

# Coq Community Survey 2022: Summary of Results

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Coq Workshop  
August 12, 2022

- ① Introduction
- ② How People Use Coq
- ③ Popular Features, Tools, and Libraries
- ④ Who is Using Coq and in What Context
- ⑤ Renaming of Coq
- ⑥ Conclusion

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# Coq Community Survey 2022 Introduction

- Online public survey conducted during February 2022
- Main goals:
  - updated picture of the Coq community
  - decision support for developers and ecosystem members
- Inspired by the Coq survey from 2014 and other programmer surveys
- Available in English and Chinese
- Received 466 submitted responses

# Survey Working Group (WG)

 Ana de Almeida Borges	 Yves Bertot	 Annalí Casanueva	 Nathan Cassee	 Jean-Remy Falleri-Vialard			
 Jim Fehrlé	 Emilio Jesus Gallego Arias	 Jerome Hugues	 Barry Jay	 Erik Martin-Dorel			
 Karl Palmkog	 Alexander Serebrenik	 Matthieu Sozeau	 Enrico Tassi	 Théo Zimmermann			
<p>English→Chinese Translators</p> <table border="1"> <tbody> <tr> <td>Yishuai Li</td> <td>Oling Cat</td> <td>Weidu Kuang</td> </tr> </tbody> </table>					Yishuai Li	Oling Cat	Weidu Kuang
Yishuai Li	Oling Cat	Weidu Kuang					

# Survey Design, Deployment, and Analysis

- Survey questions created and edited collaboratively by the WG
- Effort to adhere to survey best practices
  - Demographic questions late to not affect other answers
- Deployed on the Inria LimeSurvey instance
- Announced on Coq Discourse, Twitter, Zulip, Coq-Club
  - Lean and Agda Zulip chats
  - Types-announce, other mailing lists
- Data analyzed primarily using Jupyter

## Scope of the Survey

- 109 questions, some with conditional visibility
  - use of Coq features, IDEs, libraries, plugins
  - views on renaming Coq, on Coq improvements, inclusion
  - demographic data, including professional experience
  - survey static HTML linked in abstract and at the end of the slides
- Every question was optional to answer
- Most questions had a free text option

## Example Question

If you have projects that are not compatible with recent versions of Coq (8.13 or more recent), why is that?

Please choose all that apply:

- ☐ It would take too much effort to port them.
- ☐ I don't care that they aren't on the latest version.
- ☐ A dependency of the project is not compatible with recent versions of Coq.
- ☐ Other: \_\_\_\_\_

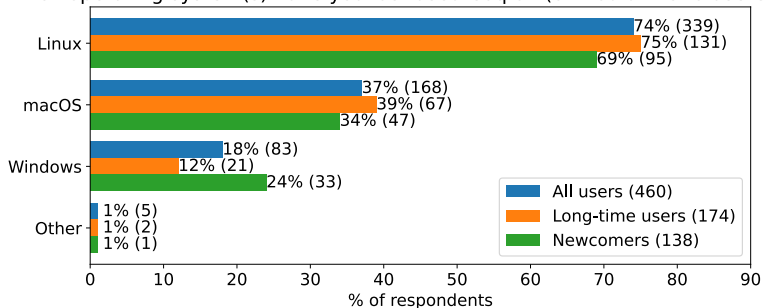
[Question hidden unless the respondent had used Coq within the last 6 months]



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# Operating systems

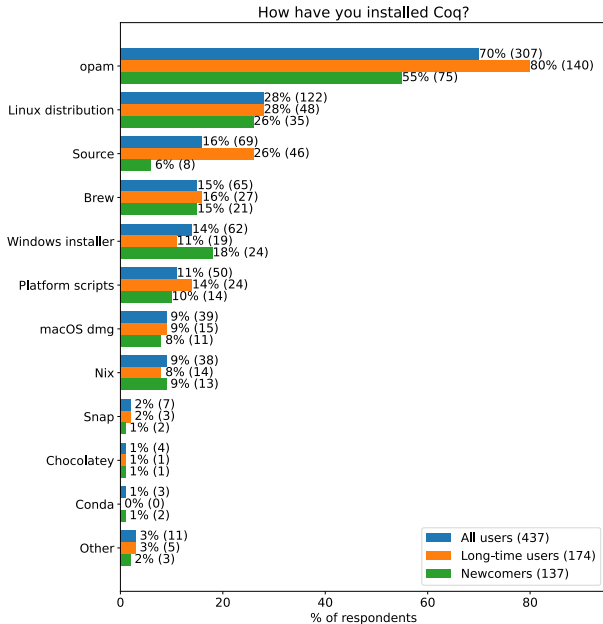
Which operating system(s) have you last used Coq on (or would like to use Coq on)?



Long-time users := used Coq for more than 5 years

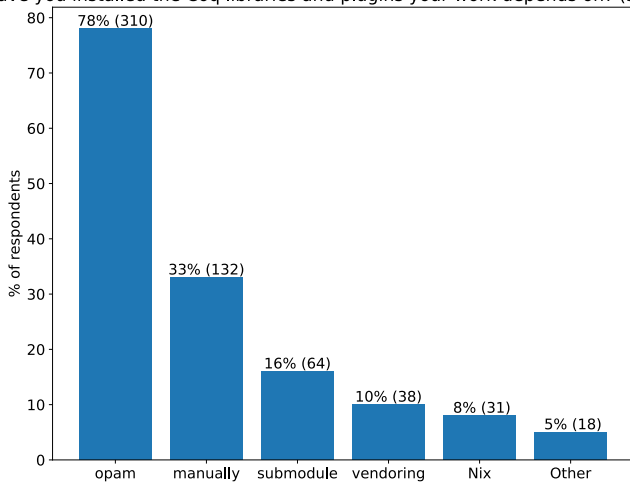
Newcomers := used Coq for less than 2 years and in the last year

