Coq POPL meeting, 2014

Coq survey

Thomas Braibant

Why?

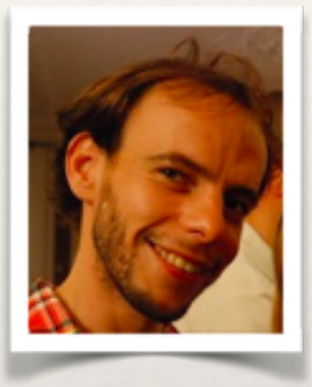
- Know the users
- Know what they do
- Know how they work
- Know what library/plugin they use
- Know what they find important

Guide development?

Who?

P. Boutillier

T. Braibant



M. Sozeau

E. Tassi

+ anonymous contributors for questions

What?

- ~120 questions
- survey platform provided by Inria
- ~30 minutes burden time

Goals of this talk

1. **Present preliminary results**

2. **Be interactive (questions welcome)**

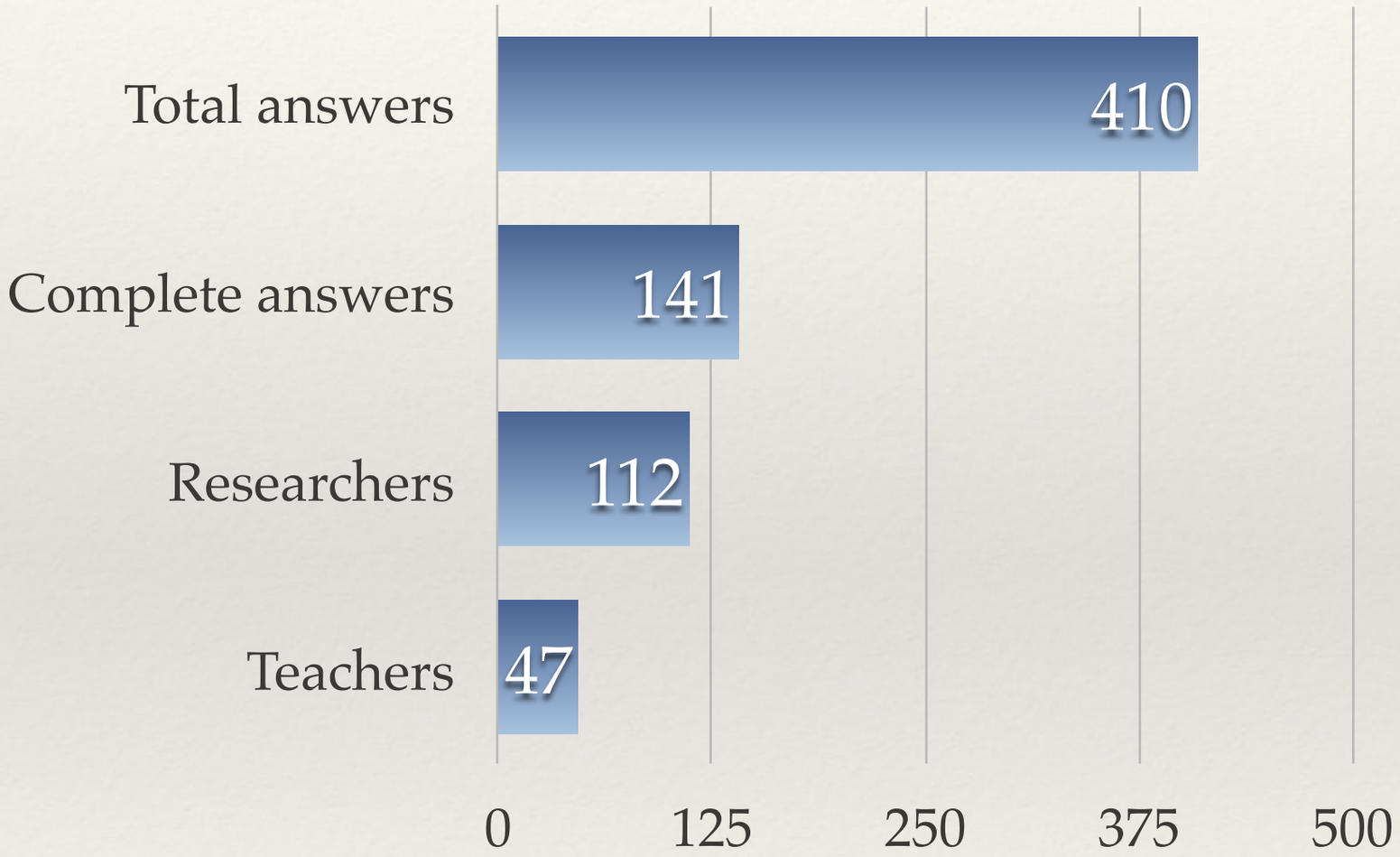
3. **Gather comments about the data, or idea bout how to use it**

(Also, it is not too late to fill it up ;))

