



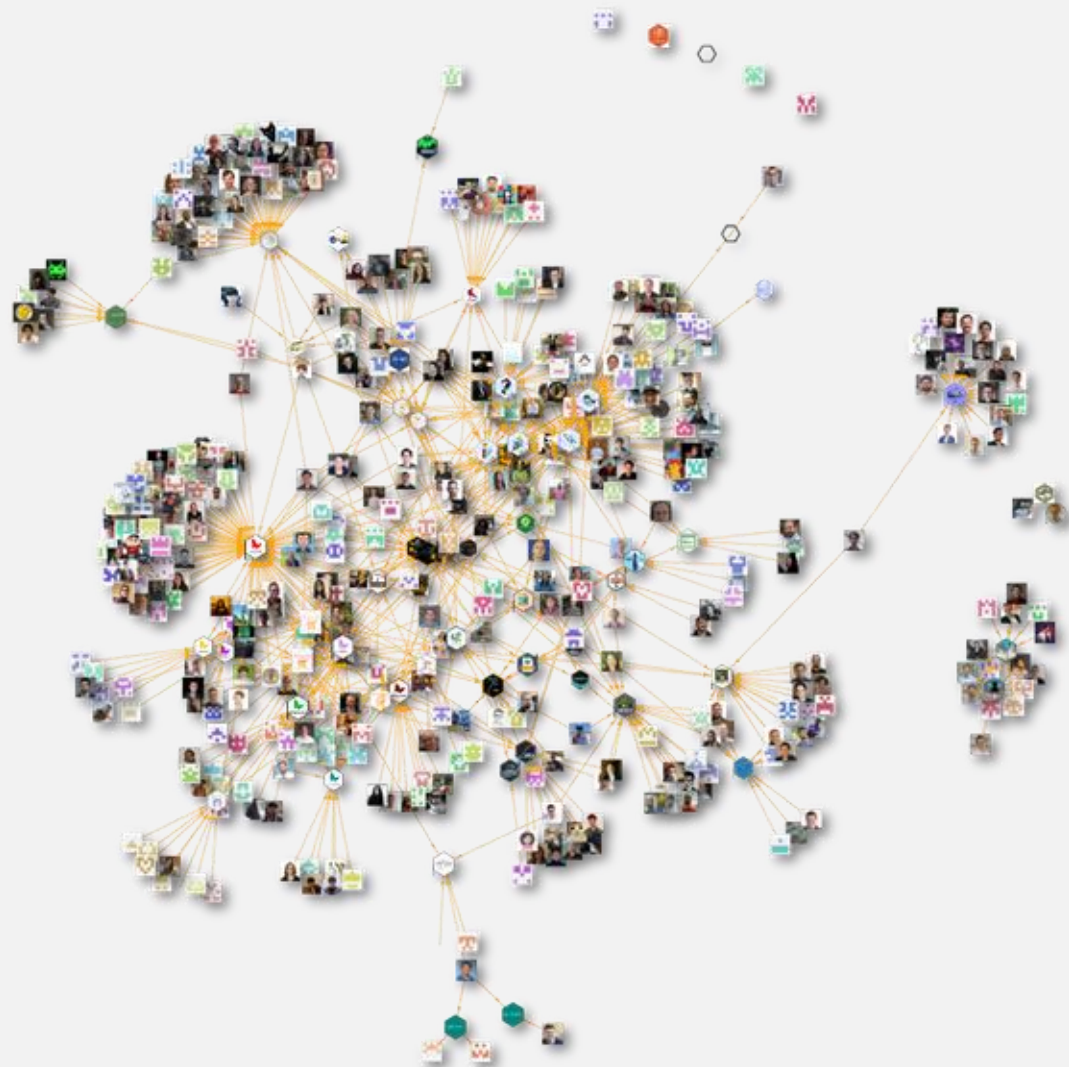
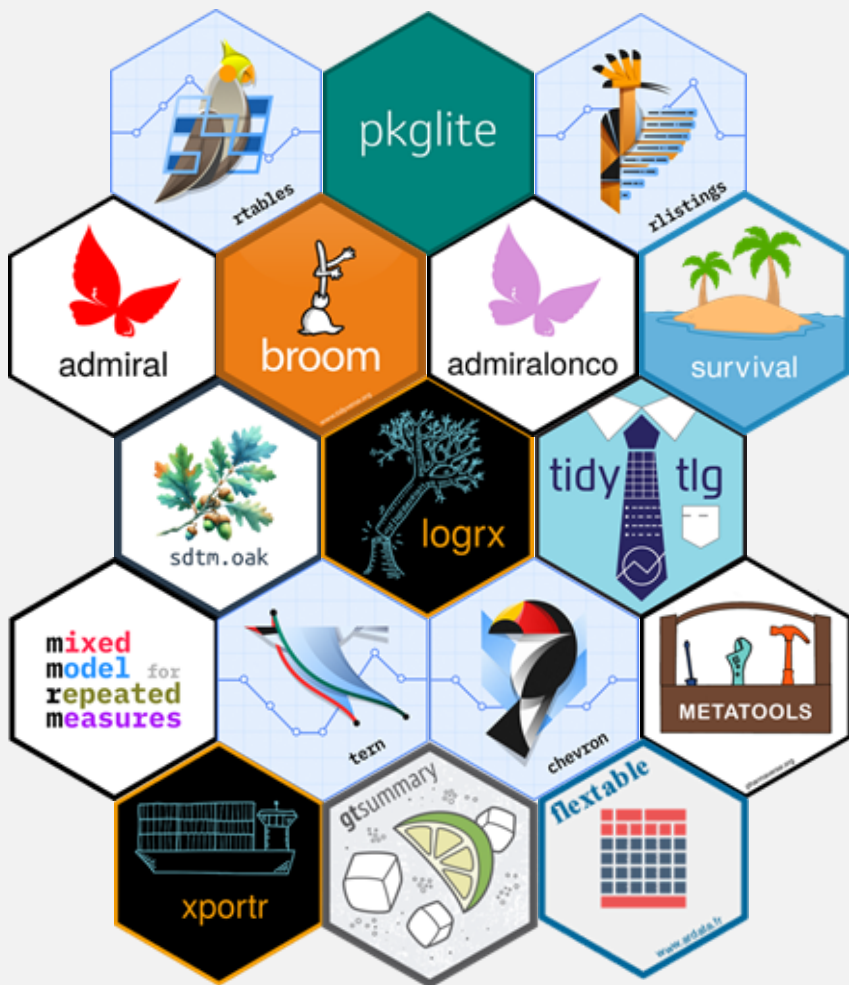
How R We Now?

Tracking Industry Progress in Adopting R and Open-Source for Clinical Reporting



What is pharmaverse?

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What is pharmaverse?



OS Software Solutions: This pillar aims to ensure the industry has a curated ecosystem of open-source solutions* useful for reporting and submission of clinical data and analyses.

** R, python, or other languages*



Community: This pillar aims to foster a community of passionate individuals interested in collaborative development and maintenance of open-source solutions for 'working with data' within the pharmaceutical industry.



PHUSE Working Group: This pillar aims to leverage pharmaverse's identity as a PHUSE Working Group to support innovation around ideas directly in line with, or adjacent to, the pharmaverse core mission.



Future Focus: This pillar aims to ensure that pharmaverse continues to drive impact as the needs of the industry evolves over time – by monitoring the landscape on what's next.



Survey

First pharmaverse adoption survey to pulse-check sponsor progress with R

- **23** responses

2024

2025

Survey repeated to track change over time and expanded to include Python

- **31** responses

- Open text, single-choice, and multiple-choice questions
- Multiple-choice results reflect selections (not companies)



