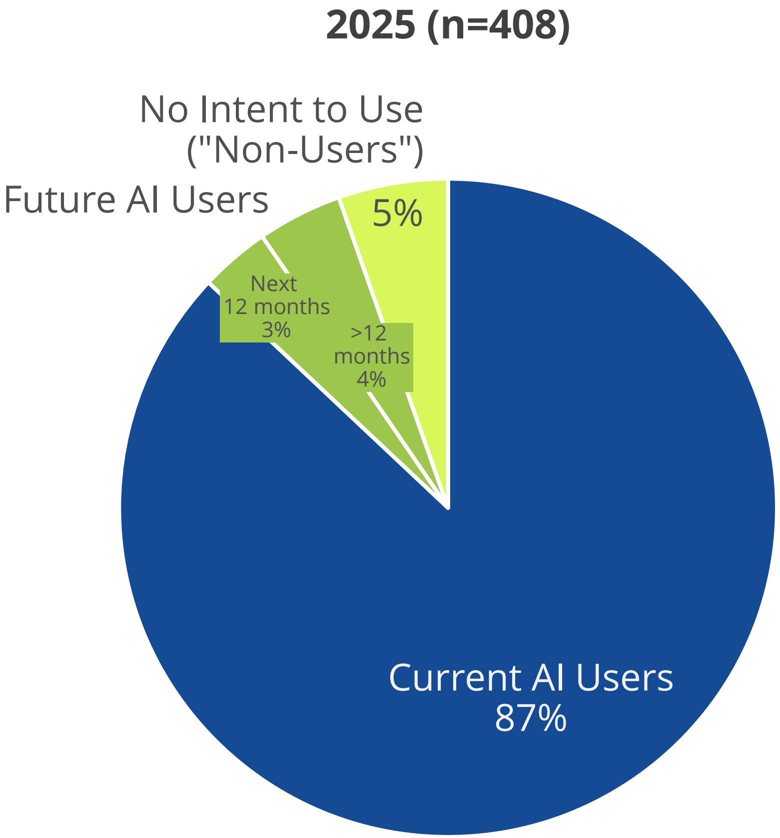


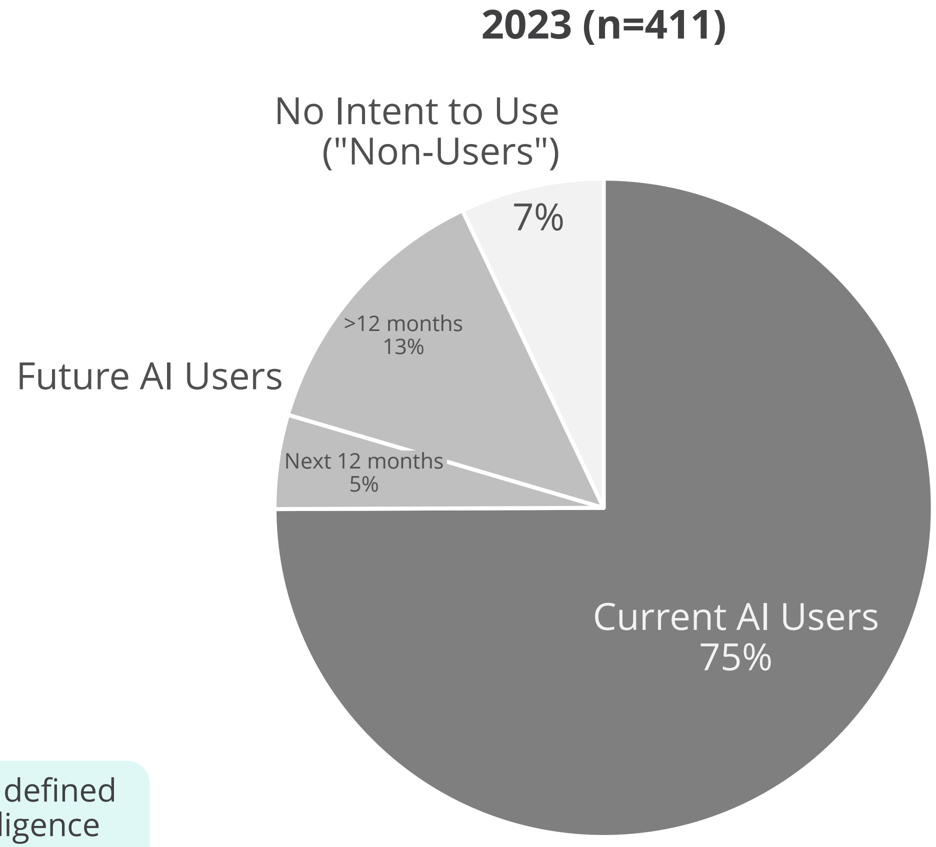
North America
38%
Europe
38%
Asia Pacific
23%



United States 36%
Canada 3%
Spain 7%
Germany 6%
Italy 6%
United Kingdom 5%
France 5%
Portugal 2%
Poland 1%
Belgium 1%
Czech Republic 1%
Netherlands 1%
Other Europe 4%
India 7%
Japan 6%
China 5%
Australia 2%
New Zealand 1%
Singapore 1%
Other Asia Pacific 1%

Current & Future AI Usage Summary — Trended





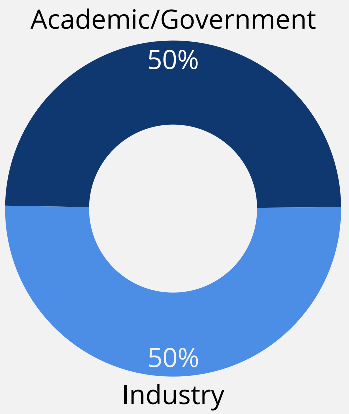
"AI usage" in this study is defined as usage of artificial intelligence for work-related tasks.

Q4: How FREQUENTLY do you CURRENTLY use AI in each of the following scenarios? (choose only one for each row)
Q5: Do you currently have any intention to use a form of AI in your work / research within the next 12 months? (choose only one)

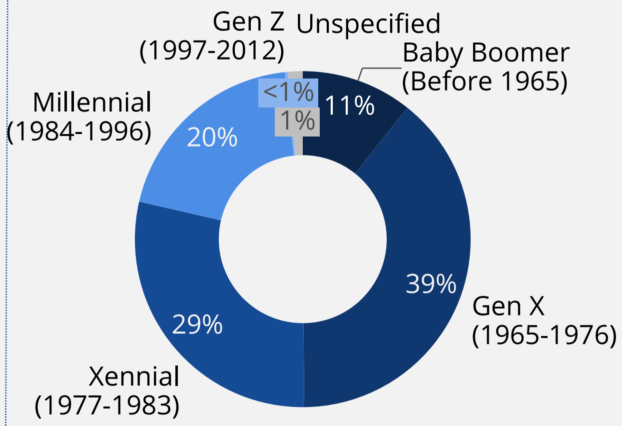
Current Users Respondent Profile (n=355)

AI usage is based on use for work-related tasks.