Numbers

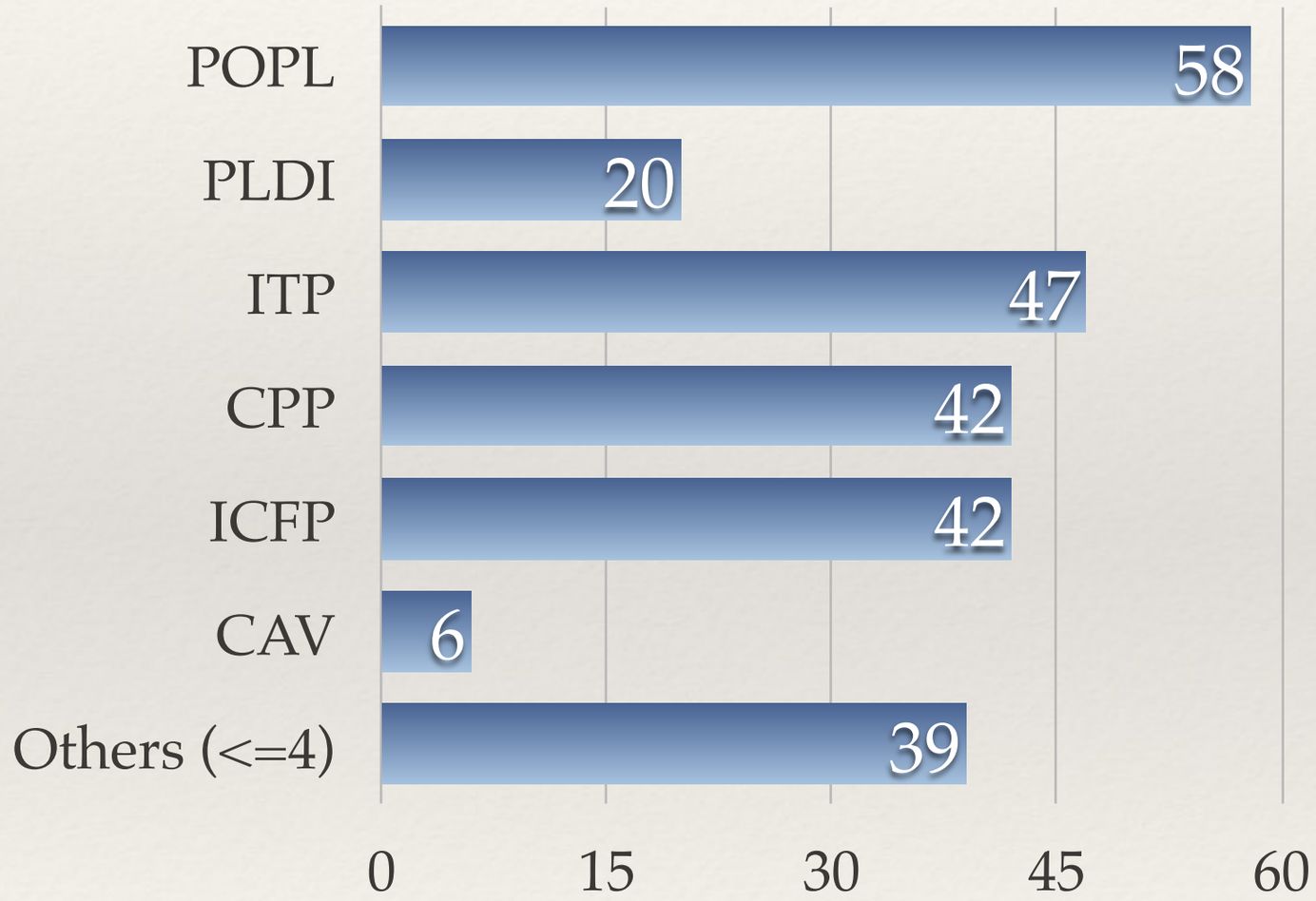
- Users
- Papers
- Conferences
- IDEs
- Coqs

How many?