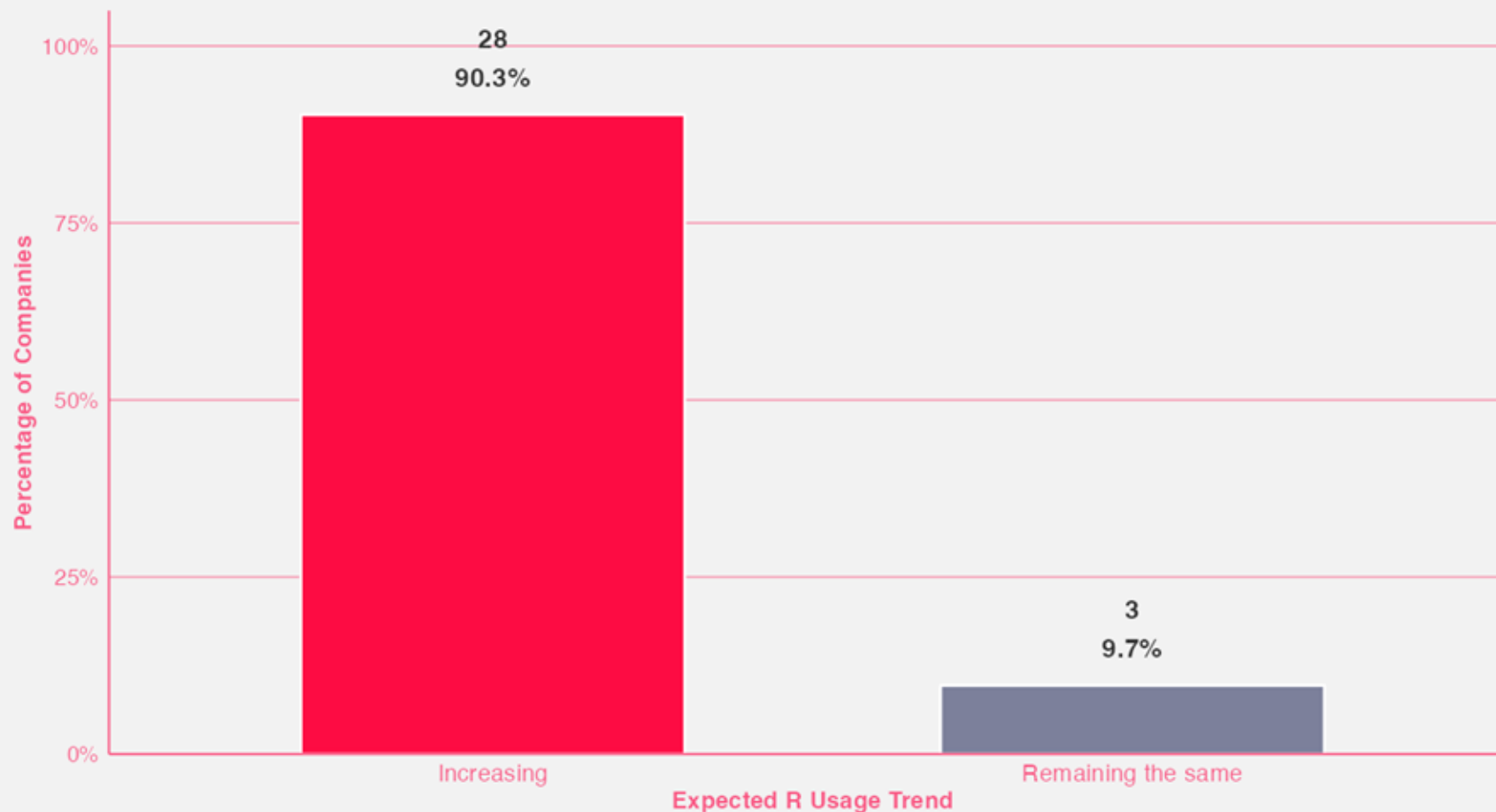
Usage of R

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Future of R Usage in Clinical Reporting: 2025 Survey

Q2: How would you see the level of R usage at your company in the near future (next 2 years)?



Source: Pharmaverse R Adoption Survey 2025 | n=31 companies | 90% expect increasing R adoption



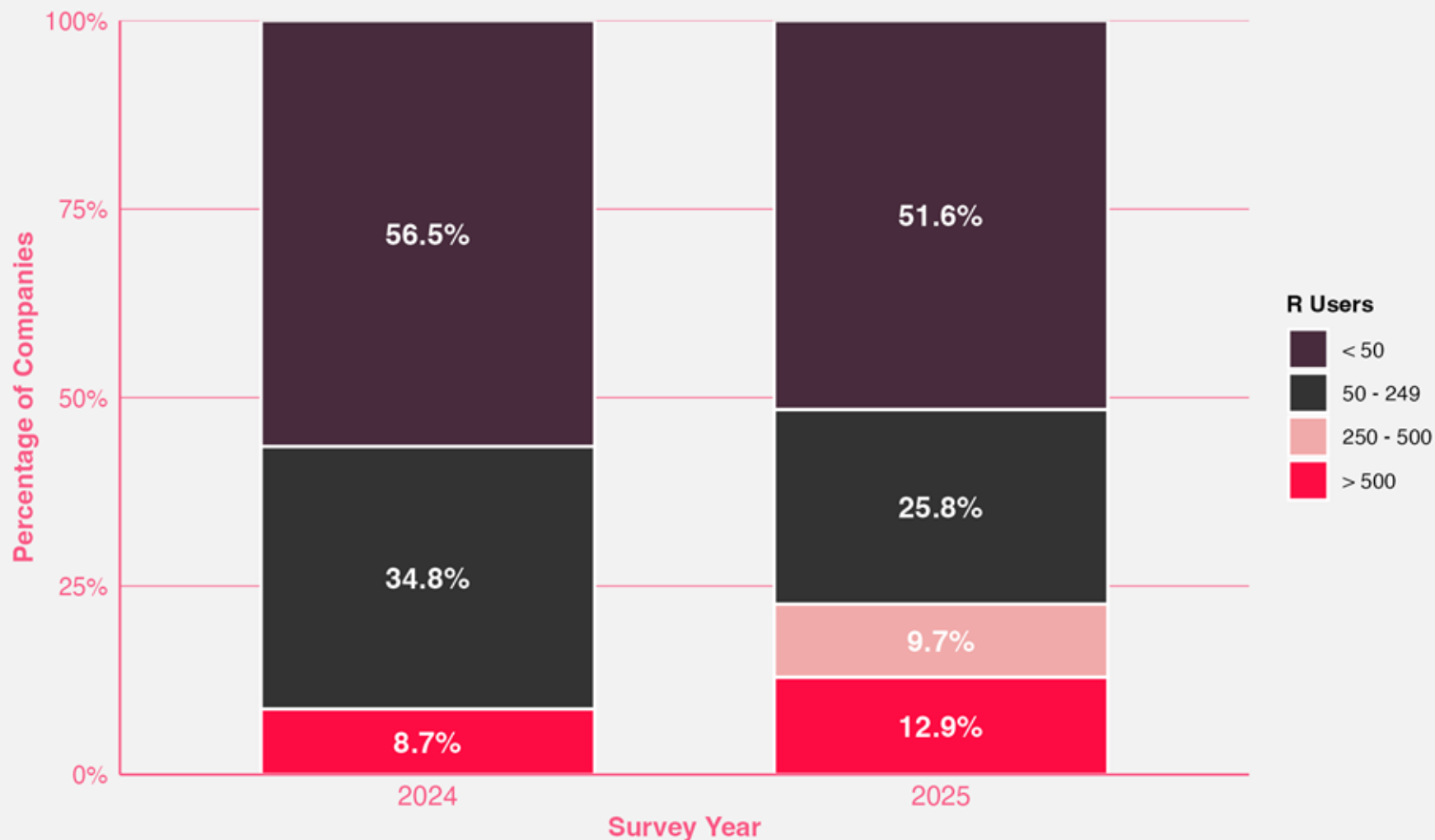
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Number of R Users

R Adoption Growth: Proportional Distribution Comparison

Companies shifting toward higher R user counts from 2024 to 2025



Source: Pharmaverse R Adoption Survey | 2024: n=23 companies | 2025: n=31 companies (+35% participation)