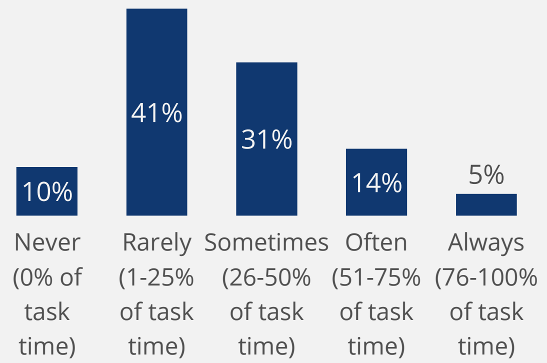
Market Segment



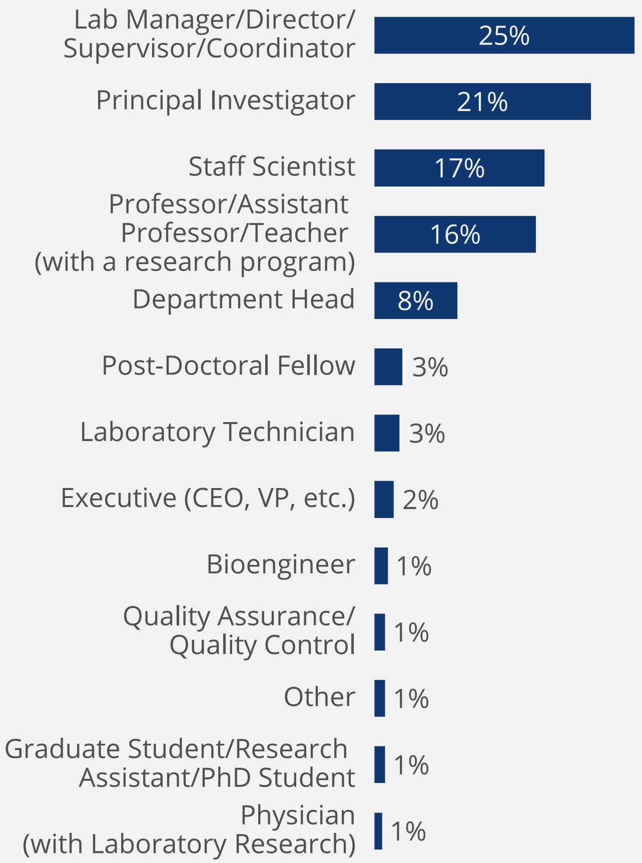
Generation



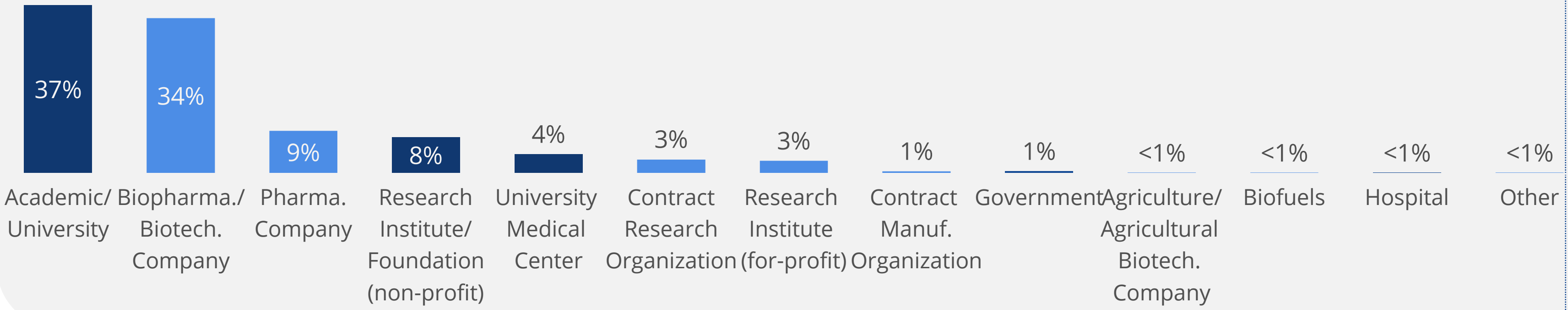
Personal Use of AI



Job Position

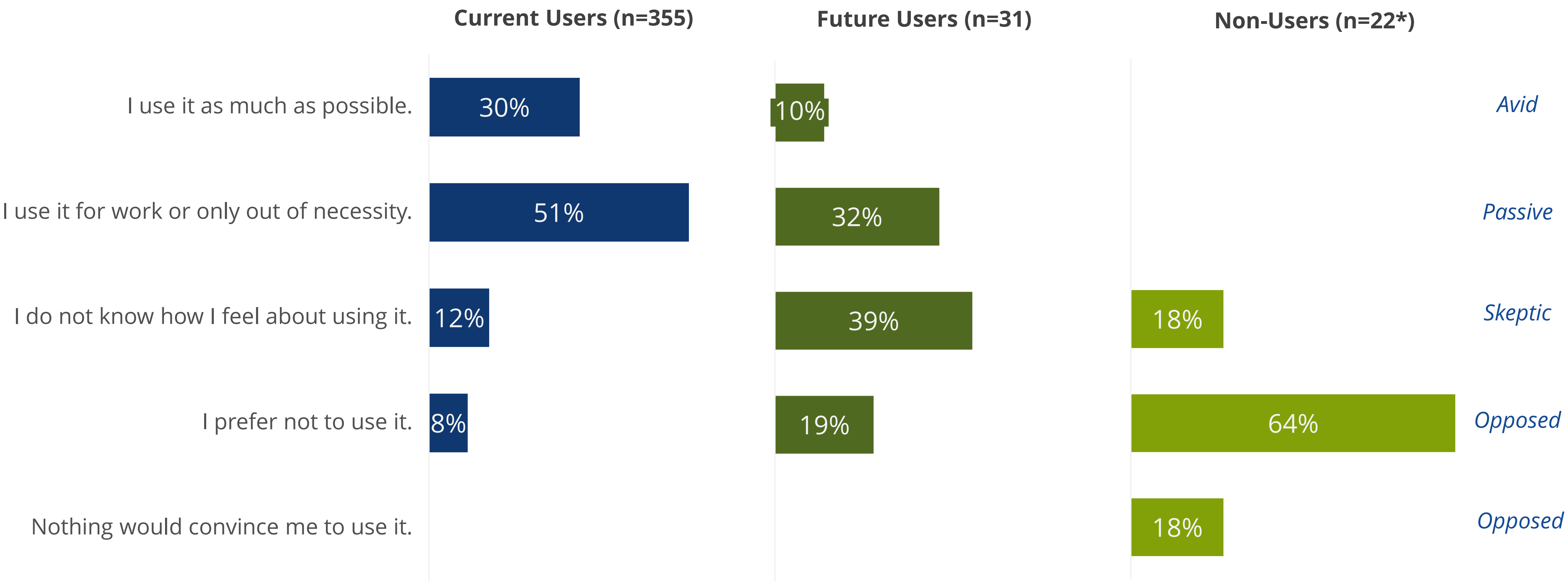


Organization Type



30% of current users of AI are avid users. Meanwhile, 51% use it for work only out of necessity.

Desire to Use AI

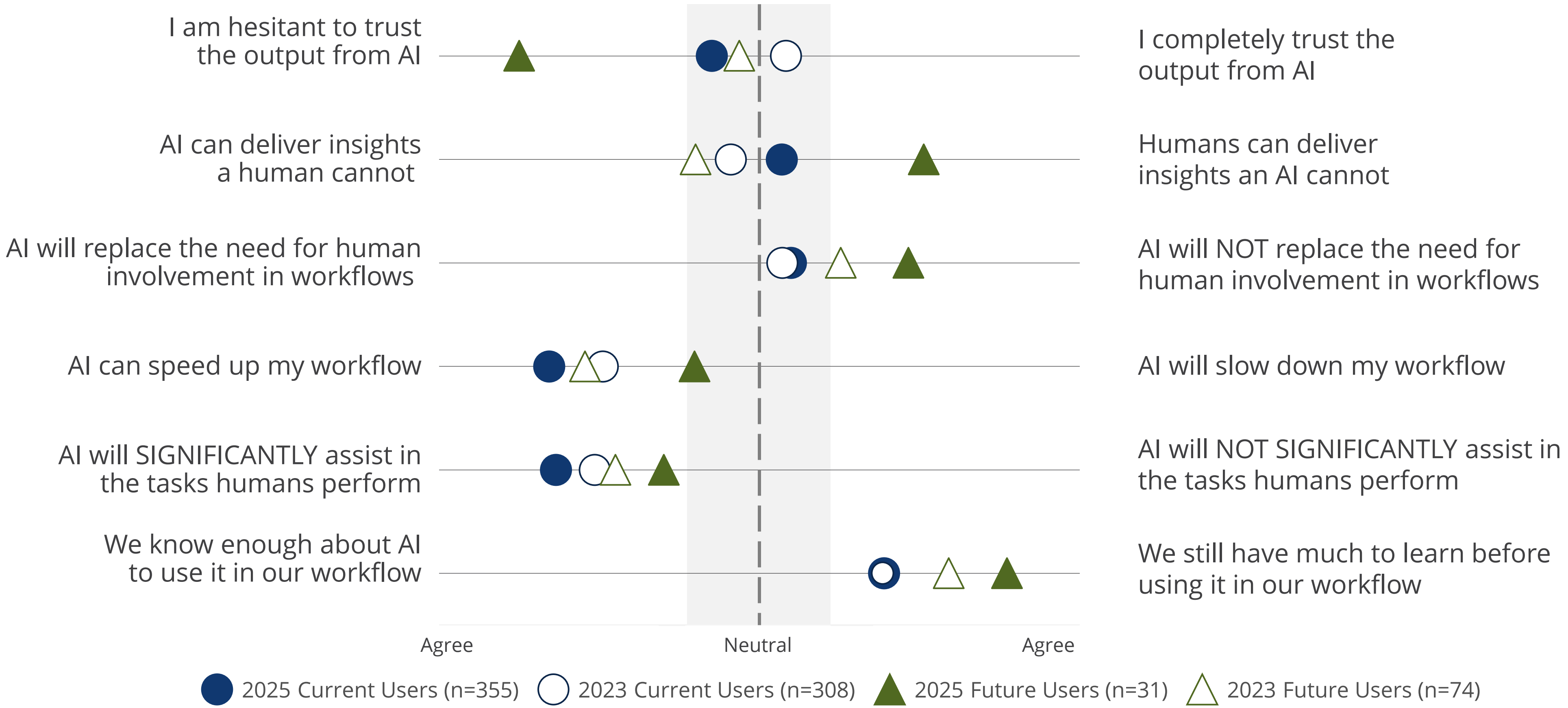


Q6. How would you describe your desire to use AI? (choose only one)
Caution: low number of respondents.