# Installation

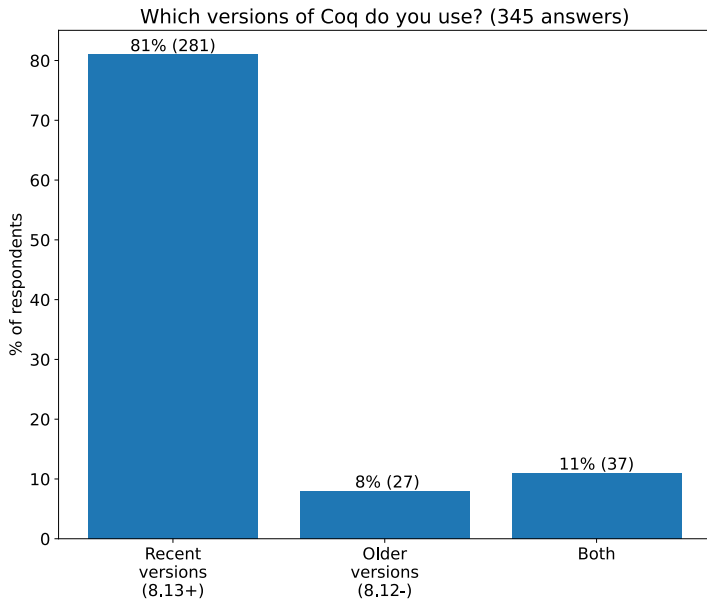


# Installation of dependencies

How have you installed the Coq libraries and plugins your work depends on? (396 answers)

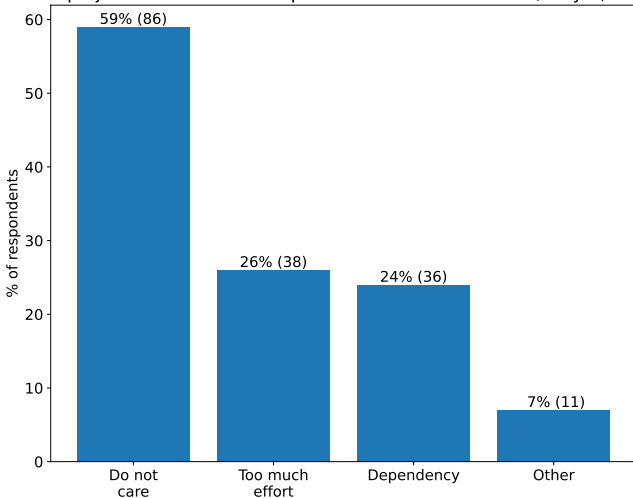


## Versions

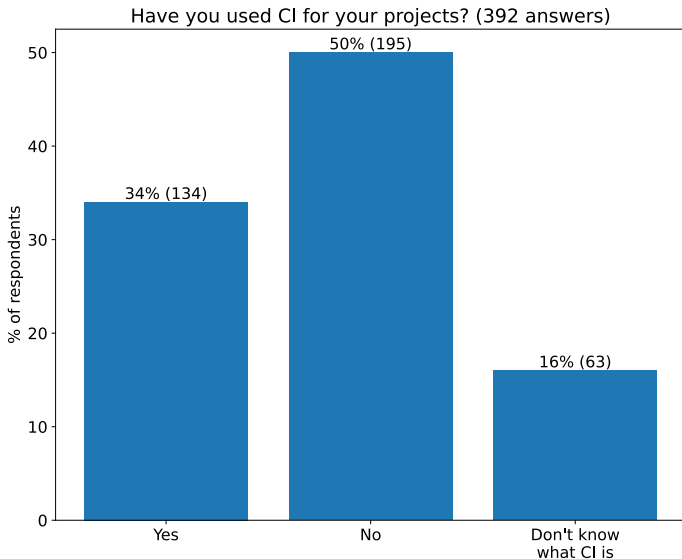


## Why old versions?

If you have projects that are not compatible with recent versions, why? (147 answers)

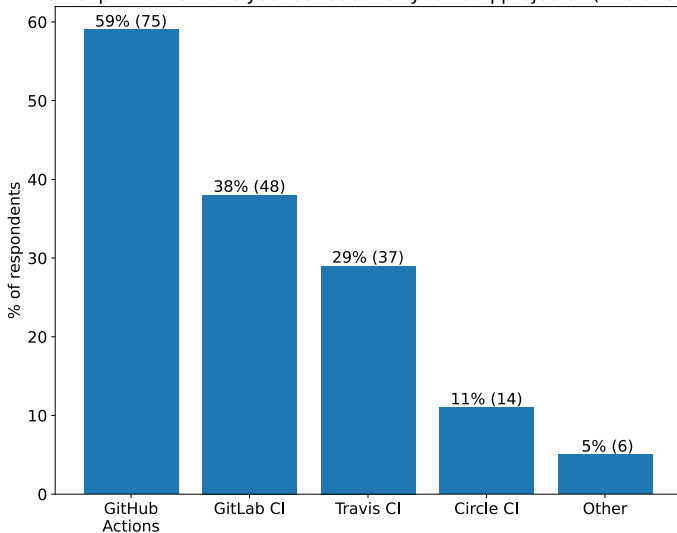


## Continuous integration



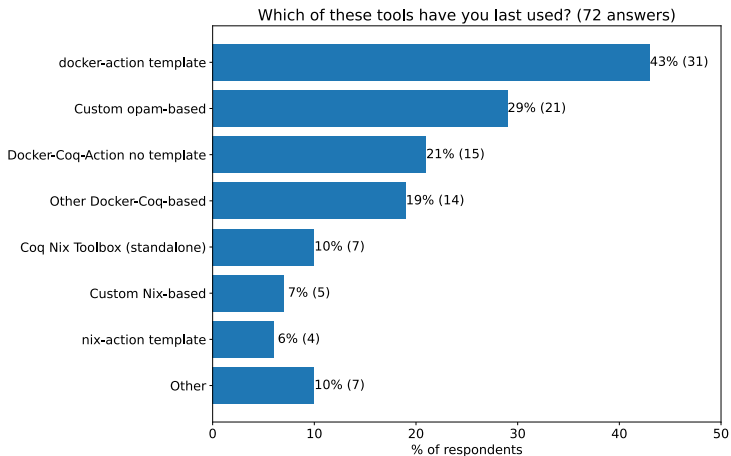
## Continuous integration platforms

Which CI platforms have you last used for your Coq projects? (128 answers)