Clinical Reporting Areas

SDTM, ADaM, TLGs, Interactive Displays

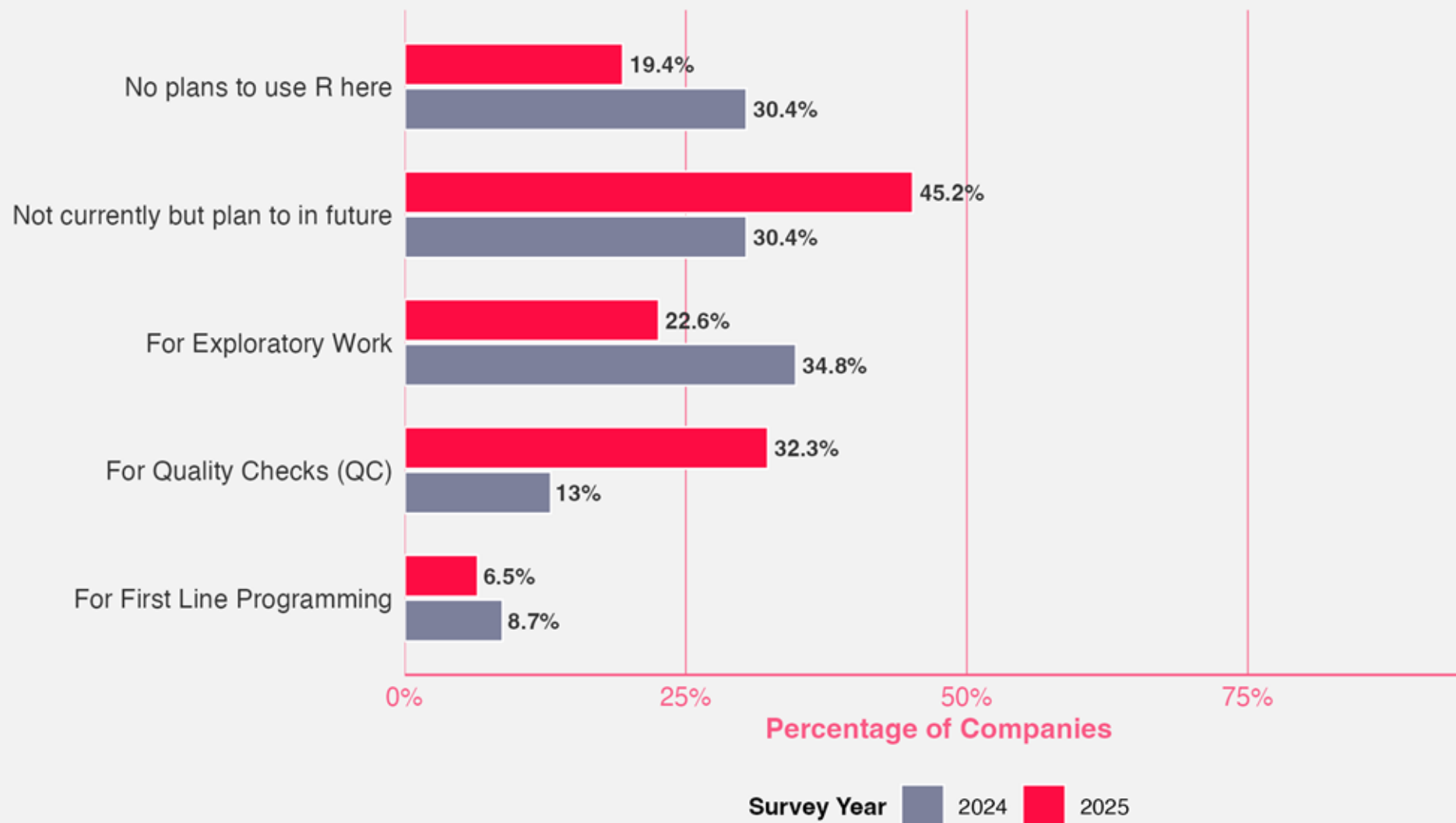


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R Usage for SDTM Tasks: 2024 vs 2025 Comparison

Q9: Please describe R usage at your organisation with respect to SDTM
(Multiple selections allowed)



Source: Pharmaverse R Adoption Survey | 2024: n=23 companies | 2025: n=31 companies



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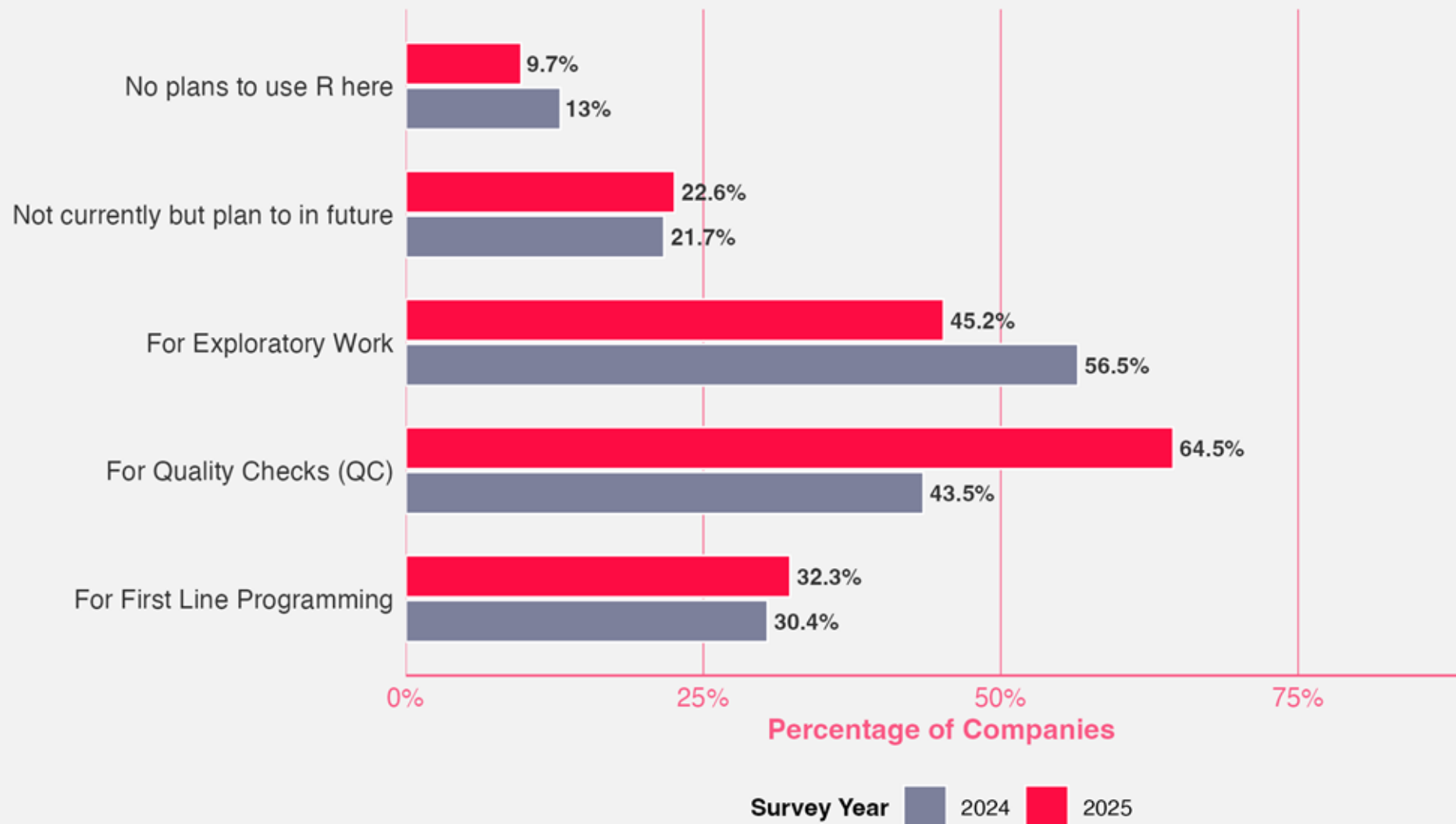


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R Usage for ADaM Tasks: 2024 vs 2025 Comparison

Q11: Please describe R usage at your organisation with respect to ADaM
(Multiple selections allowed)



Source: Pharmaverse R Adoption Survey | 2024: n=23 companies | 2025: n=31 companies



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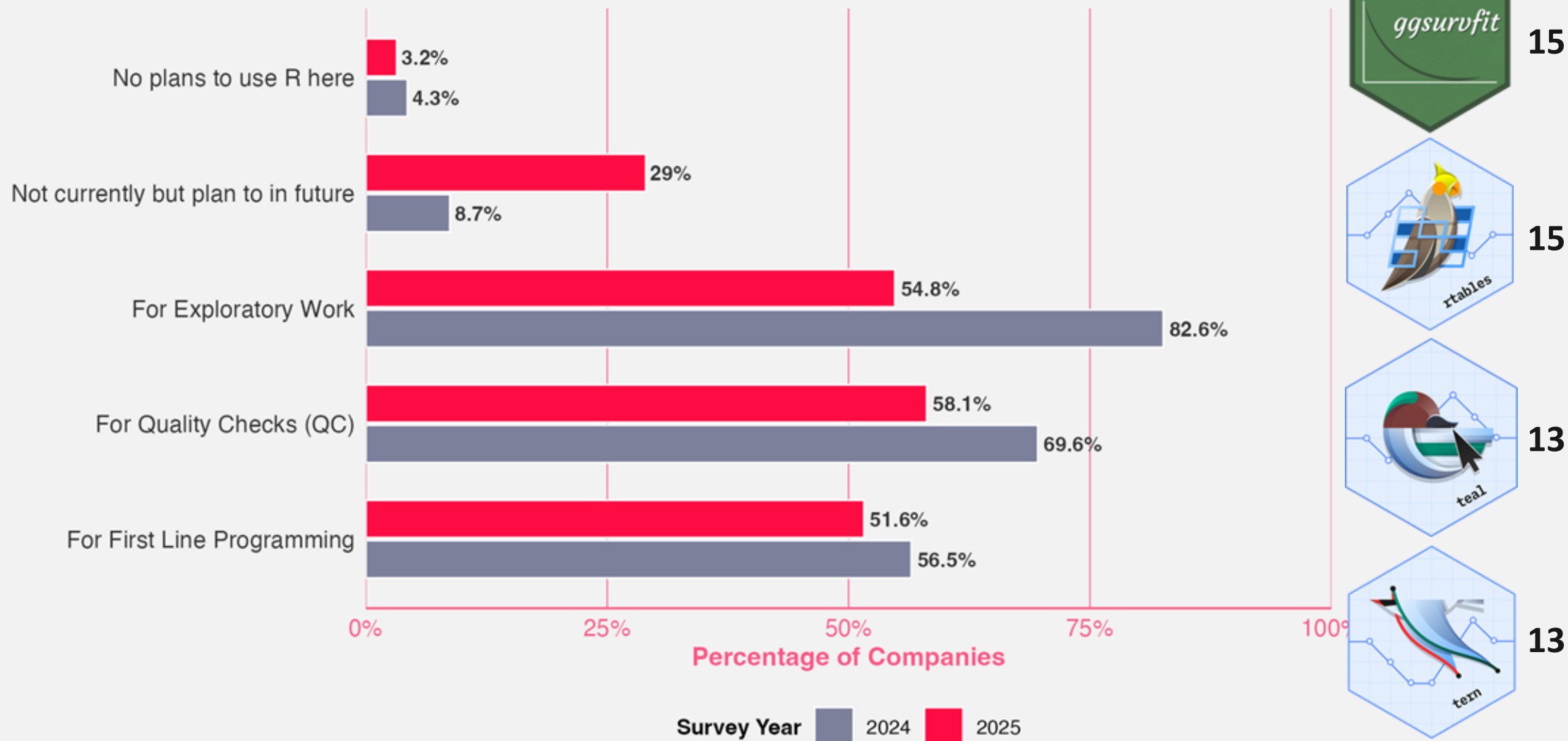