Perceptions of Artificial Intelligence in the Life Sciences

In 2025, more users are hesitant to trust AI and believe that humans can offer insights that an AI cannot.

Sentiments Towards AI in the Life Sciences by AI Usage — Trended



Future users are more hesitant to trust AI outputs; they also more strongly agree that human can deliver insights that an AI cannot and that AI will not replace human involvement.

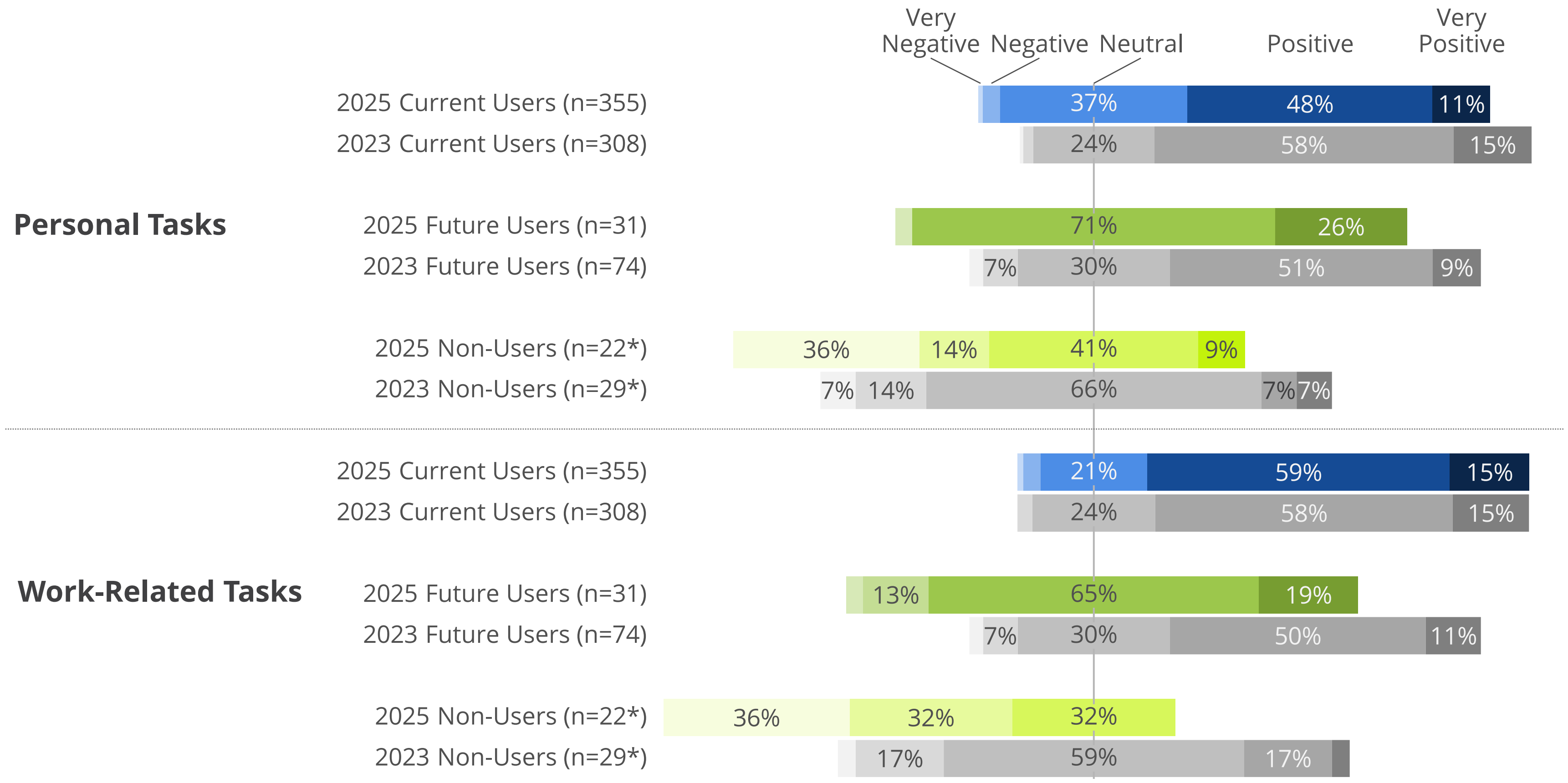
More current users agree that AI can speed up and significantly assist workflows in 2025 than in 2023. Future users are less certain.

All respondents agree that there is still much to learn before using AI.

Q8. For each set of sentiments towards AI in the life sciences, please indicate where your agreement falls? (move each slider to your selection for each option below in order to continue)

59% of current users indicate that AI has some positive impact for personal tasks, a substantial decrease from 73% in 2023.

Perceived Impact of AI by Scenario and AI Usage — Trended



Overall perceptions of the impact of AI has shifted to be more neutral in 2025 than in 2023 for current and future users for personal tasks.

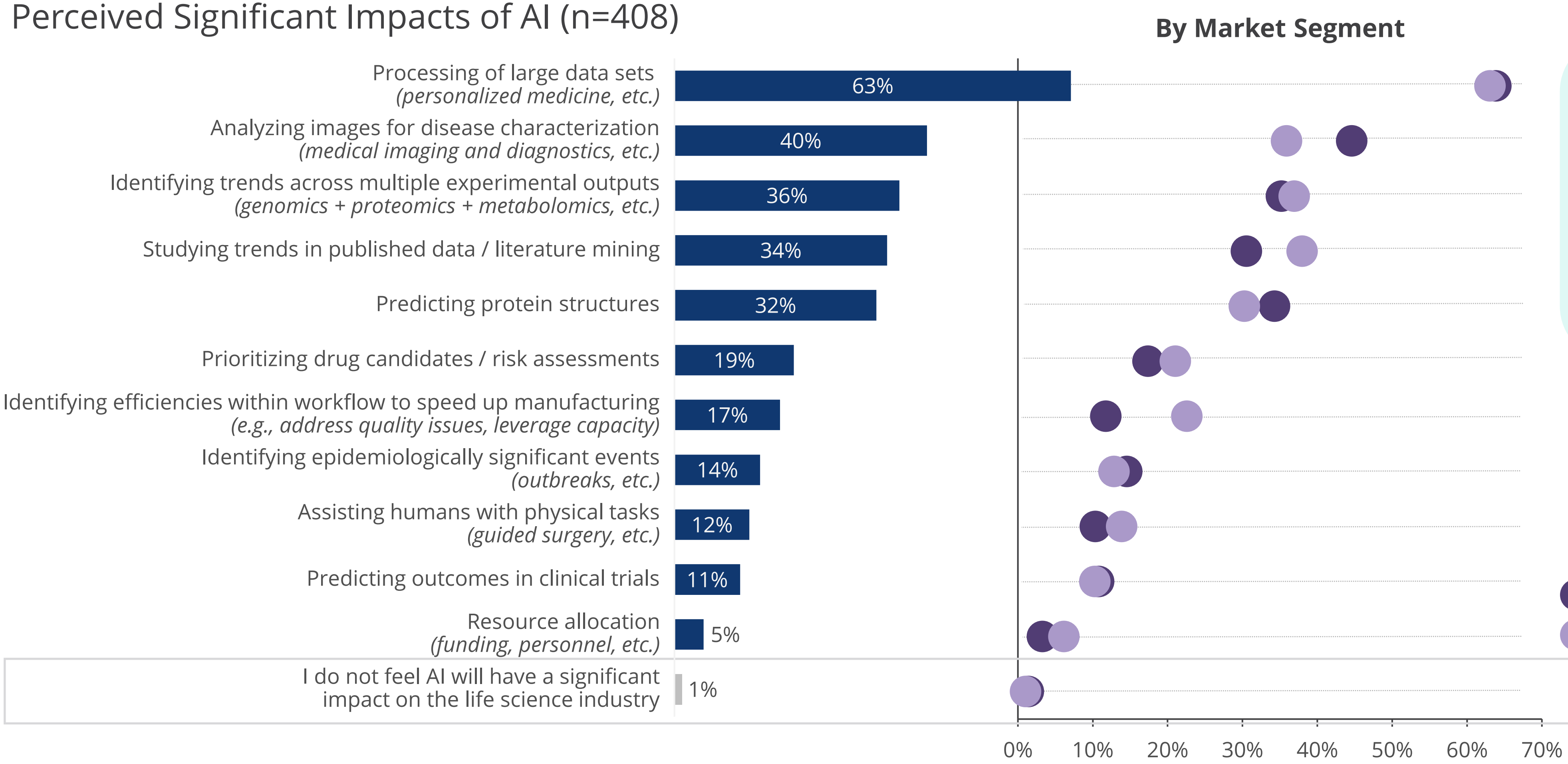
The impact of AI on work-related tasks have remained steady and positive; 74% of current users indicate that AI has positively impacted their work.

Non-users have more negative perceptions on the impact of AI across personal and professional settings in 2025.

Q4. Generally, what type of impact do you perceive AI to have on your life in each of the following scenarios? (choose only one for each row)
Caution: low number of respondents.