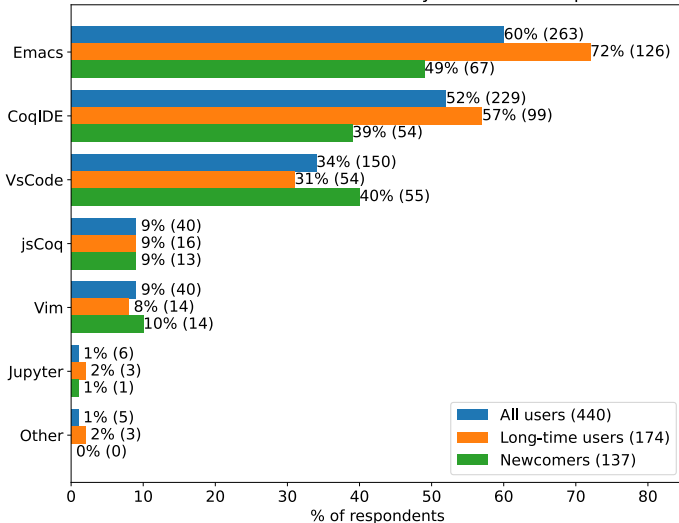


# Continuous integration tools



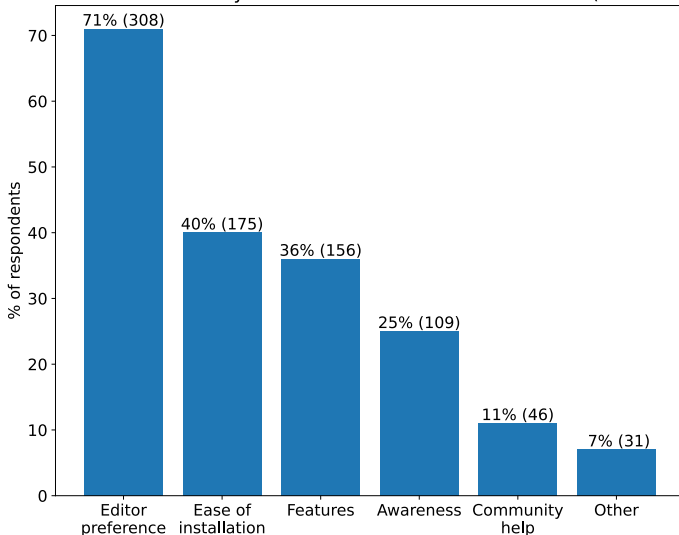
# Integrated Development Environments

Which editors or IDEs have you used for Coq?

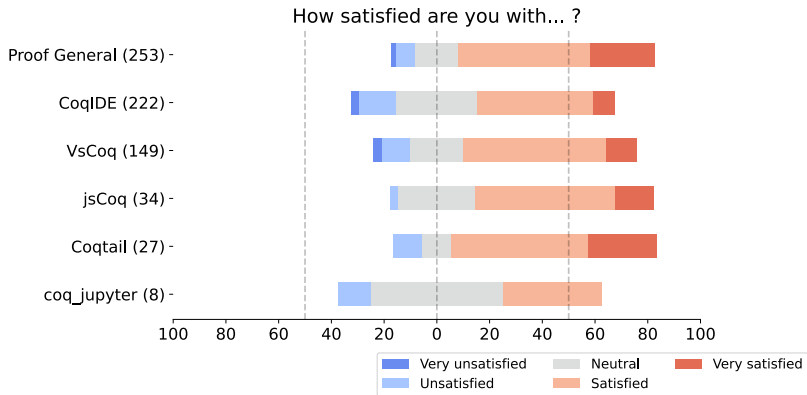


## IDE reasons

What factors influence your choice of one IDE over another? (436 answers)