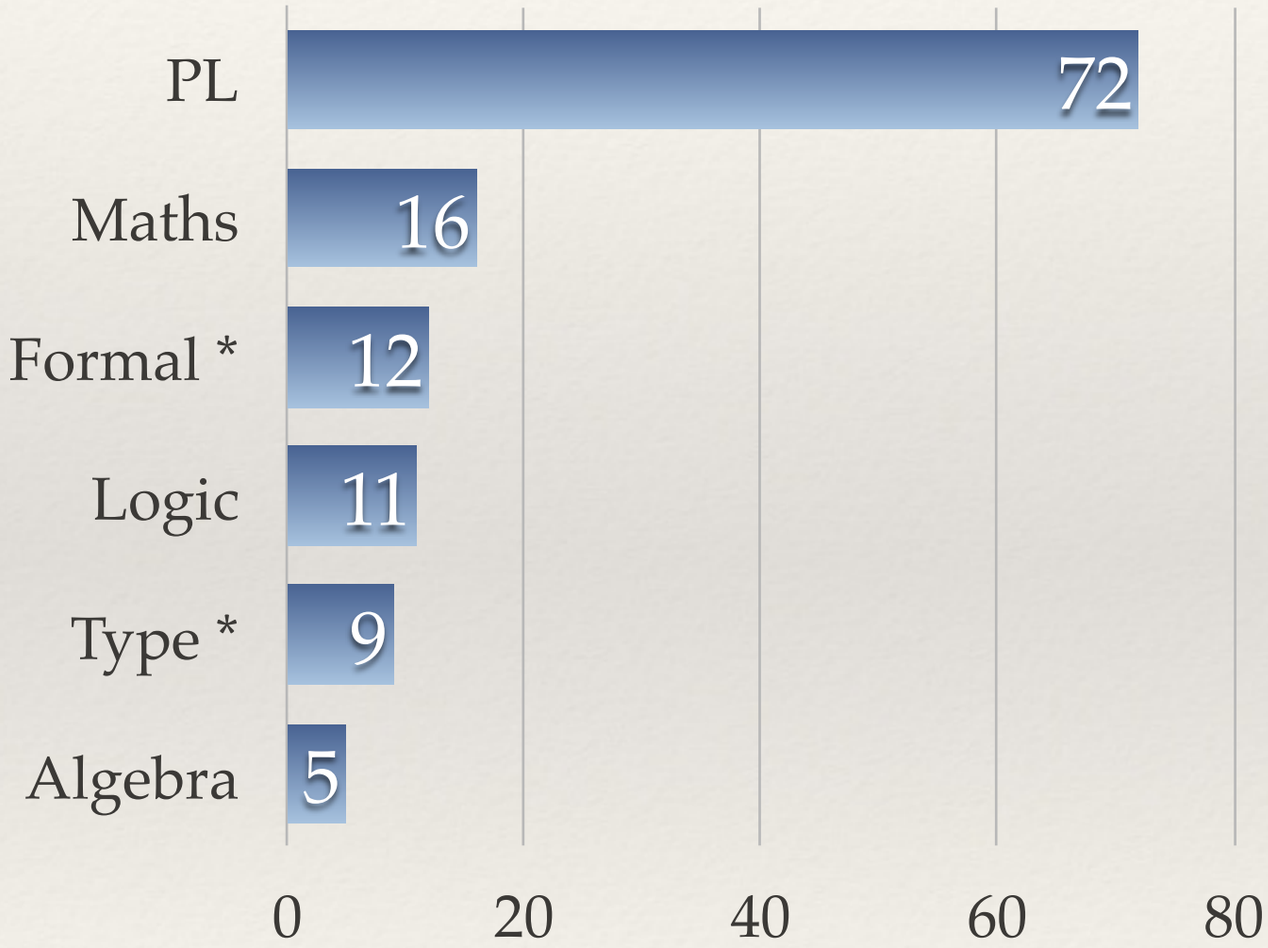


~1500 students??