63% of respondents indicate that AI will have a significant impact on the processing of large data sets.

Perceived Significant Impacts of AI (n=408)



Academic / Government (n=213)

Industry (n=195)

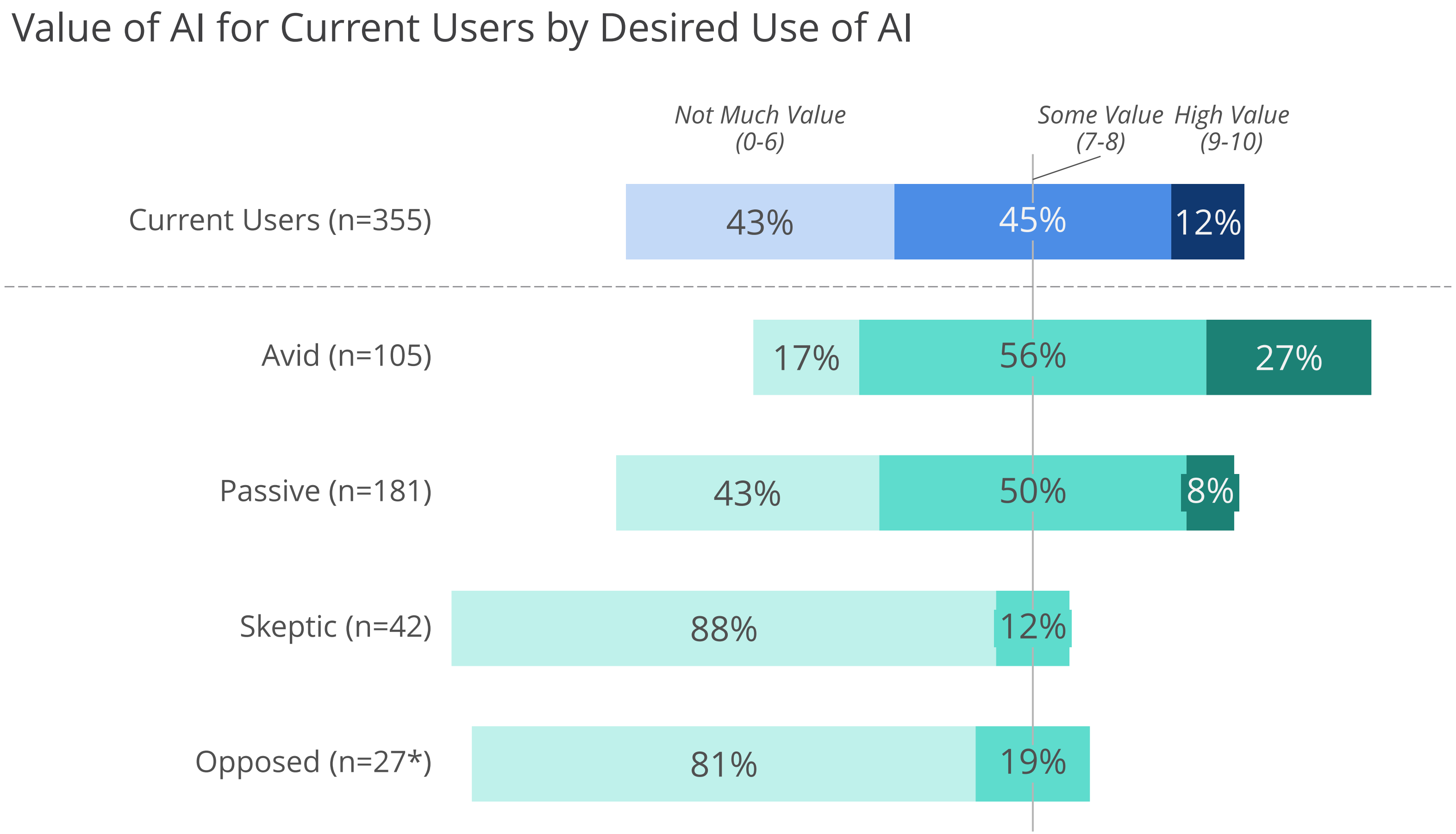
Note: This answer choice is mutually exclusive.

Additional areas of AI impact include analyzing images, identifying trends in –omics, literature mining, and predicting protein structures.

Industry respondents also highlight the ability of AI to identify efficiencies to speed up manufacturing.

Q9. In which way(s) do you feel AI will have the MOST SIGNIFICANT IMPACT on the life science industry? (check up to THREE)
**Caution: low number of respondents.*

57% of current users indicate that AI has brought at least some value to their workflows.

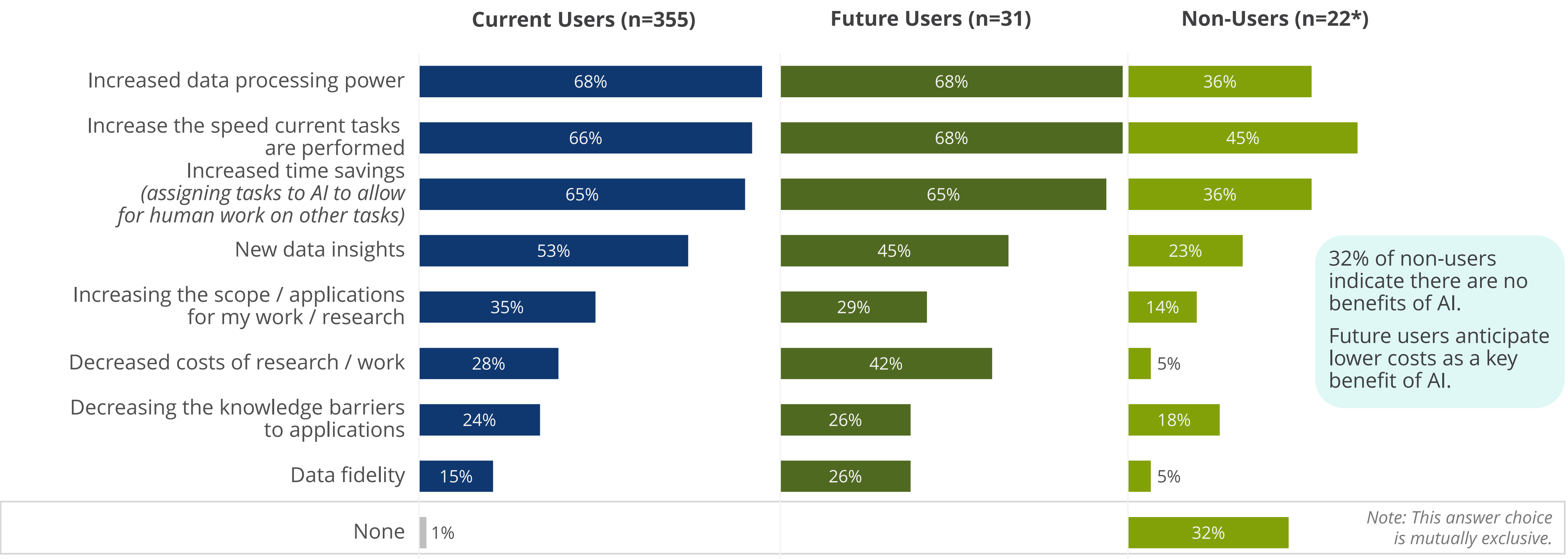


The desire to use AI is correlated with the perceived value that AI brings: 27% of avid users reveal that AI has brought high value, while Skeptics and Opposed respondents indicate that AI has not brought much value to their workflows.

Q17. How much VALUE has AI brought to your workflow? (choose only one)
**Caution: low number of respondents.*
Note: Only Current AI Users answered this question.

Over 65% of current users indicate that increased data processing, speed, and time savings are key benefits of using AI.