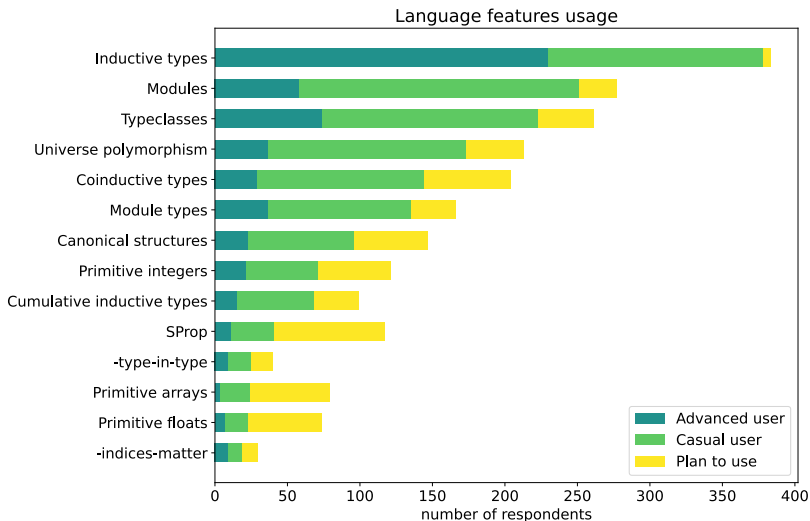


# IDE satisfaction

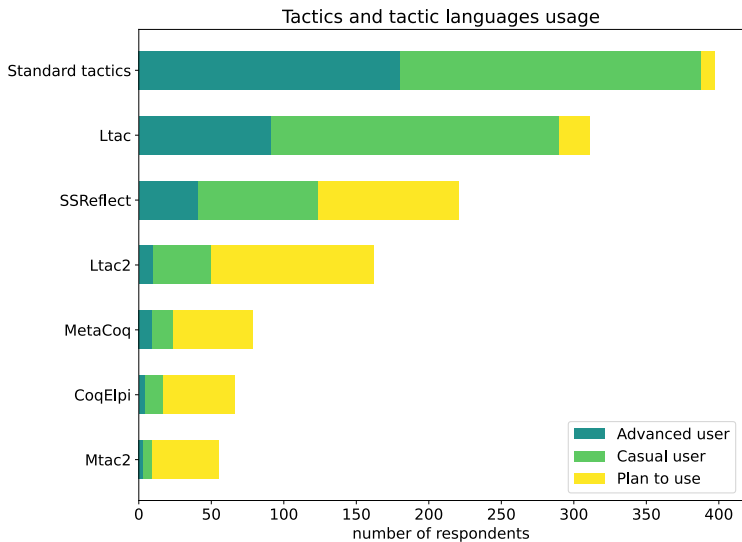


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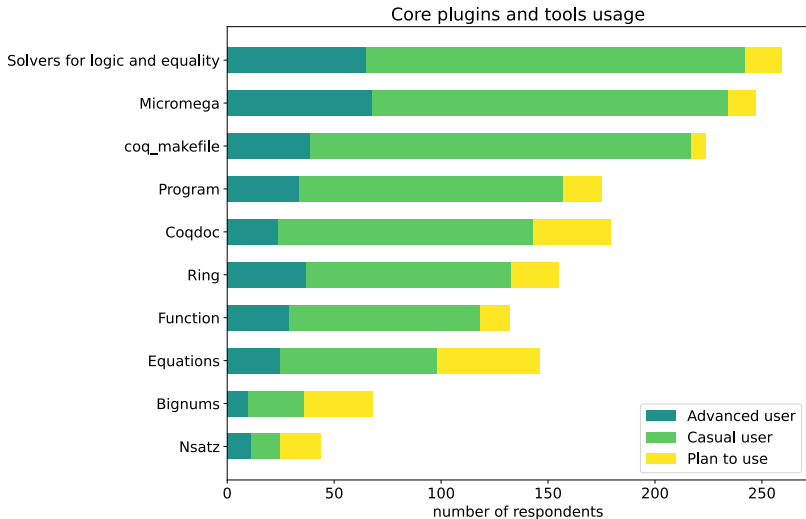
# Features



# Tactic languages



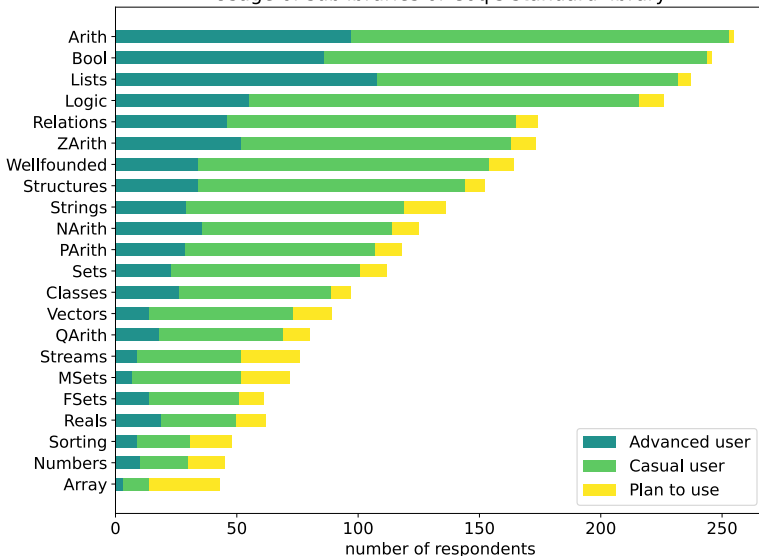
# Core plugins and tools



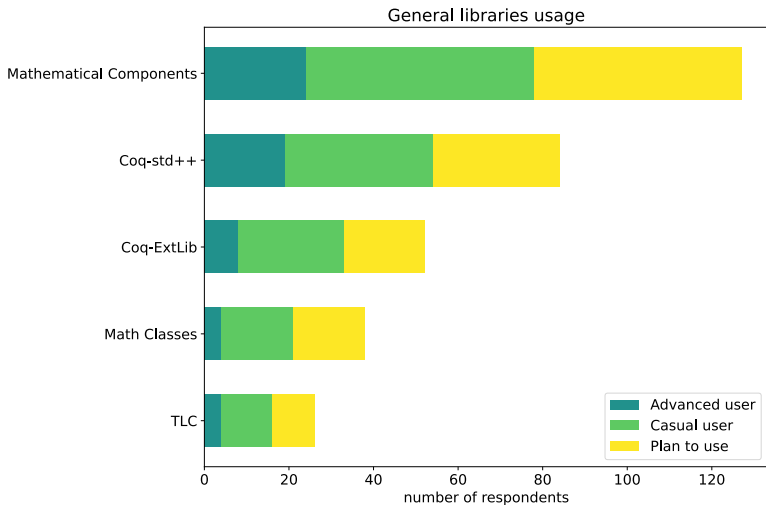


# Stdlib sublibraries

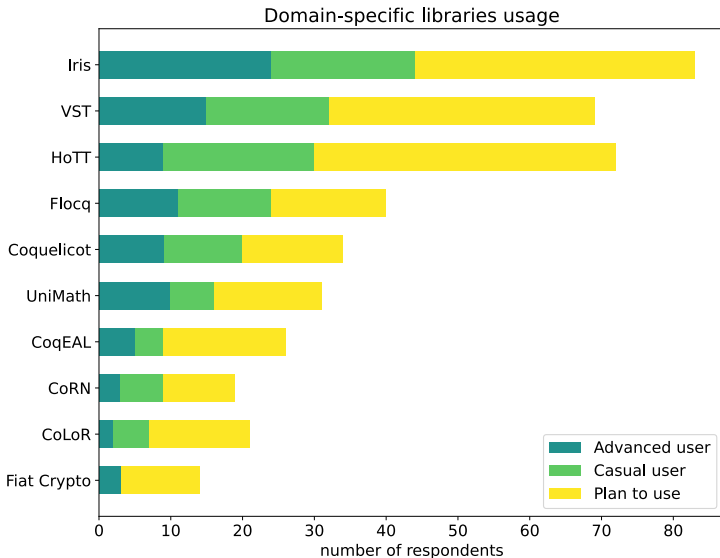
Usage of sublibraries of Coq's standard library