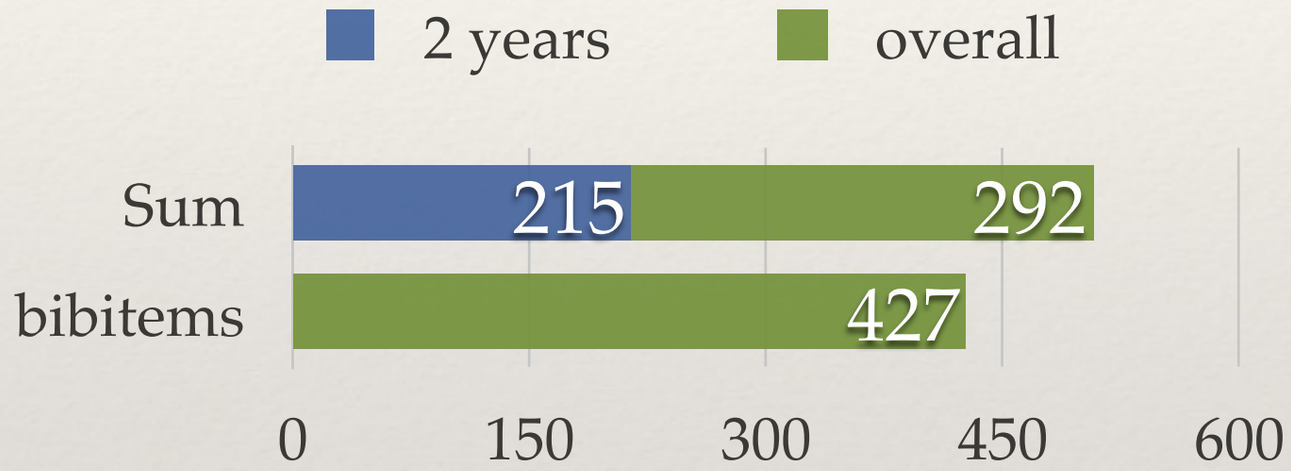
Proximity


POPL
58
PLDI
20
ITP
47
CPP
42
ICFP
42
CAV
6
Others (<=4)
39
0
15
30
45
60

Field



Papers



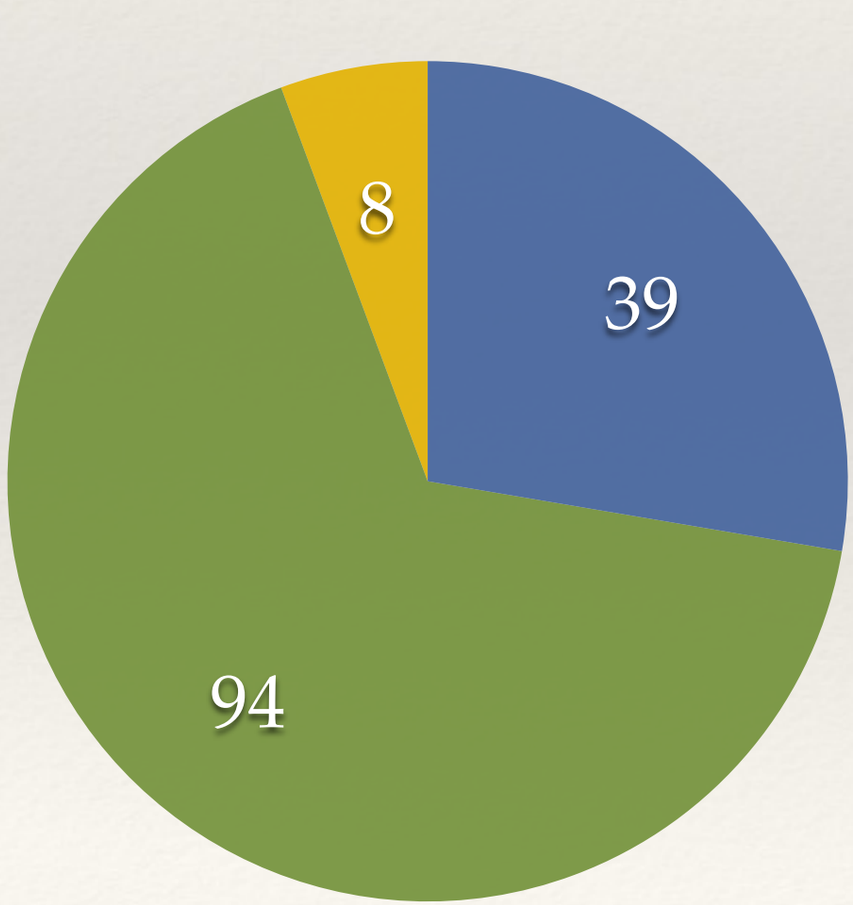
Bibtex mangled… Crowdsource the recovery effort?

IDE

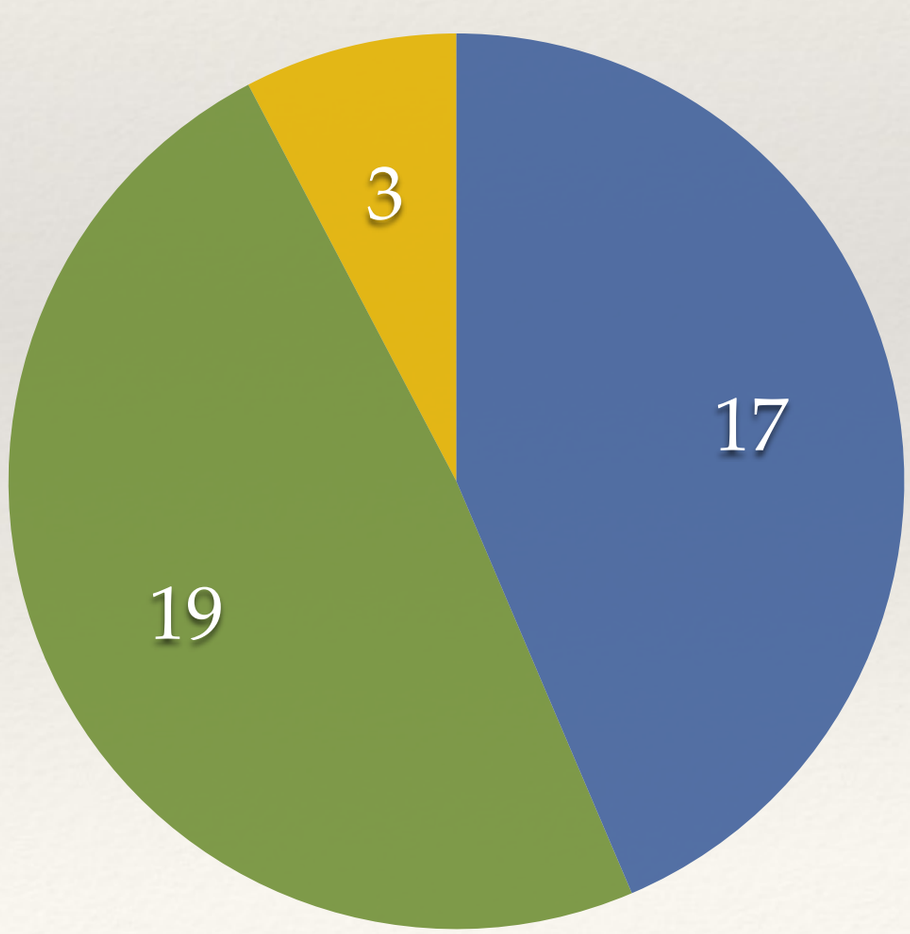
- CoqIDE
- Vim + Proofweb
- Proof General