Perceived Benefits of AI in Research / Work by AI Usage



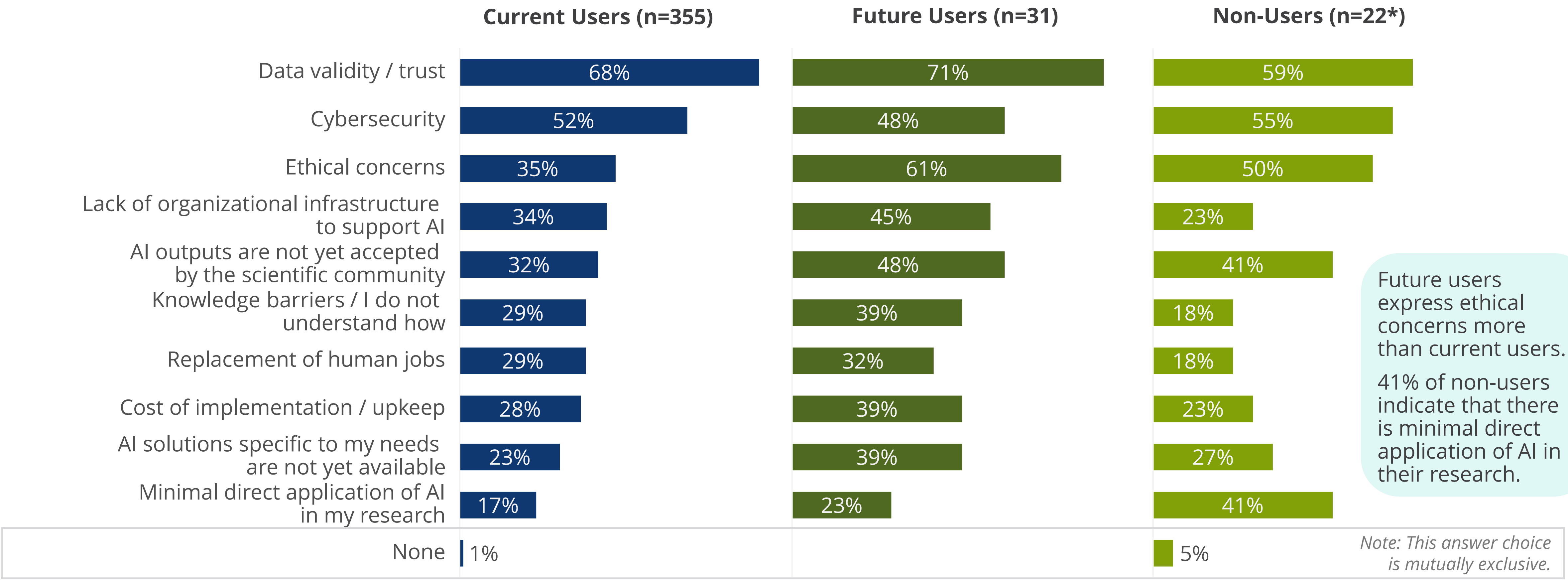
32% of non-users indicate there are no benefits of AI.

Future users anticipate lower costs as a key benefit of AI.

Q13. What BENEFITS do you perceive the use of AI would have in your research / work? (check all that apply)

99% of respondents indicate they have concerns about the usage of AI. Data validity and trust are top concerns.

Perceived Concerns of AI in Research / Work by AI Usage

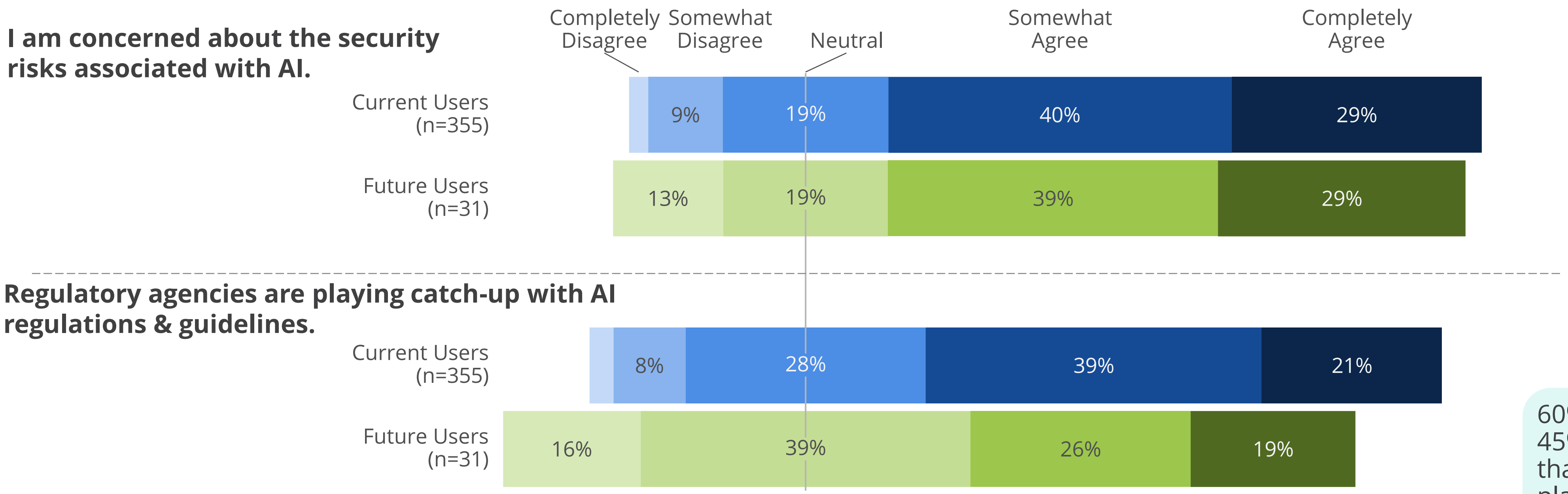


Q12. What CONCERNS do you have regarding the use of AI in your research / work? (check all that apply)

Caution: low number of respondents.

Nearly 70% of current and future users have concerns about security risks.

Agreement with Sentiments About AI by AI Usage



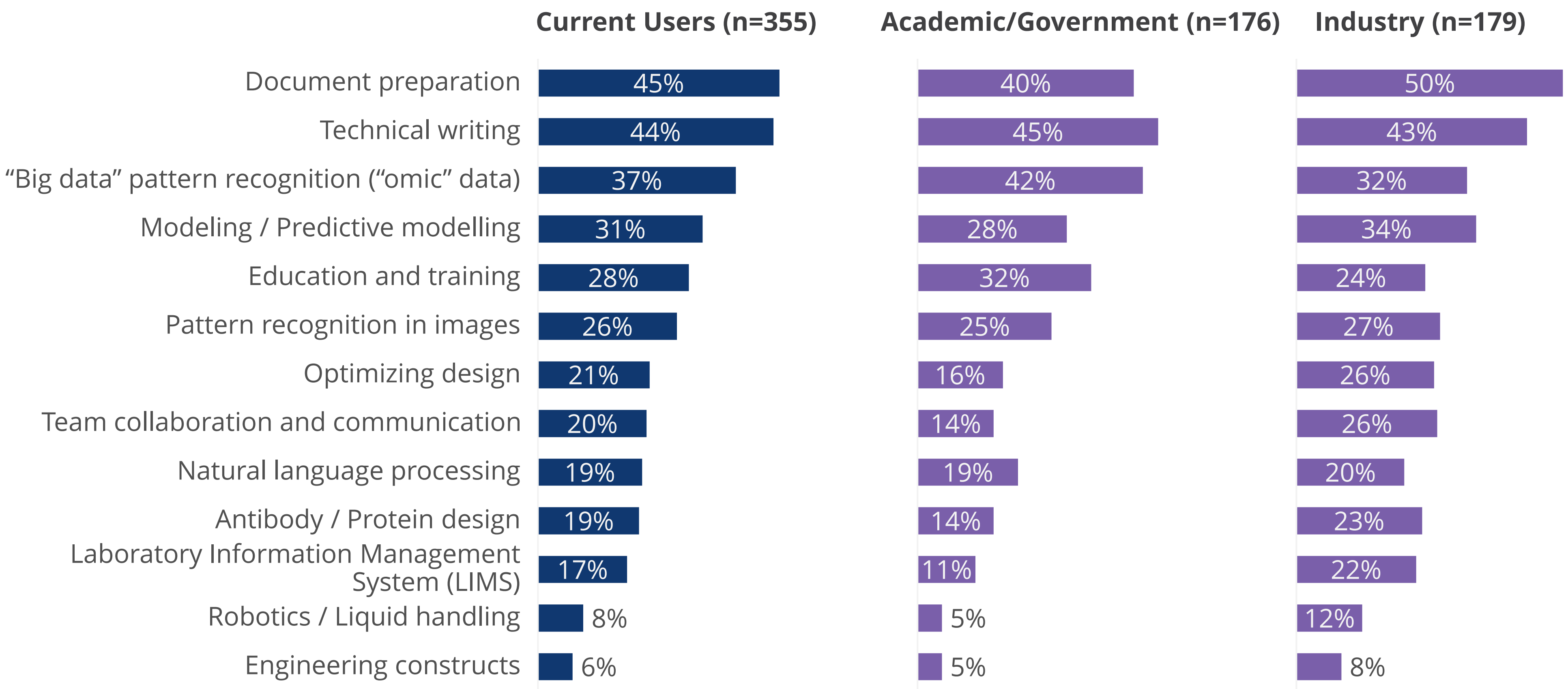
60% of current users and 45% of future users agree that regulatory agencies are playing catch-up with AI guidelines.

Q7. To what extent do you agree or disagree with the following statements? (choose only one for each)

Current Workflows Using AI

Document preparation and technical writing are the most common tasks assigned to AI.