# Ecosystem general libraries

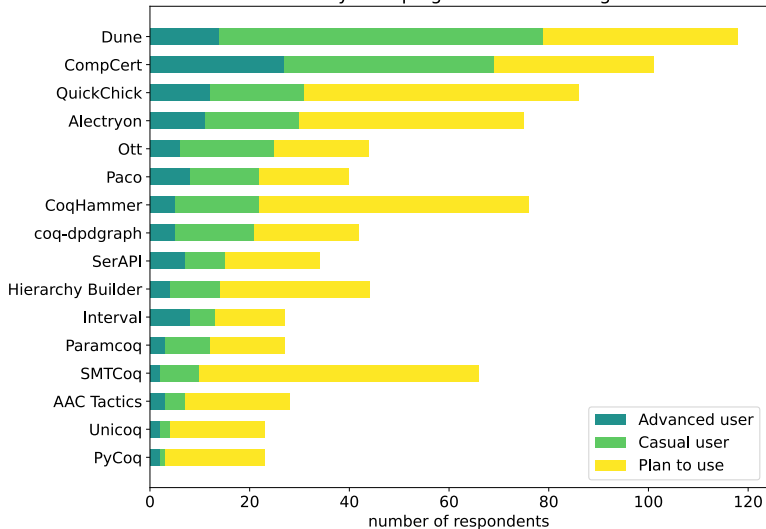


# Ecosystem domain-specific libraries



# Ecosystem plugins and tools

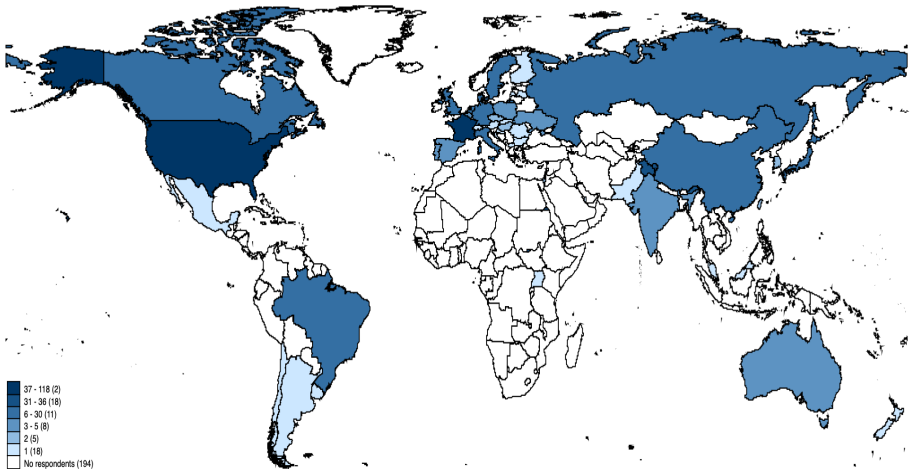
Ecosystem plugins and tools usage



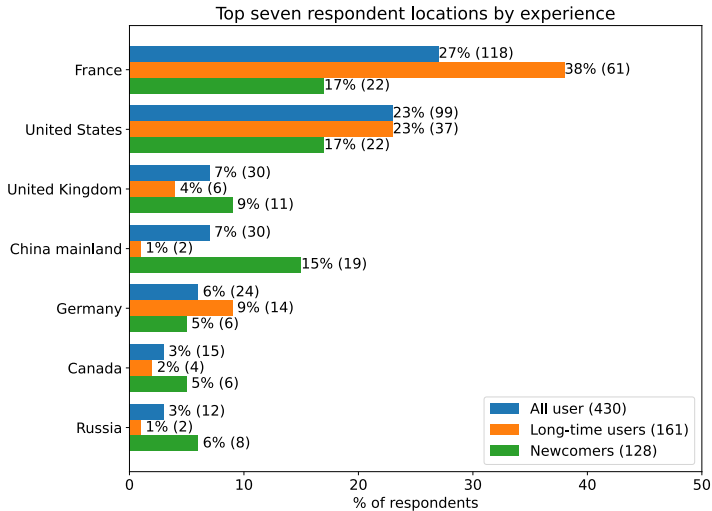
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# Location