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R Usage for TLG Tasks: 2024 vs 2025 Comparison

Q13: Please describe R usage at your organisation with respect to TLG
(Multiple selections allowed)



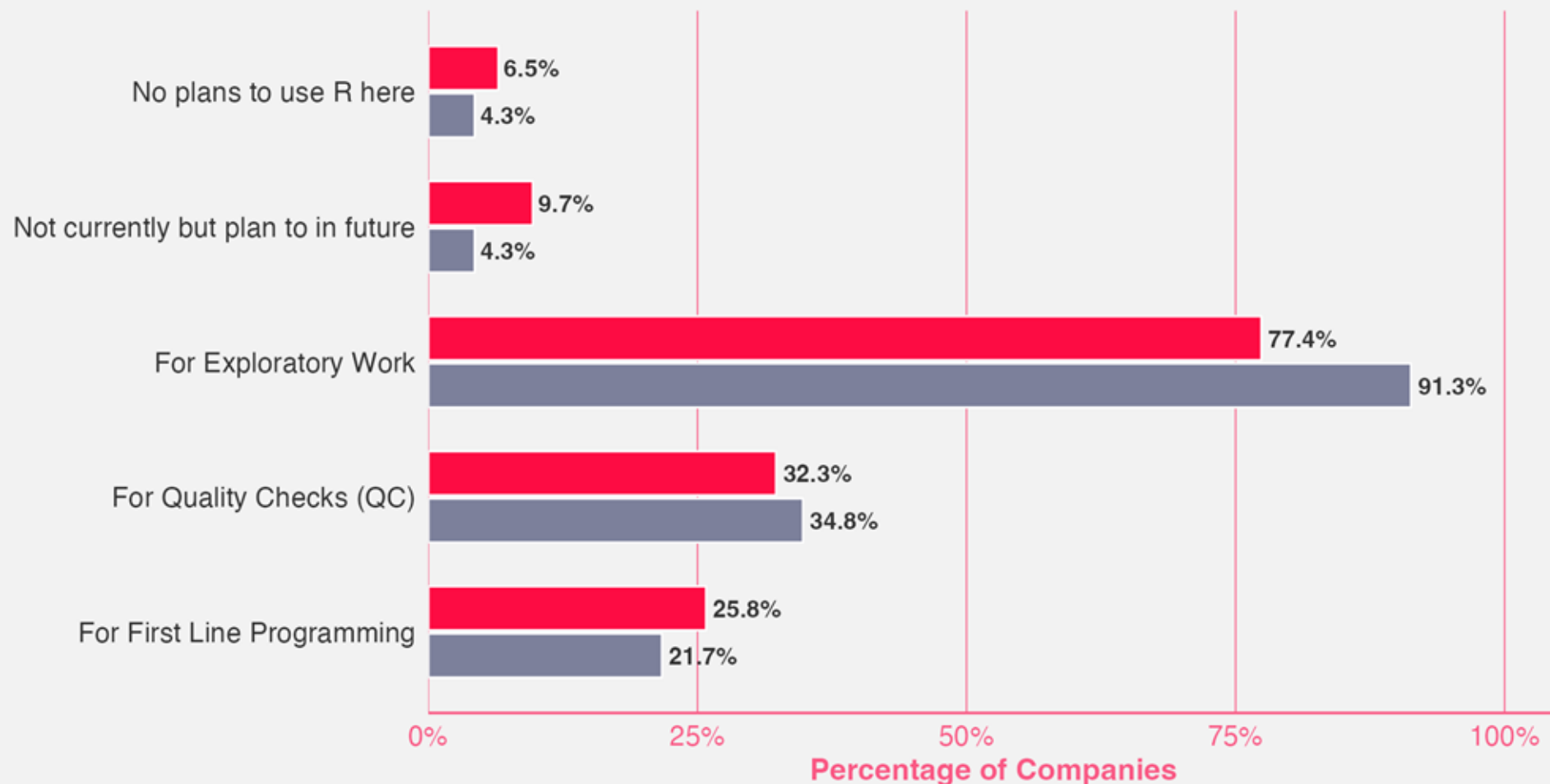


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R Usage for Interactive Displays: 2024 vs 2025 Comparison

Q15: Please describe R usage at your organisation with respect to Interactive Displays
(Multiple selections allowed)



Survey Year 2024 2025

Source: Pharmaverse R Adoption Survey | 2024: n=23 companies | 2025: n=31 companies



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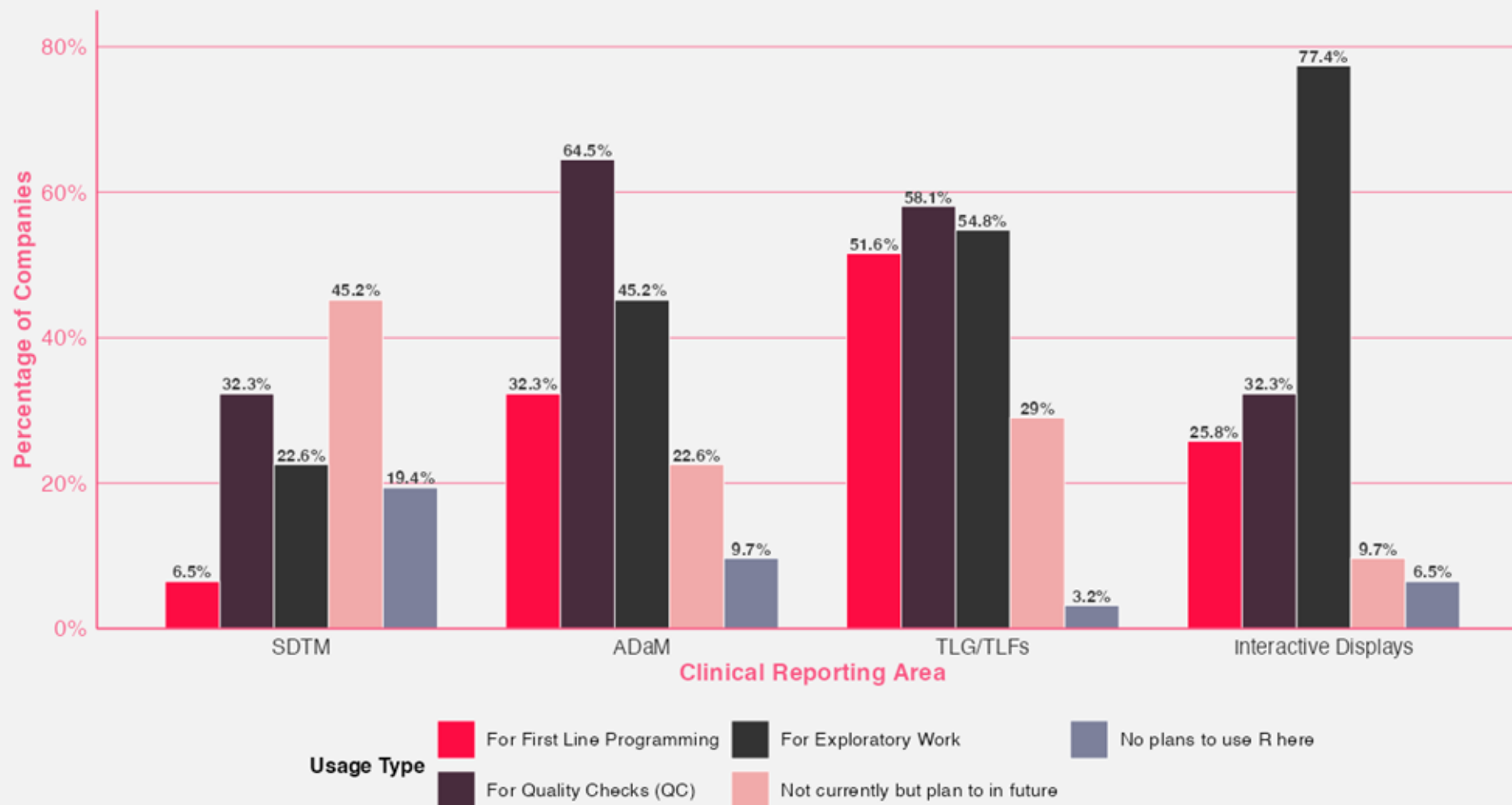
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R Usage Comparison