Tasks Currently Assigned to AI for Current Users by Market Segment



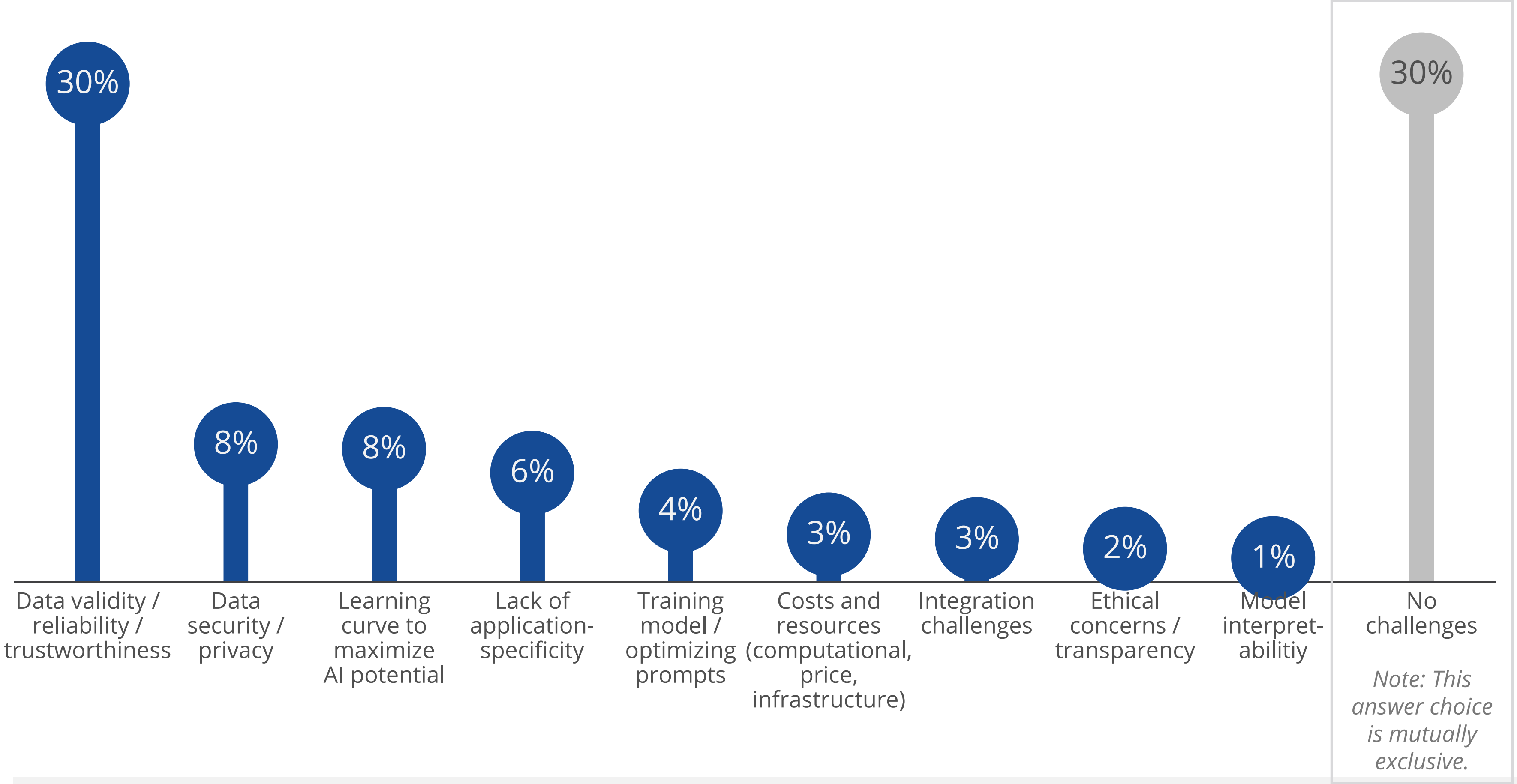
Over 30% of respondents also use AI for big data pattern recognition and modeling/predictive modeling.

Optimizing design, team collaboration, antibody/protein design, and LIMS are currently assigned to AI in Industry more than in Academic settings.

Q23. What class of tasks do you currently assign to AI? (check all that apply)
Note: Only current AI users answered this question.

Data validity is the key challenge for 30% of current users of AI .

Challenges with AI (n=355)



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The ability to integrate AI into specific data analysis applications without needing the involvement of a computer scientist. The lack of transparency about how the data output is generated makes it difficult to fully trust the accuracy of the data, especially when small but inaccurate outputs can be picked up when AI performs tasks that are more easily assessable by humans.

APAC, Academic/Government

Incorporating AI into existing systems can be complex and resource-intensive, especially if legacy systems are involved. Handling vast amounts of sensitive data raises concerns about privacy and security. Ensuring compliance with data protection regulations is crucial.

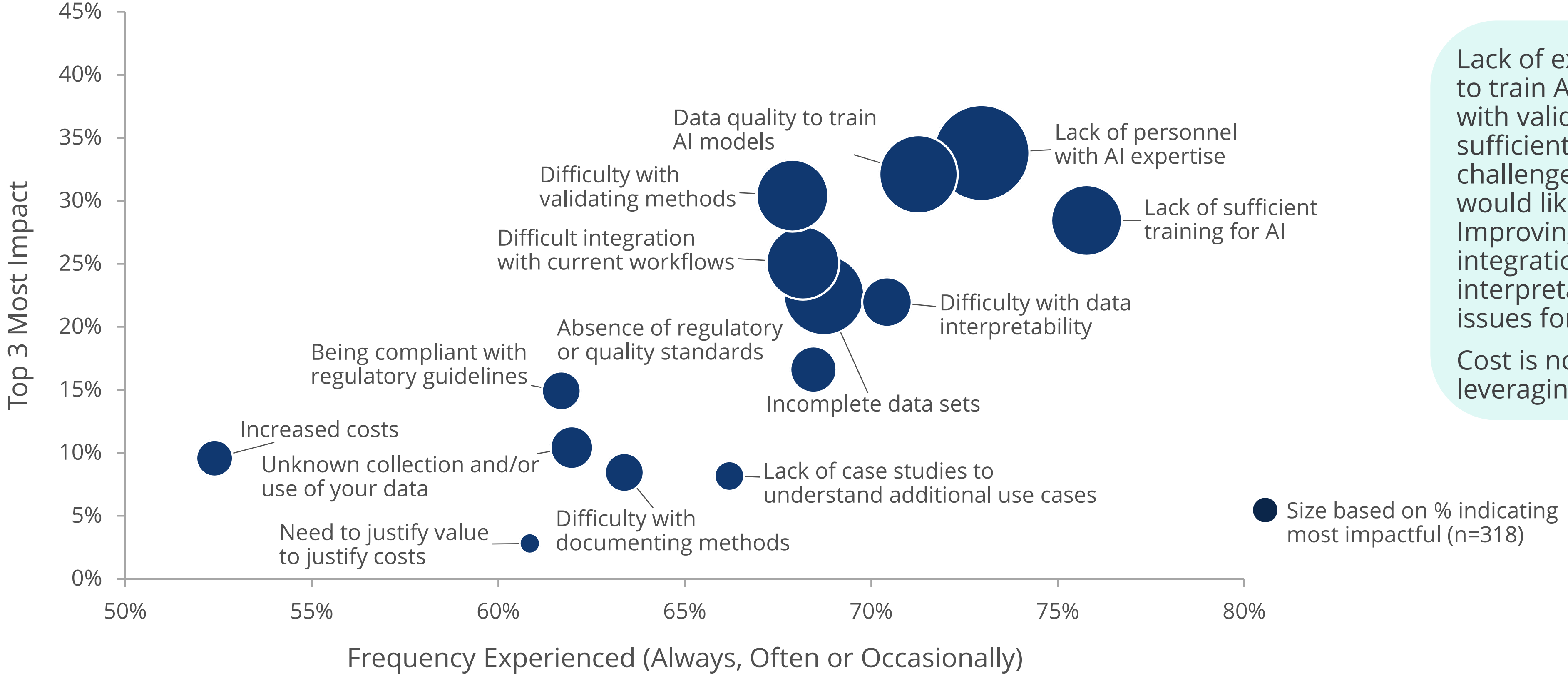
Europe, Industry

Q18. What CHALLENGES do you currently experience with AI in your workflow? (please elaborate)

Note: Only Current AI Users answered this question. Free text responses were reviewed and categorized to facilitate analysis.

Lack of sufficient training and lack of personnel with AI expertise are frequently occurring pain points in using AI tools.