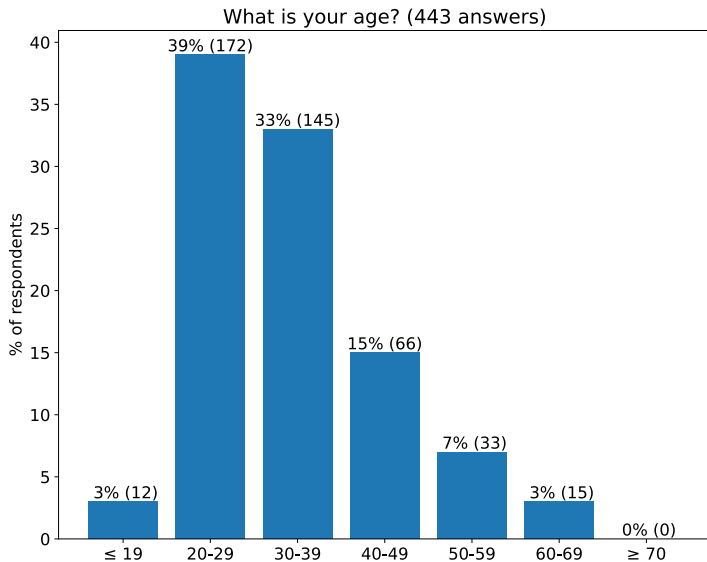
Number of respondents



## Location (top 7)

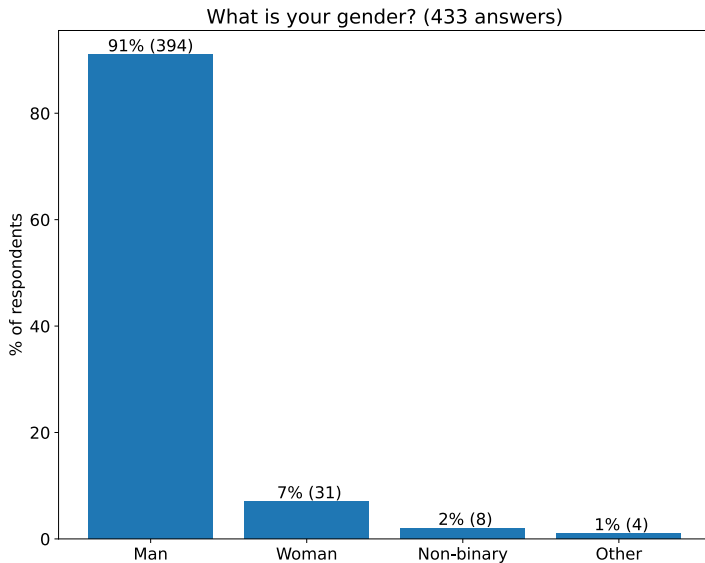


## Age

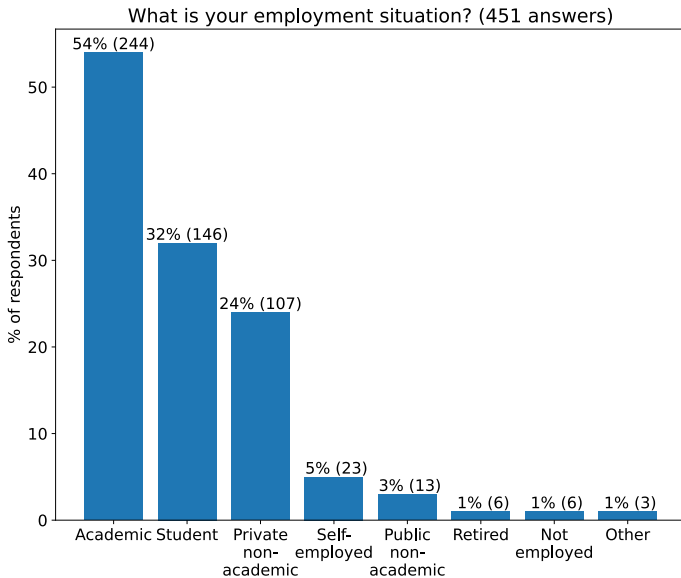




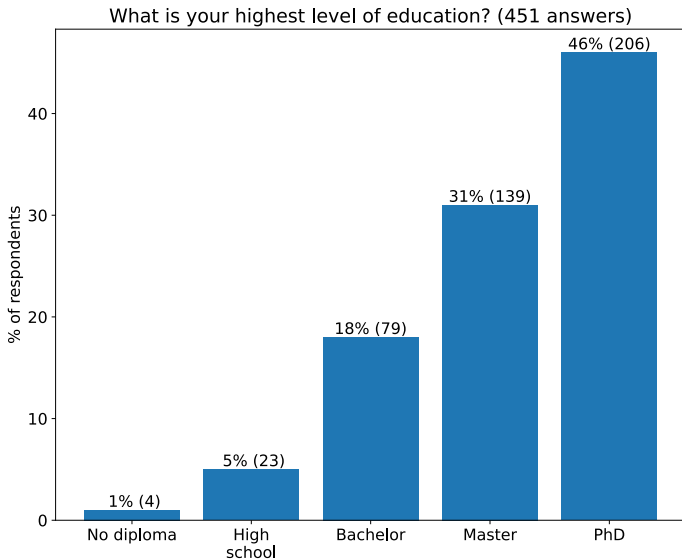
## Gender



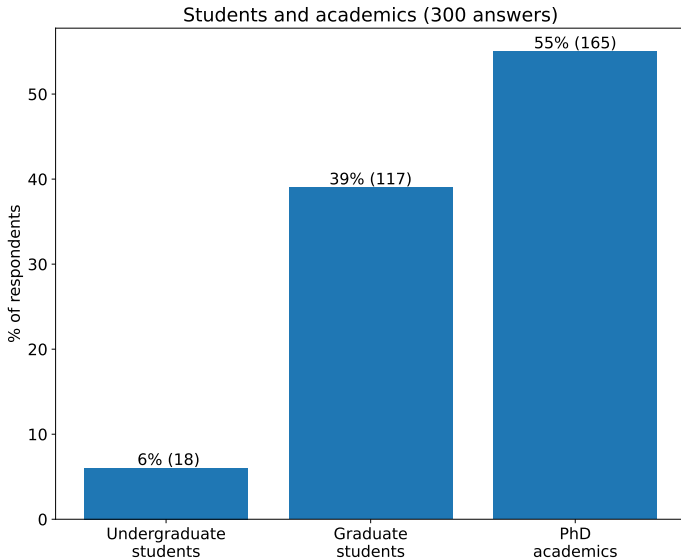
# Employment



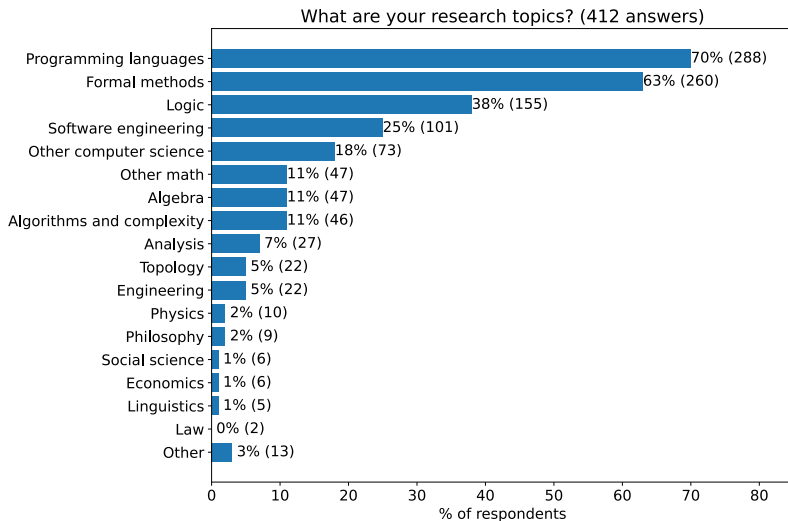
## Education



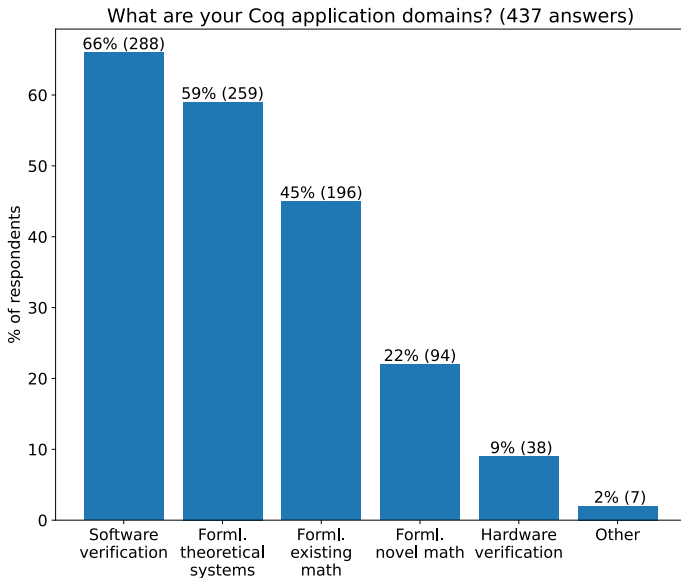
# Students and academics



# Research topics

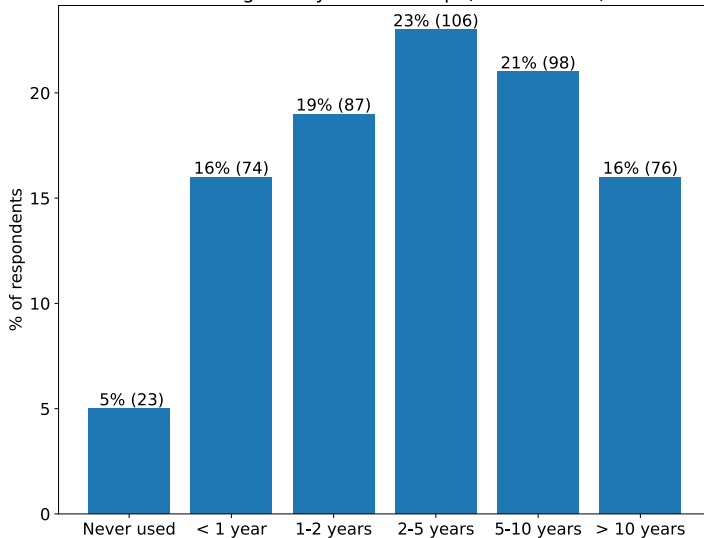