- CoqIDE
- Proof web
- Proof General

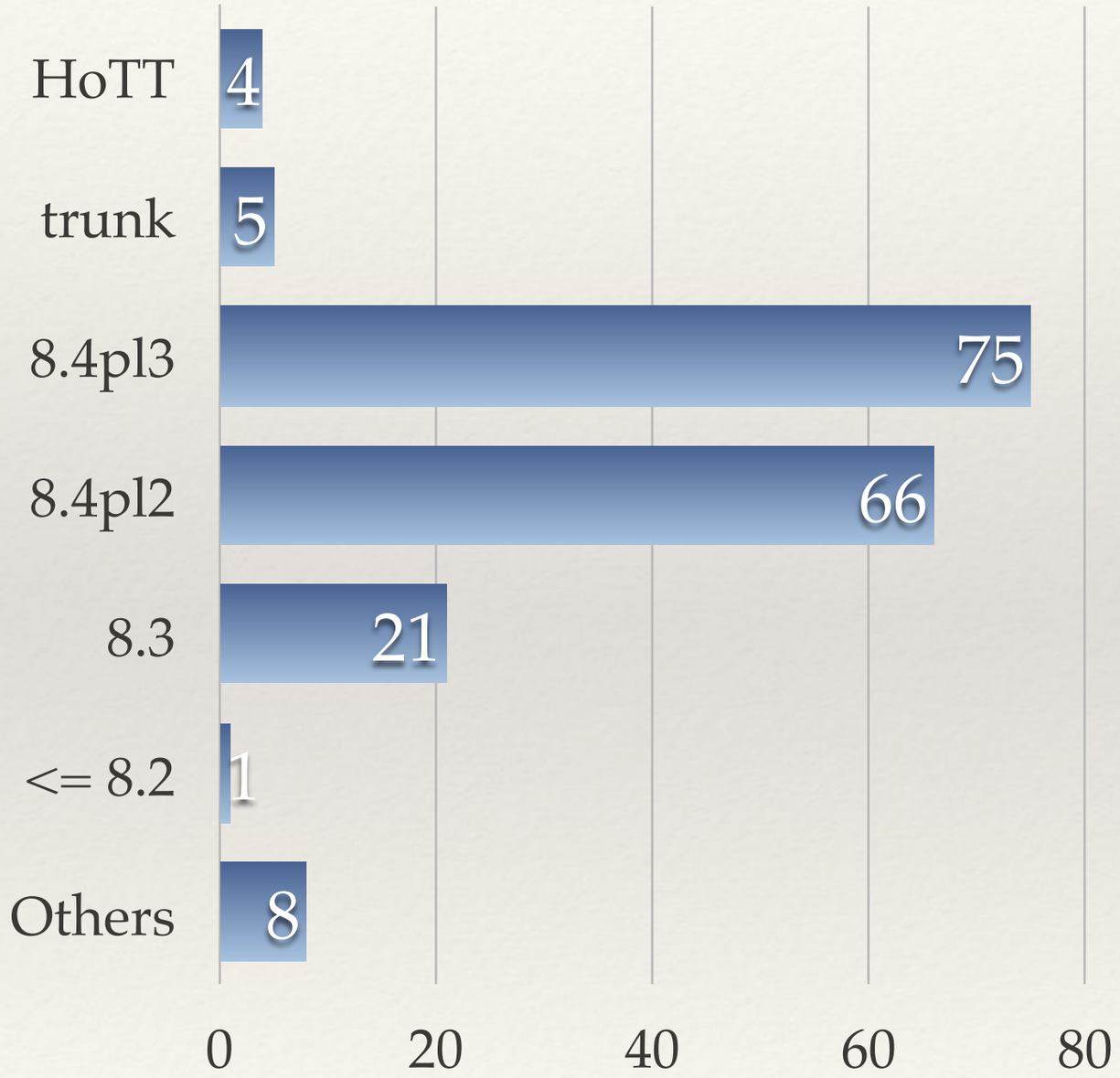
Without students



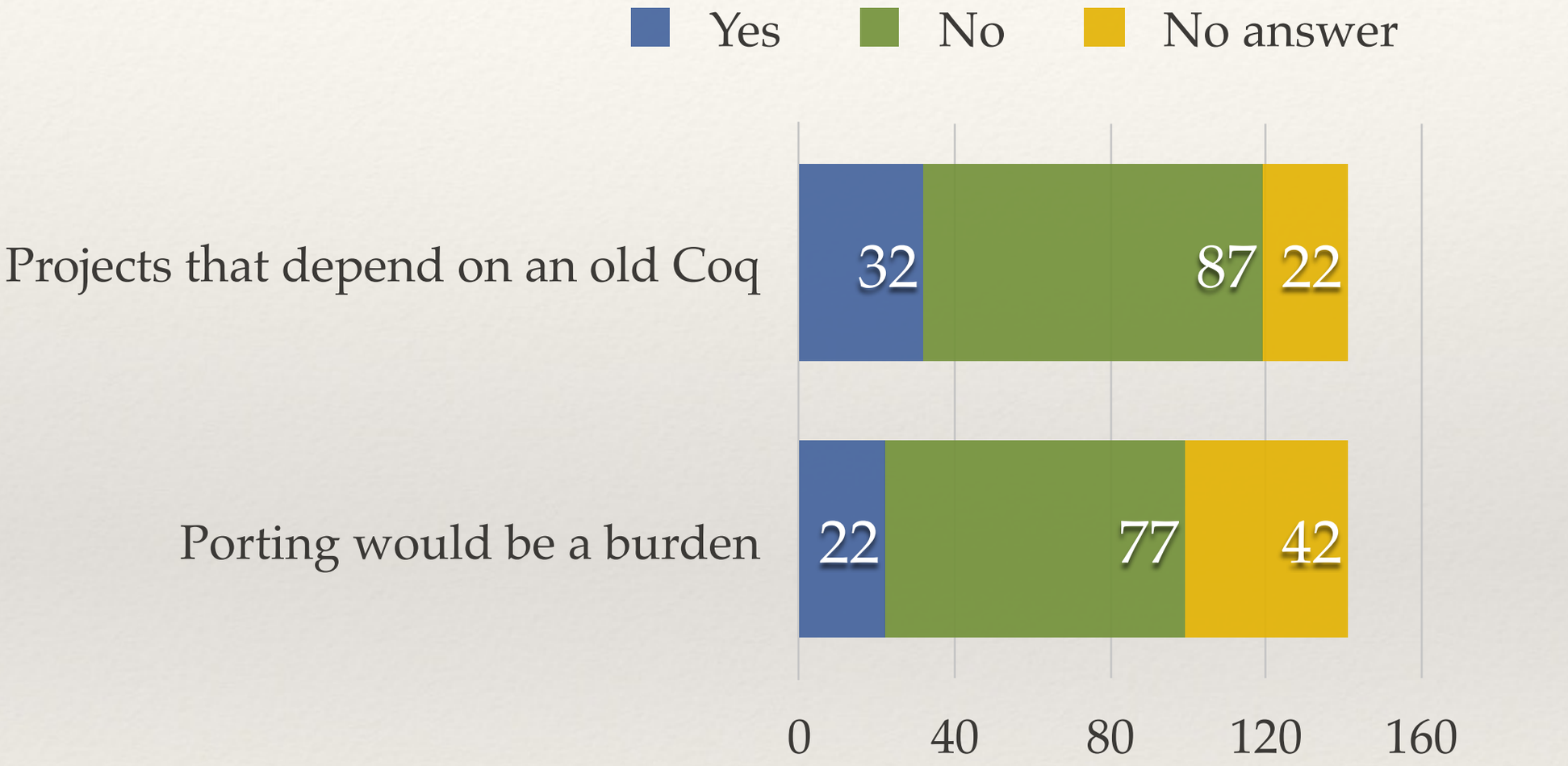