R Adoption Maturity Across Clinical Reporting Areas

Comparison of R usage patterns: SDTM, ADaM, TLG/TLFs, and Interactive Displays





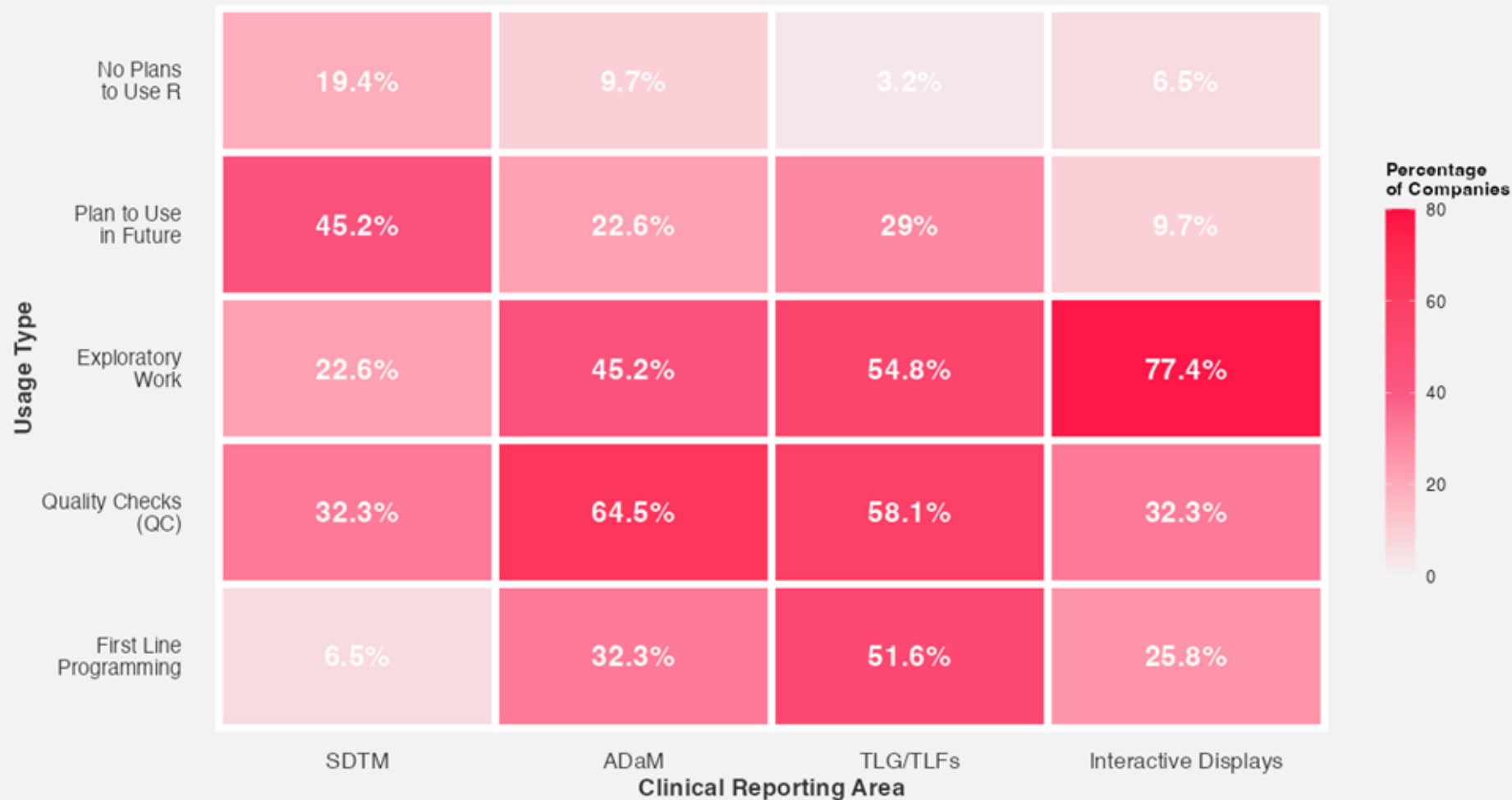
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R Usage Comparison

R Usage Heat Map: Clinical Reporting Areas

Maturity progression from SDTM (emerging) to TLG/Interactive (mature)



Source: Pharmaverse R Adoption Survey 2025 | n=31 companies | Darker colors indicate higher adoption



Additional Areas

Electronic Submission, Python, Other

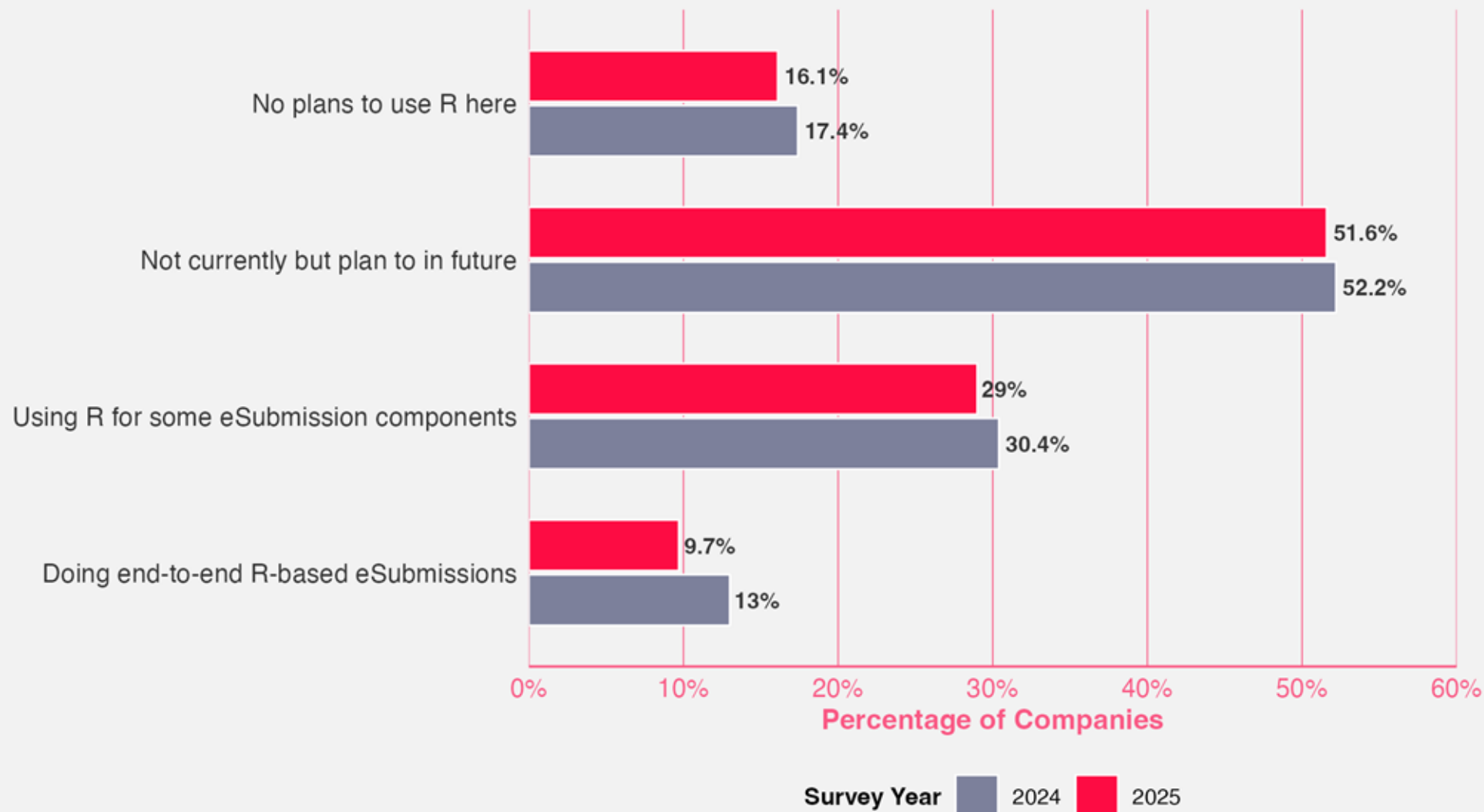


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R Usage for eSubmission: 2024 vs 2025 Comparison