## Application domains

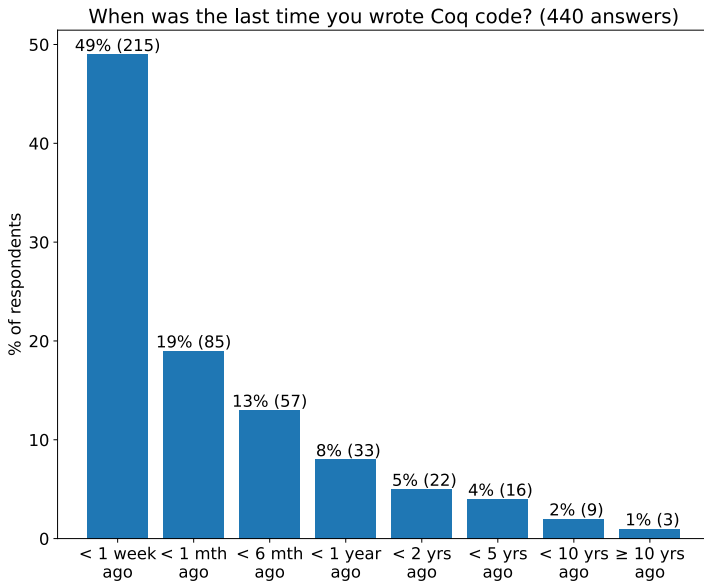


## Duration of Coq use

How long have you used Coq? (464 answers)



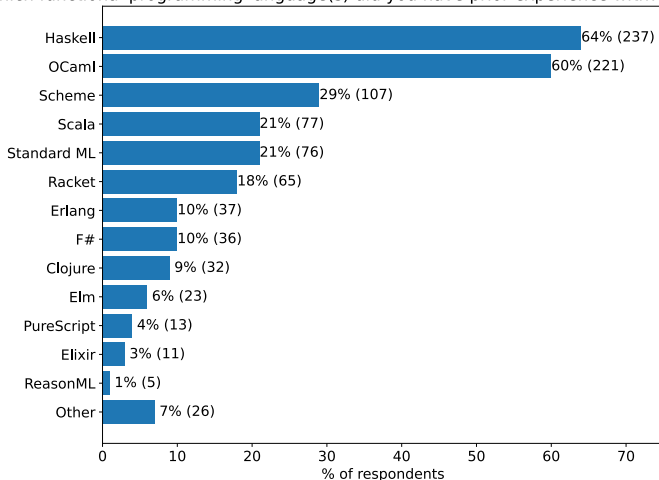
## Last use of Coq





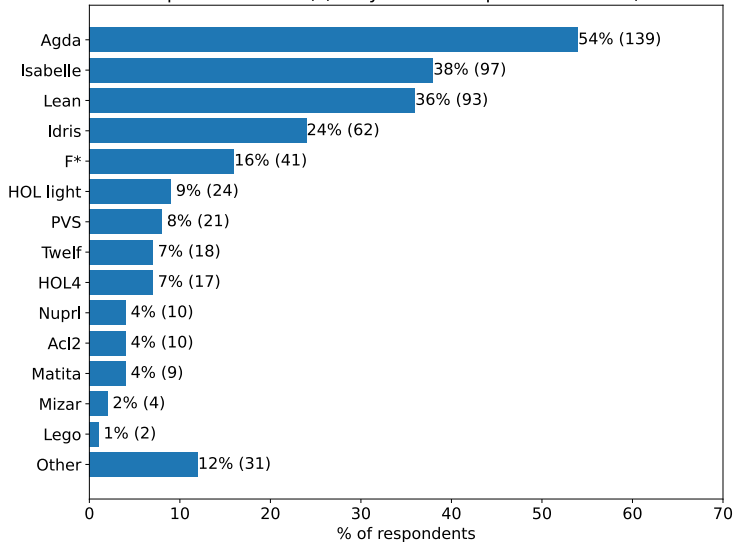
# Functional programming experience

Which functional programming language(s) did you have prior experience with? (370 answers)



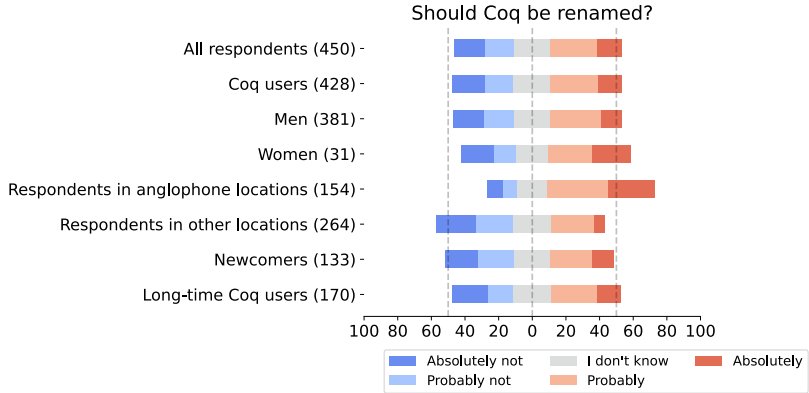
## Other proof assistants

Which other proof assistant(s) do you have experience with? (256 answers)