With students



Coq versions in use

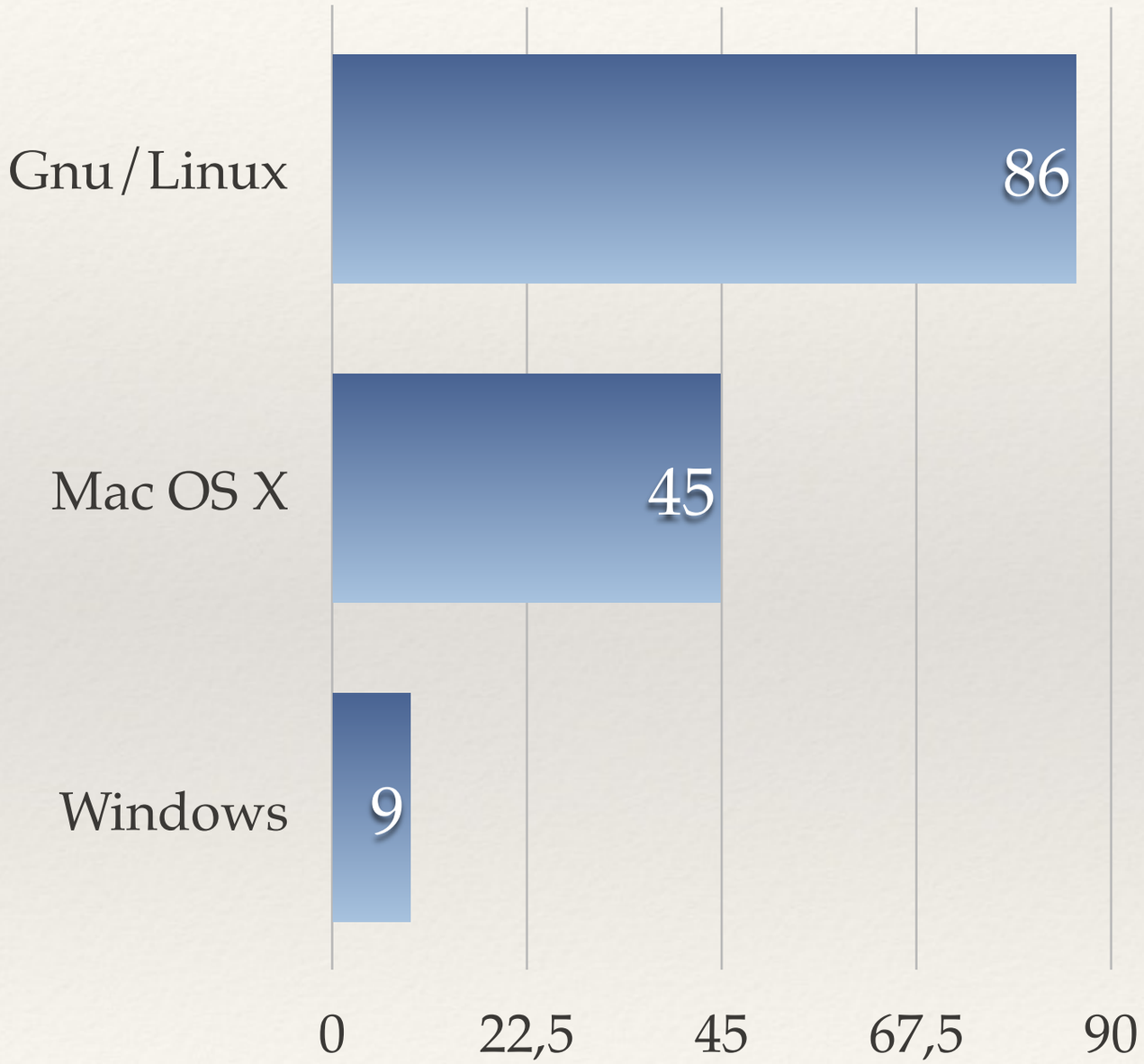


Coq versions (cont)