Q17: Please describe R usage at your organisation with respect to eSubmission
(Multiple selections allowed)



Source: Pharmaverse R Adoption Survey | 2024: n=23 companies | 2025: n=31 companies



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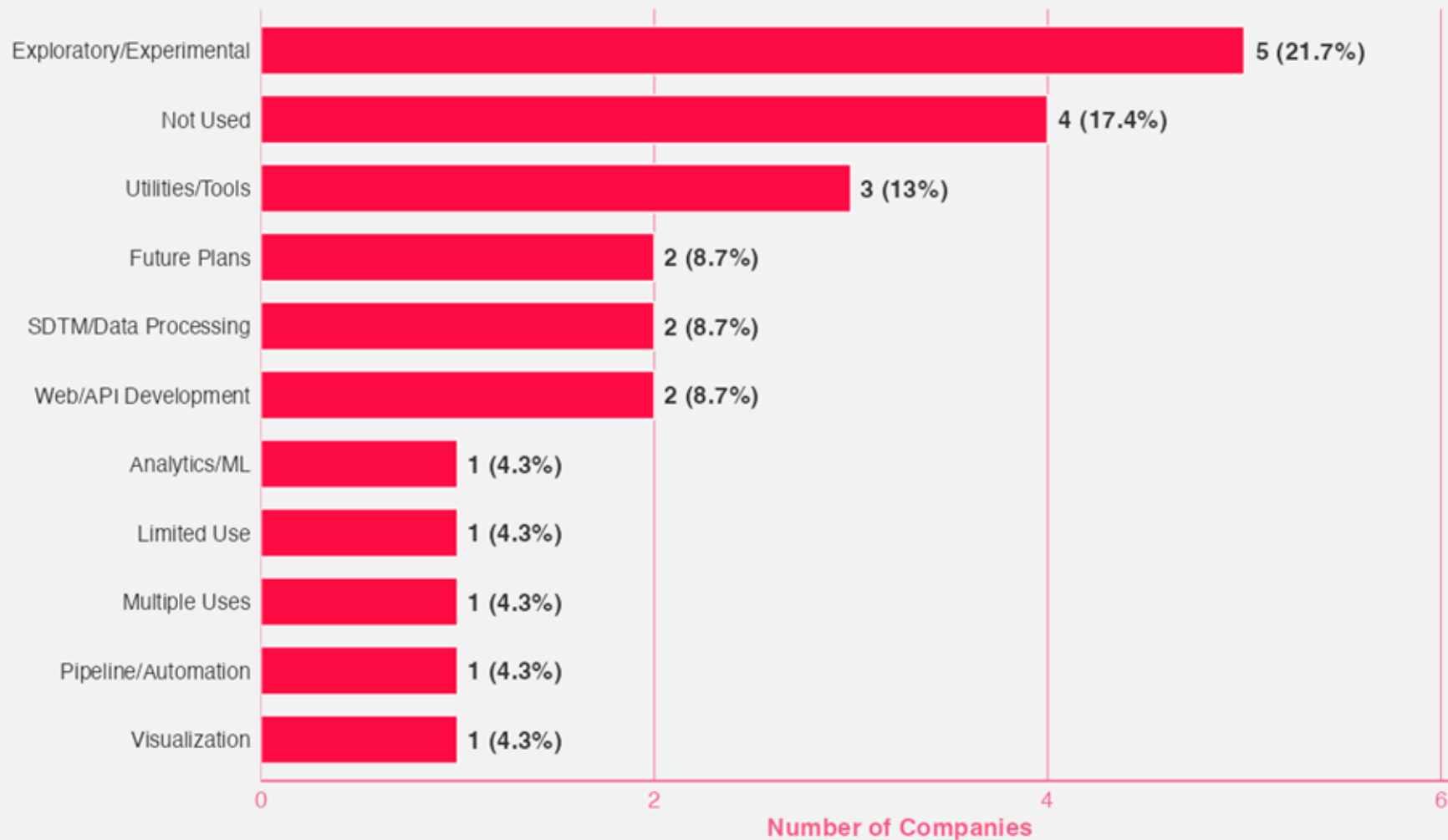


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Python Usage in Clinical Reporting Tasks

Q19: Please describe Python usage at your organisation (Free text responses, n=23)



Source: Pharmaverse R Adoption Survey 2025 | Python mainly used for utilities, exploration, and specialized tasks



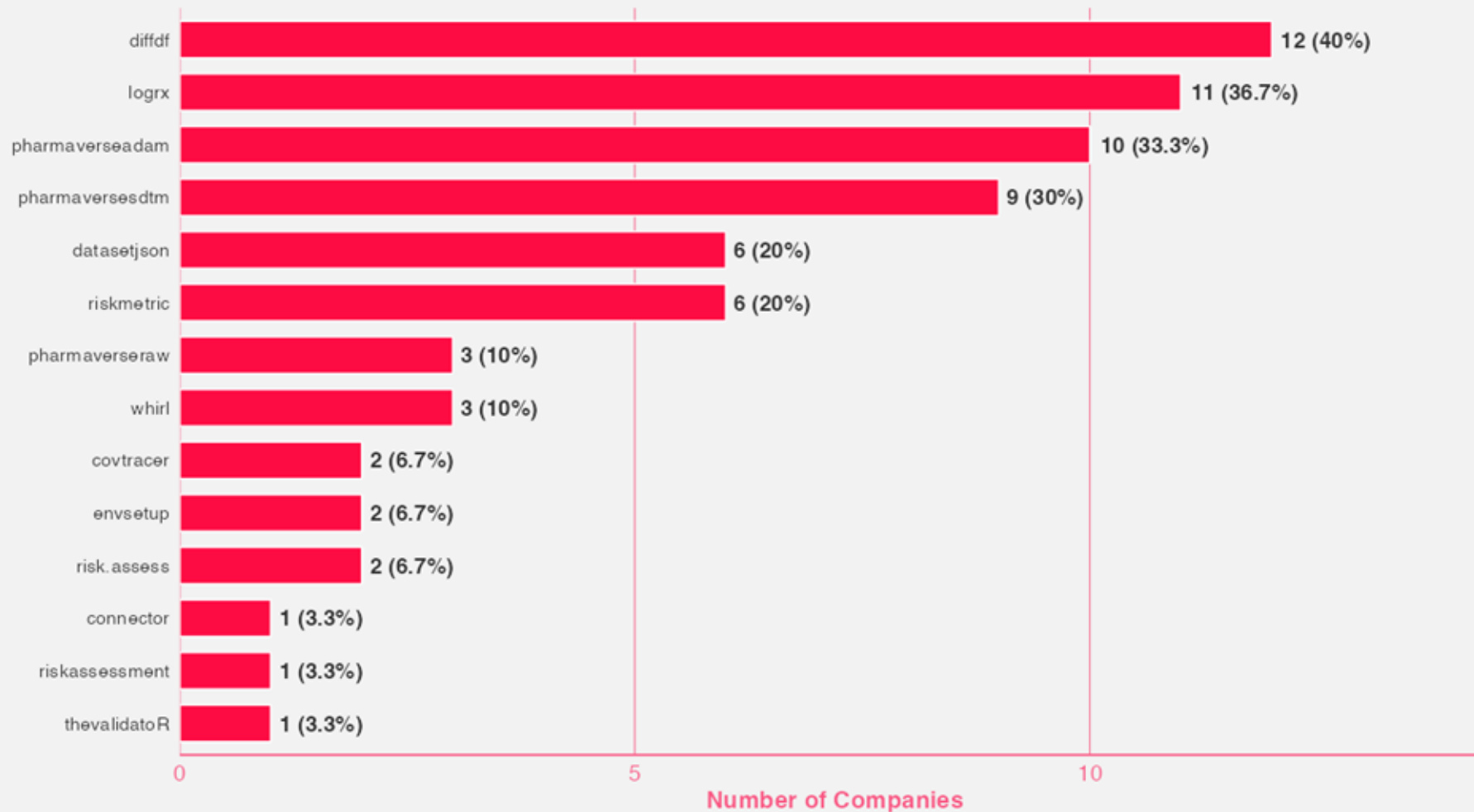


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Pharmaverse Package Usage: Other Supporting Packages