Frequency and Impact of AI Tool Pain Points (n=355)



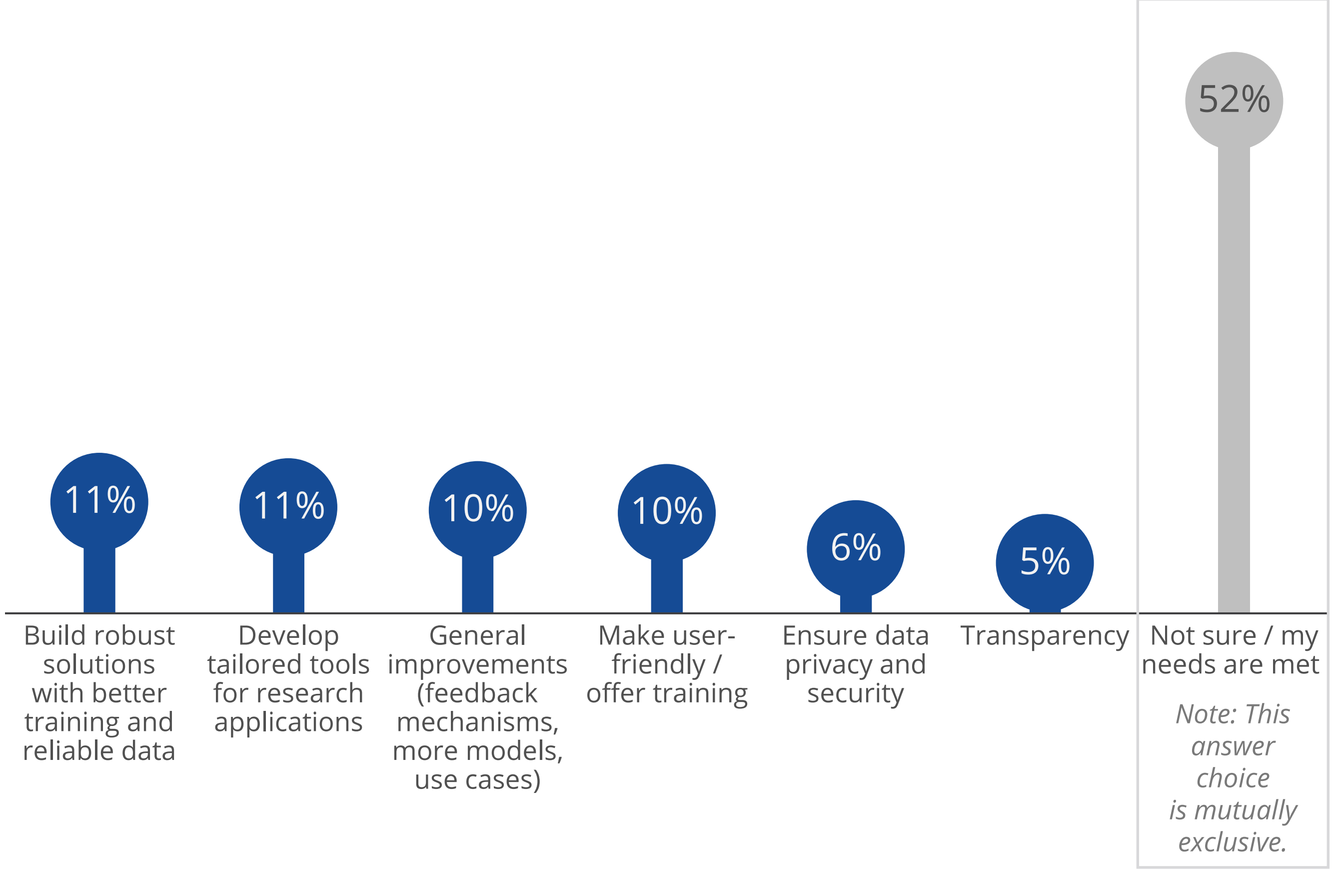
Lack of expertise, data quality to train AI models, difficulty with validation, and lack of sufficient training are key challenges that current users would like to resolve. Improving workflow integration and data interpretability will address issues for over 20% of users.

Cost is not a top pain point in leveraging AI tools.

Q19. How FREQUENTLY does your lab experience the following pain points when using AI tools? (choose only one for each)
Q20. Improving which of the following pain points would have the MOST IMPACT on your workflows leveraging AI? (please rank at least one and up to three pain points, where 1=Most Impactful to Resolve, 2=2nd Most Impactful to Resolve, and 3=3rd Most Impactful to Resolve)
Note: Only Current AI Users answered this question

52% of current users indicate their current needs are met, though demand exists for robust and tailored AI solutions.

Potential AI Solutions (n=355)



Provide practical demo or training modules that are easily applicable to the work.
North America, Industry

Analytical workflow and results declaration can be automated. Data sets for training models needs to be validated to remove inconsistencies and data which doesn't meet the quality threshold.
APAC, Industry

Work with regulators and transparent about training data set just to make sure no biases are there and some quality control measures.
Europe, Industry

AI companies need to discuss the requirements of customers on an individual basis, tweaking the models until such time that a comprehensive understanding of all challenges has been assessed.
Europe, Academic/Government

Q21. How can AI companies create solutions that best meet your needs [or resolve these challenges]? (please elaborate)
Note: Only Current AI Users answered this question. Free text responses were reviewed and categorized to facilitate analysis.

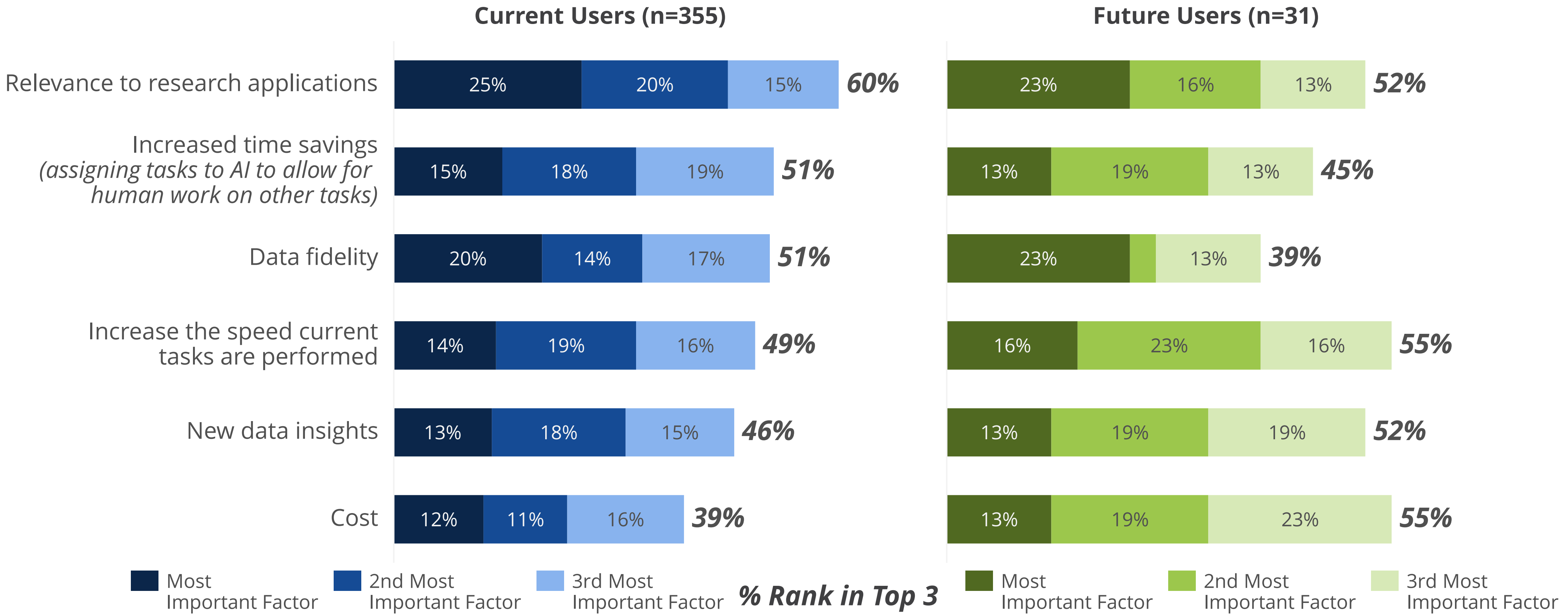
Motivators and Barriers to Adoption

Relevance to research applications is the most important at driving AI adoption for current users.

Increased time savings, data fidelity, and speed are additional adoption drivers for current users.

Speed, cost, and data insights are also important to future users.