75% of devs have been ported at most on 3 versions

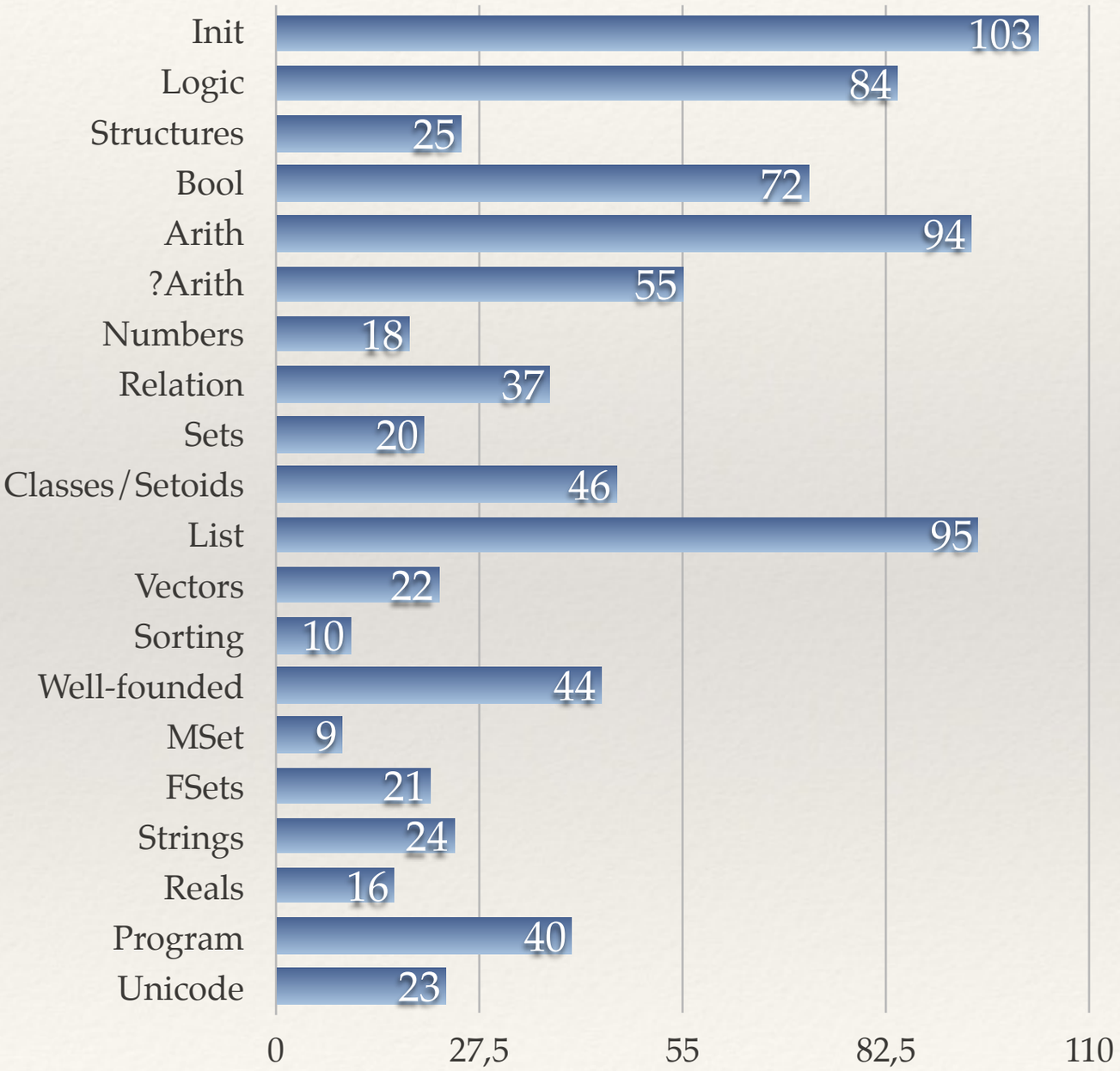