Q21: Other pharmaverse packages used (quality, validation, metadata, testing)



Source: Pharmaverse R Adoption Survey 2025 | n=31 companies | diffdf for data comparison is most popular



Implementation and Business Impact

Obstacles, Success Factors, Impact, Approach

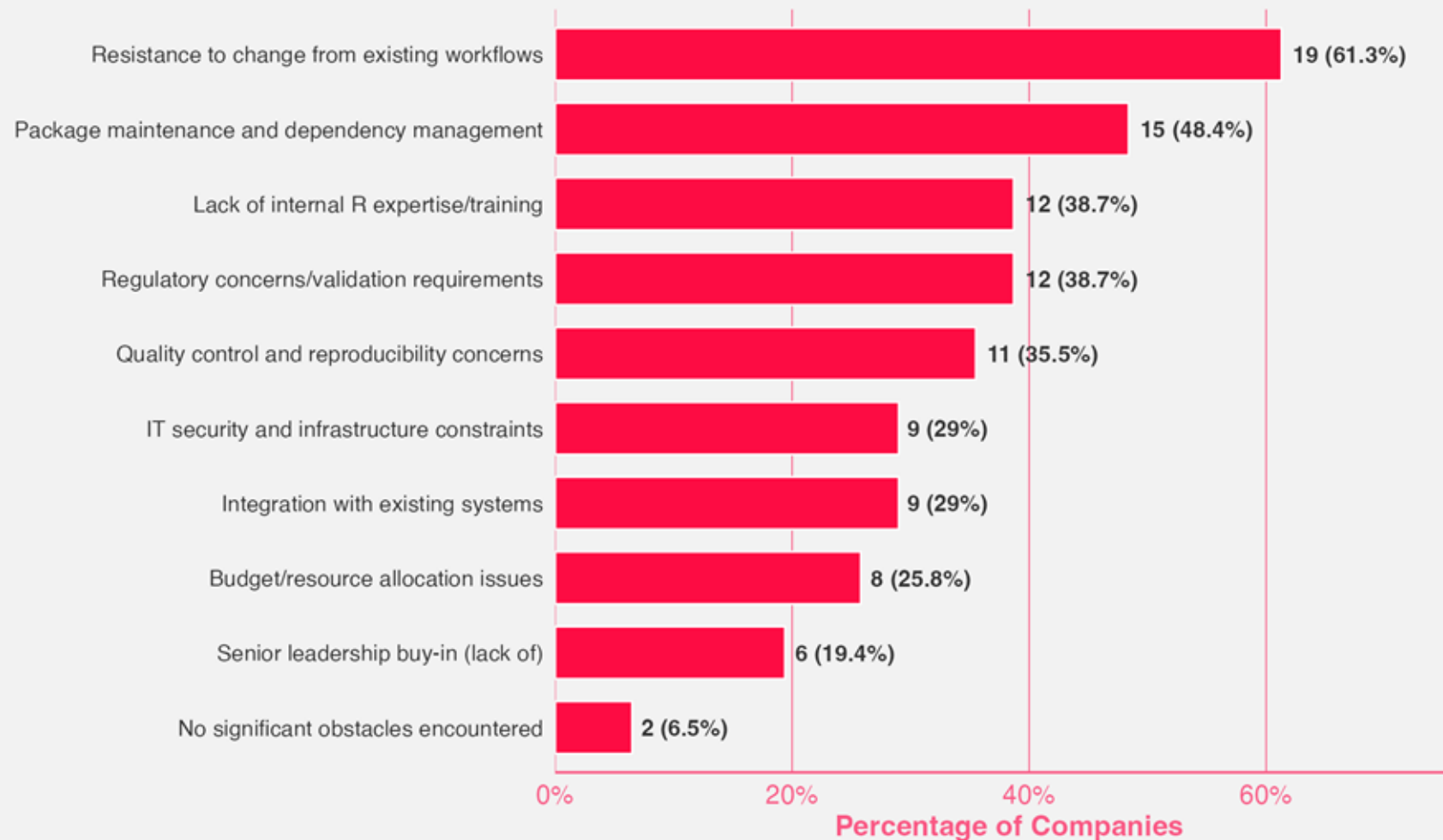


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Top Obstacles to R Adoption in Pharma

Q5: What are the biggest obstacles or challenges you've encountered when adopting R?
(Multiple selections allowed)



Source: Pharmaverse R Adoption Survey 2025 | n=31 companies | Resistance to change is the leading obstacle



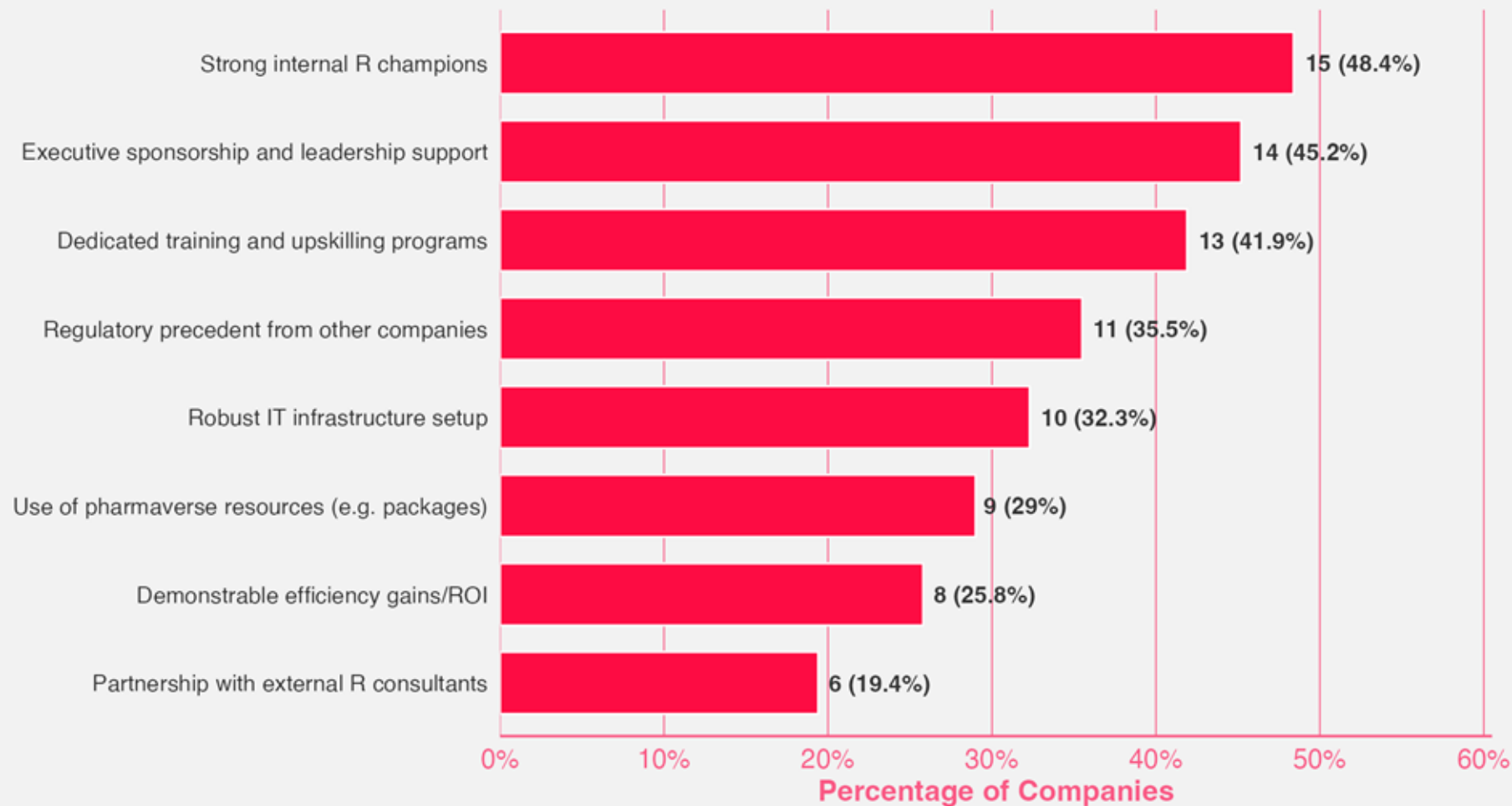
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Key Success Factors for R Adoption in Pharma

Q6: What key factors have contributed to successful R adoption at your organization?