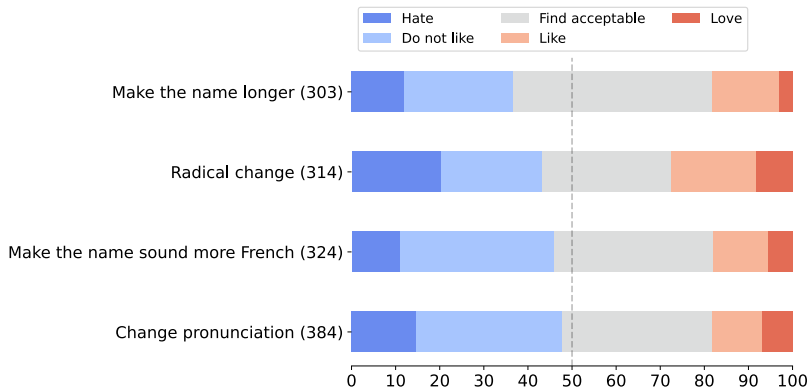


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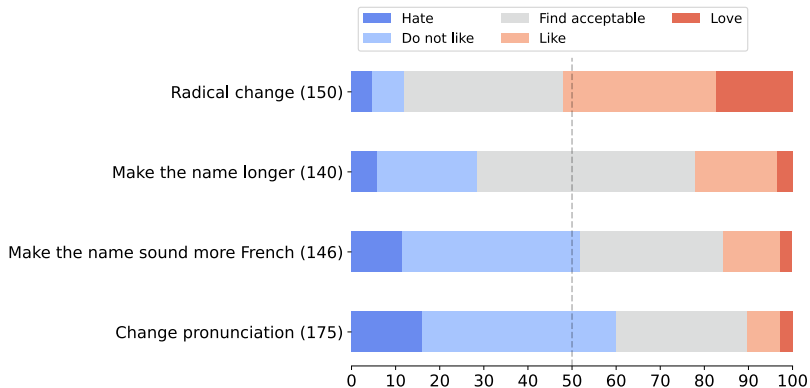
# General renaming views



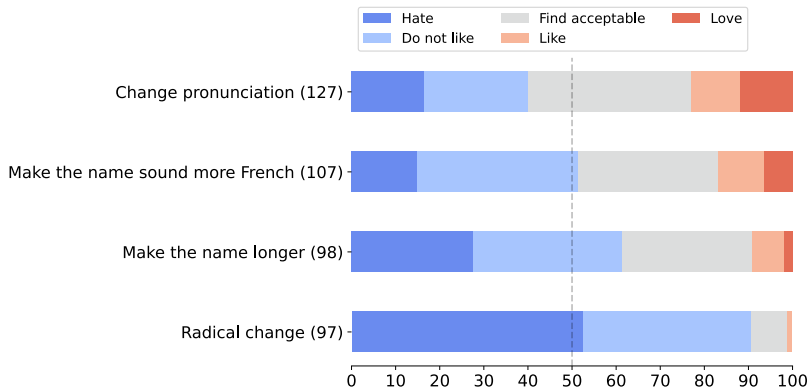
# Strategy



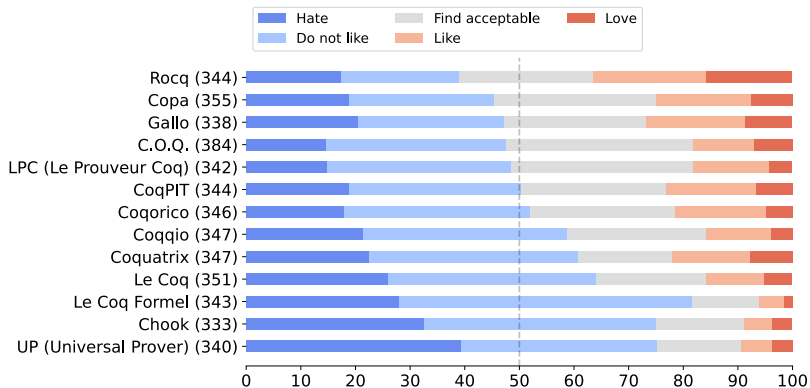
## Strategy when favorable to renaming



## Strategy when against renaming

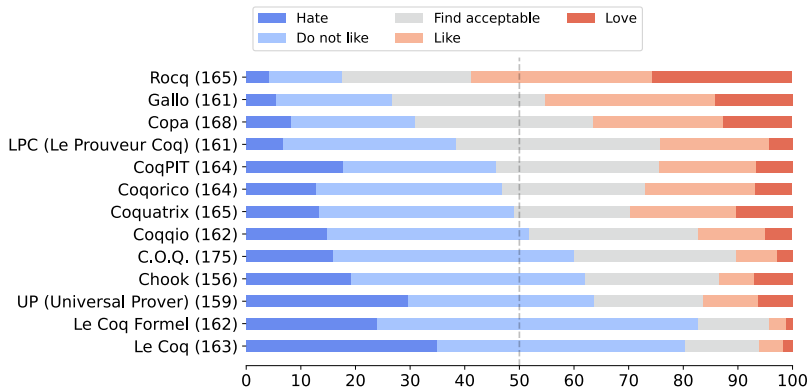


# Renaming options

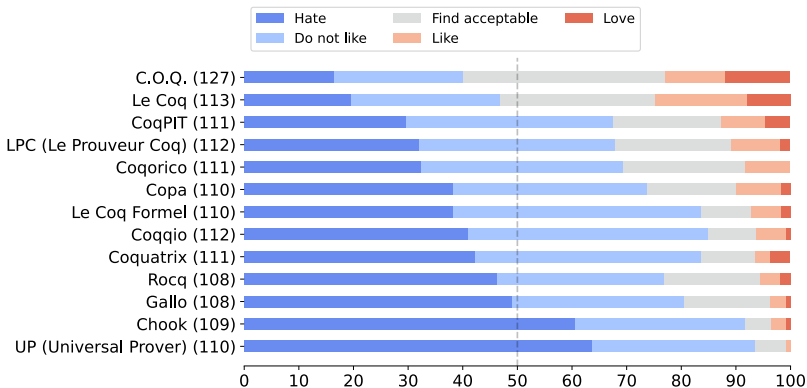




## Renaming options when favorable to renaming



# Renaming options when against renaming



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## Conclusion

- Additional plots in the blog posts on Coq Discourse Forum
- Plan to publish formal research papers
- We thank all members of the WG for their efforts

## References and Blog Posts

These slides in PDF



Survey (HTML)



# References and Blog Posts

{ Blog Post I  
Who is using Coq & in what context



{ Blog Post II  
How people are using Coq