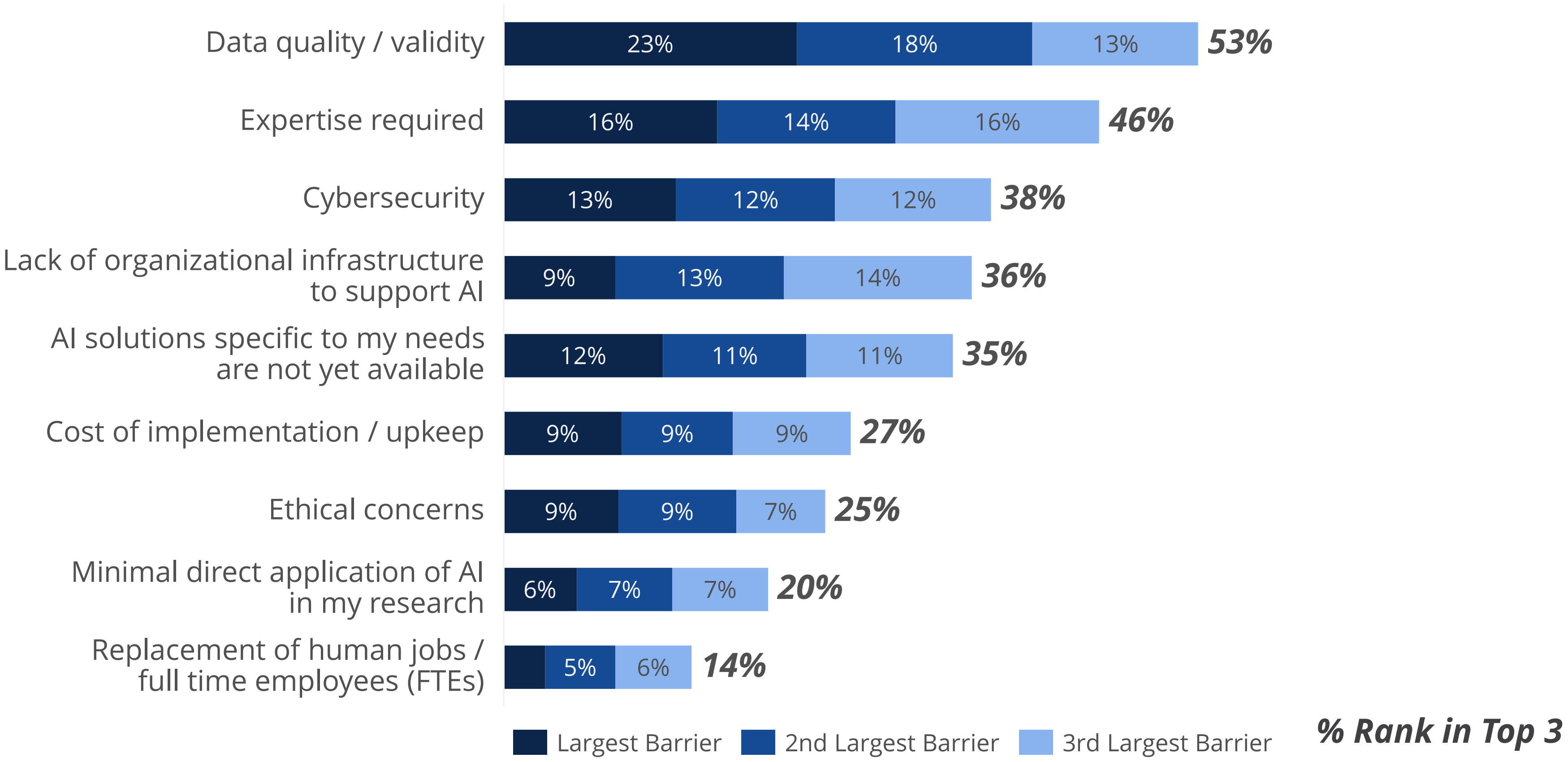
Important Factors in Lab's Adoption of a New AI Solution by AI Usage



Q26. How IMPORTANT are the following factors to your lab in adopting a new AI solution? (please rank at least one and up to three factors, where 1=Most Important Factor, 2=2nd Most Important Factor, and 3=3rd Most Important Factor)

Data validity, expertise, cybersecurity, and lack of infrastructure are the top barriers to adopting AI.

Top Barriers Preventing Adoption of AI (n=408)



Respondents are **not** concerned about replacement of human jobs by AI.

Top barriers for non-users include data quality / validity (63%), cybersecurity (45%), and ethical concerns (45%, data not shown).

Q27. What are the top barriers currently preventing you from adopting AI? (please rank at least one and up to three barriers, where 1=Largest Barrier, 2=2nd Largest Barrier, 3=3rd Largest Barrier)

Next Steps

Next Steps

1. Read the full 2025 Perceptions of Artificial Intelligence in the Life Sciences report to delve deeper into how AI is shaping research workflows.

2. Browse our catalog of publications that center around life scientist feedback and workflows.
   - ***Upcoming Titles***
     - Customer Loyalty and Switching: Real-Time PCR Reagents
     - Science in the Digital Age: Exploring Online Behaviors of Researchers
     - Benchmarking for 2025: Understanding the IVD User Experience
   - ***Recent Titles***
     - Life Science Global Funding and Research Budgets in Academia
     - Benchmarking for 2024: Understanding the Life Science Customer Experience
     - 2024 Market Report for Research Antibodies
     - 2024 Perceptions in Environmental Sustainability in the Life Sciences

3. Evaluate our market research options to determine if there is a solution best suited for your study goals.

SMG Primary Market Research Tiers

ACCELERATED INSIGHTS

- Audience: Broad, life science
- Sample Size: 100-200
- Timeline: 5-7 days
- Use Cases: Quick gut check on Product Receptivity & Usage, Pricing, Brand Check

CUSTOM LITE

- Audience: Life science professionals with up to 5 screener questions
- Sample Size: 100 – 200
- Timeline: 4 – 6 weeks
- Uses Cases: Concept Testing, Consumer Feedback Surveys, Brand Awareness

CUSTOM INSIGHTS

- Full-service market study designed for complex or strategic initiatives that demand a fully customized study, tailored to your specific needs

Accelerated Insights

RATE MY PRODUCT

Use Case: Benchmark your product ideas against previously evaluated products to assess viability before investing in R&D

Survey: Use our ready-made survey designed by our market research experts

Deliverable: Auto-generated, presentation-ready report showing ratings on 7 key product attributes.

REAL-TIME MARKET PULSE

Use Case: Obtain real-time data on a variety of market questions quickly

Survey: Build your own survey with up to 10 questions that fit your needs

Deliverable: Excel with individual, respondent-level answers to slice & dice the data

Custom Lite

Designed for less strategic initiatives on a tighter budget, Custom Lite empowers you to make informed decisions quickly and cost-effectively.

Core Advantages

- Cost-Effective Expertise: ensure you stay within budget without sacrificing insight quality
- Customizable Scope: deliver answers you need from the people you need it from
- Trusted Methodologies: built on over 30 years of proven research frameworks

Designed For

- Companies seeking insights for less critical or experimental initiatives
- Teams with limited research budgets looking for maximum ROI
- Businesses needing quick, reliable data to guide decision-making.

Real-World Applications

- Concept Testing
- Consumer Feedback Surveys
- Brand Awareness Checks

Quantitative Market Research Options

Panel Only

- Coordination of recruitment and honoraria
- List building/panel directed to client survey via coordination of programmed links between SMG and client

Custom Base

- Survey design
- Programming
- Recruitment/panel
- Data cleaning
- Cleaned data set

Custom Core

- Survey design
- Programming
- Recruitment/panel
- Data cleaning
- Cleaned data set
- Frequencies/cross-tabs creation

Custom Complete

- Survey design
- Programming
- Recruitment/panel
- Data cleaning
- Cleaned data set
- Frequencies/cross-tabs creation
- Custom report with analysis & interpretation.

Custom Advanced

- Survey Design
- Programming
- Recruitment/panel
- Data cleaning
- Cleaned data set
- Frequencies/cross-tabs creation
- Custom report with analysis & interpretation.
- Conjoint Simulator, interactive data deliverable, or other advanced analysis tools
- Data presentation in Tableau

Qualitative Market Research Options

Recruit Only: Recruit and Schedule Interviews Only

- Screener survey design
- Programming
- Recruitment
- Interview scheduling
- Client conducts interviews
- Interview recordings

Custom Base: Interview Moderation with Recordings & Transcripts

- Screener survey design
- Programming
- Recruitment
- Discussion guide design
- Interview scheduling
- SMG moderator conducts interviews
- Interview recordings and transcripts

Custom Complete: Interview Moderation with Full Insights Report

- Screener survey design
- Programming
- Recruitment
- Discussion guide design
- Interview scheduling
- SMG moderator conducts interviews
- Interview recordings and transcripts
- Custom report with analysis of key findings

Other Qualitative Options

- Cognitive interviews to test survey designs
- Focus groups
- Ethnographies

About BioInformatics

BioInformatics, part of Science and Medicine Group, is **the premier research and advisory firm** serving the life science industry. Since 1994, we have been providing off-the-shelf reports, custom-designed studies, and market analysis that enables companies to understand their market and competitors through the eyes of the most important information source of all the people who buy their products.

By leveraging our online professional network of tens of thousands of scientific customers, we have supported more than 500 companies and provided insights that lead to better business decisions.

Our actionable insights support assessing the size and attractiveness of markets, optimizing product configurations and pricing, validating corporate acquisitions, measuring of customers' brand loyalty, and evaluating of your brand strength and positioning. **We help you grow, adapt, and change in a rapidly evolving market.**

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671 North Glebe Road, Suite 1610
Arlington, VA 22203

Phone: 703.778.3080

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Contact us

info@bioinfoinc.om

703-778-3080

703-778-3081

BioInformatics Inc
671 North Glebe Road
Suite 1610 Arlington, VA
22203
United States

Science and Medicine Group

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AMPLION

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