(Multiple selections allowed)



Source: Pharmaverse R Adoption Survey 2025 | n=31 companies | Internal champions and leadership support are critical



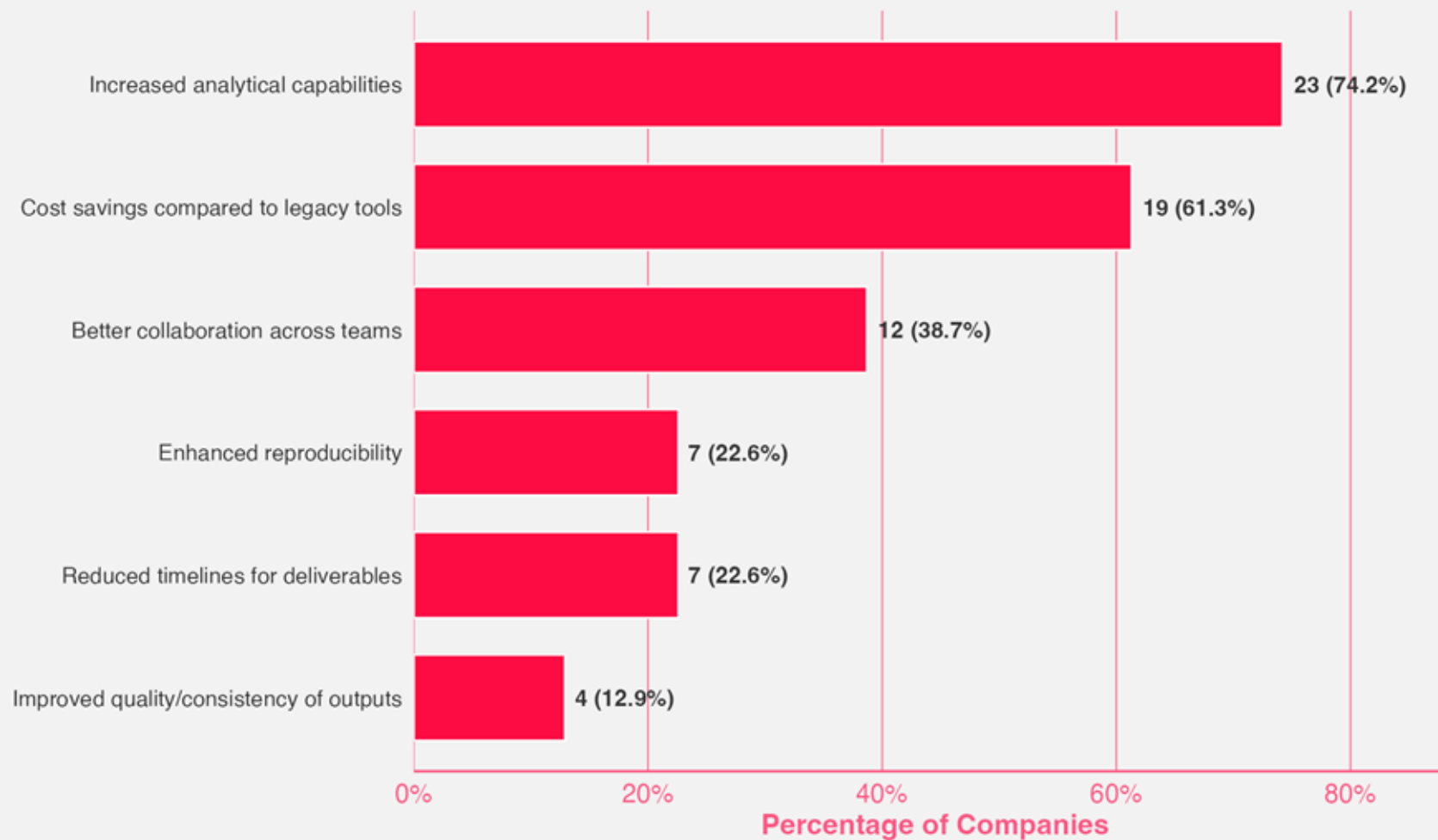
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Business Impact of R Adoption in Pharma

Q7: What measurable business impact has R adoption had at your organization?

(Multiple selections allowed)



Source: Pharmaverse R Adoption Survey 2025 | n=31 companies | Only 9.7% report no measurable impact yet



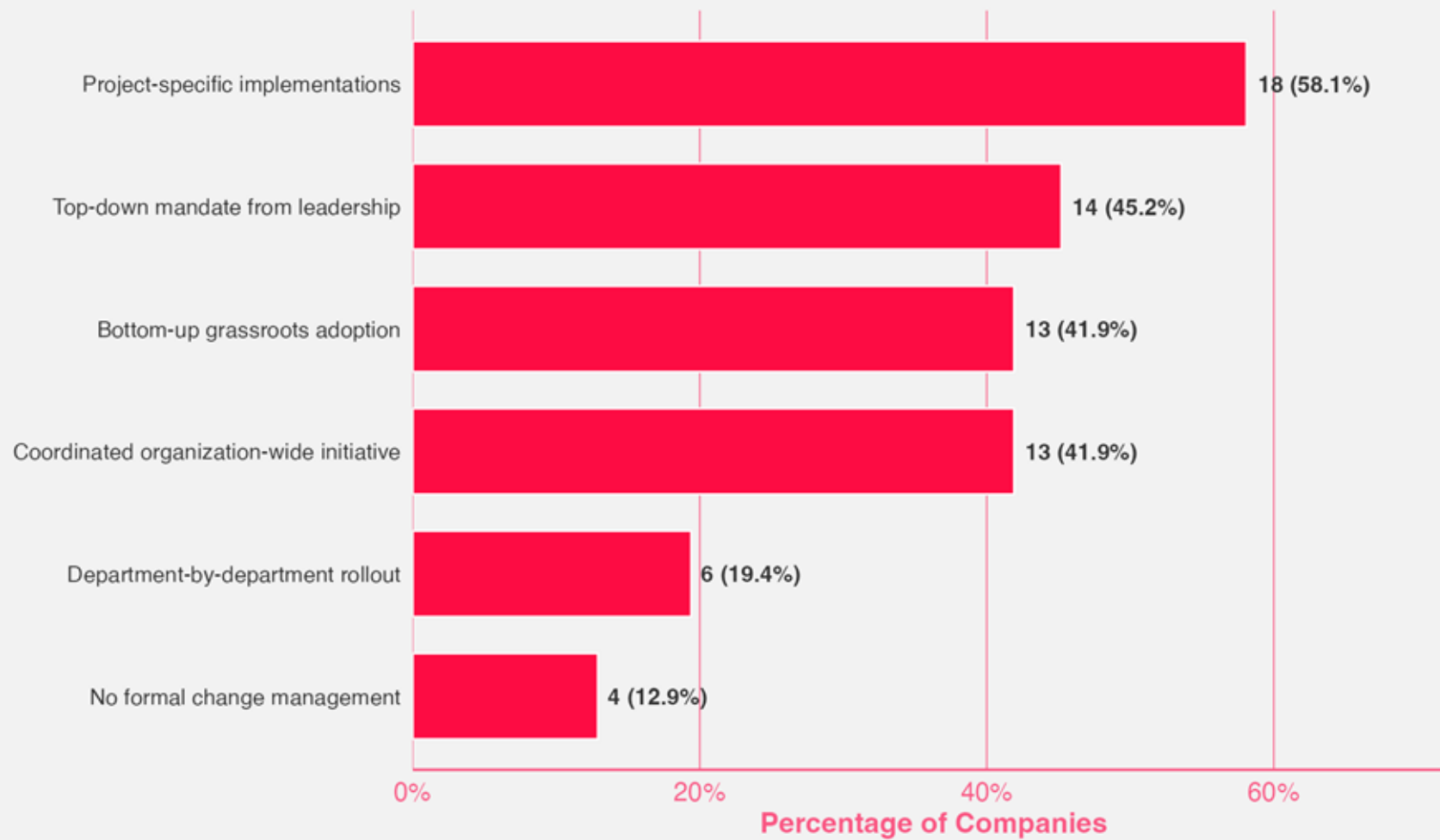
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Change Management Approaches for R Adoption

Q8: What change management approach has your organization taken for R adoption?

(Multiple selections allowed)



Source: Pharmaverse R Adoption Survey 2025 | n=31 companies | Most use hybrid approaches combining multiple strategies



What Respondents Want Next



**SUBMISSION-READY
ENVIRONMENTS**



METADATA HANDLING



**DISCOVERABILITY AND
DOCUMENTATION**



What Changed Since 2024

- Increased focus on **QC** (especially in **SDTM** and **ADaM**)
- Continued growth in **interactive exploration**, moving towards **production use**
- Shift from **package selection** to **validation, scale, and governance**
- Consistent eSubmission split



Conclusion and Next Steps



Start where value is easiest to prove (**QC, utilities, and TLG/TLF** work)



Invest early in **training** and **internal champions**



Prioritize **dependency management** and **reproducibility**



Use **regulatory precedent** to reduce perceived risk



Acknowledgements



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