OS



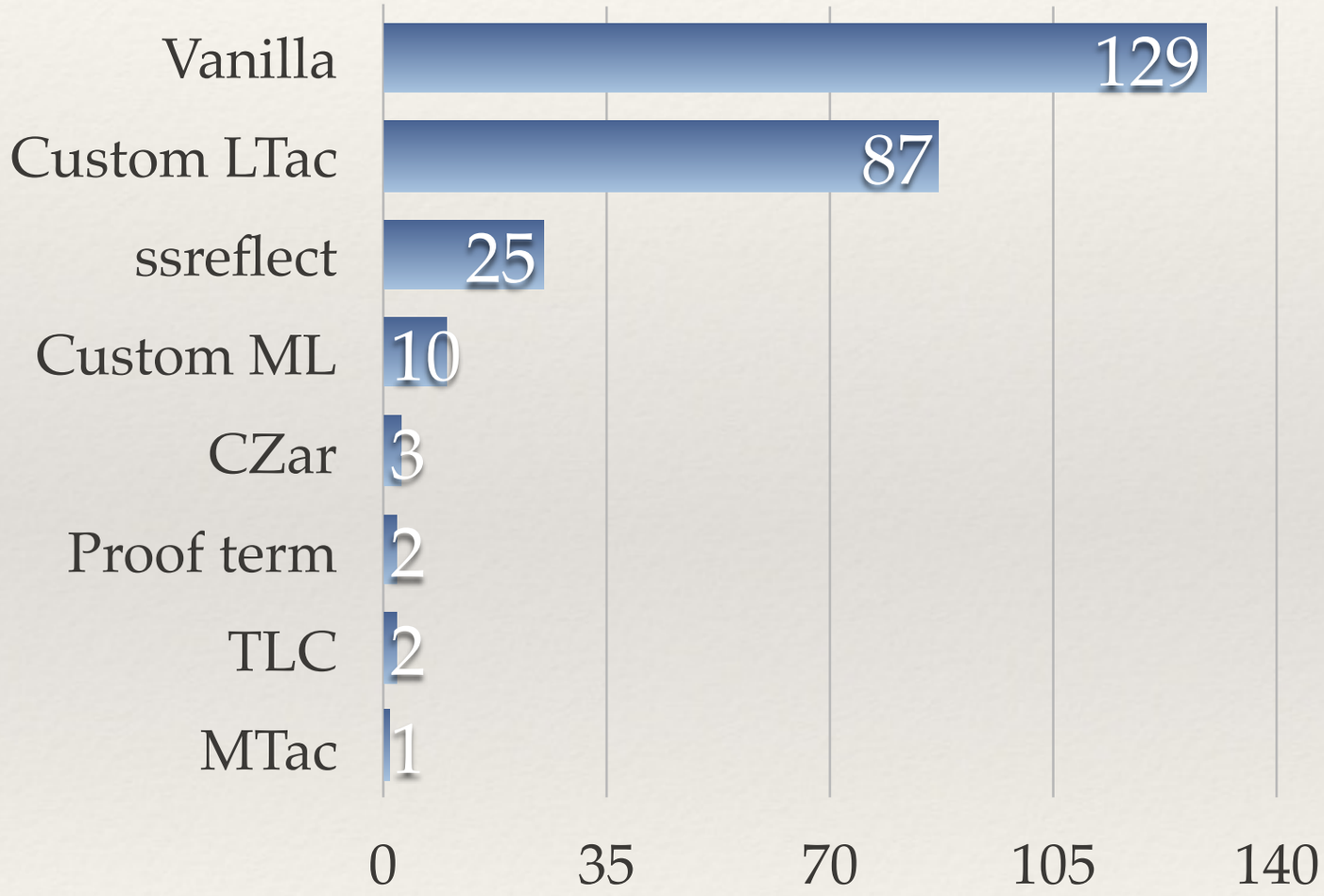
Usage

Libraries
Tactics
Features

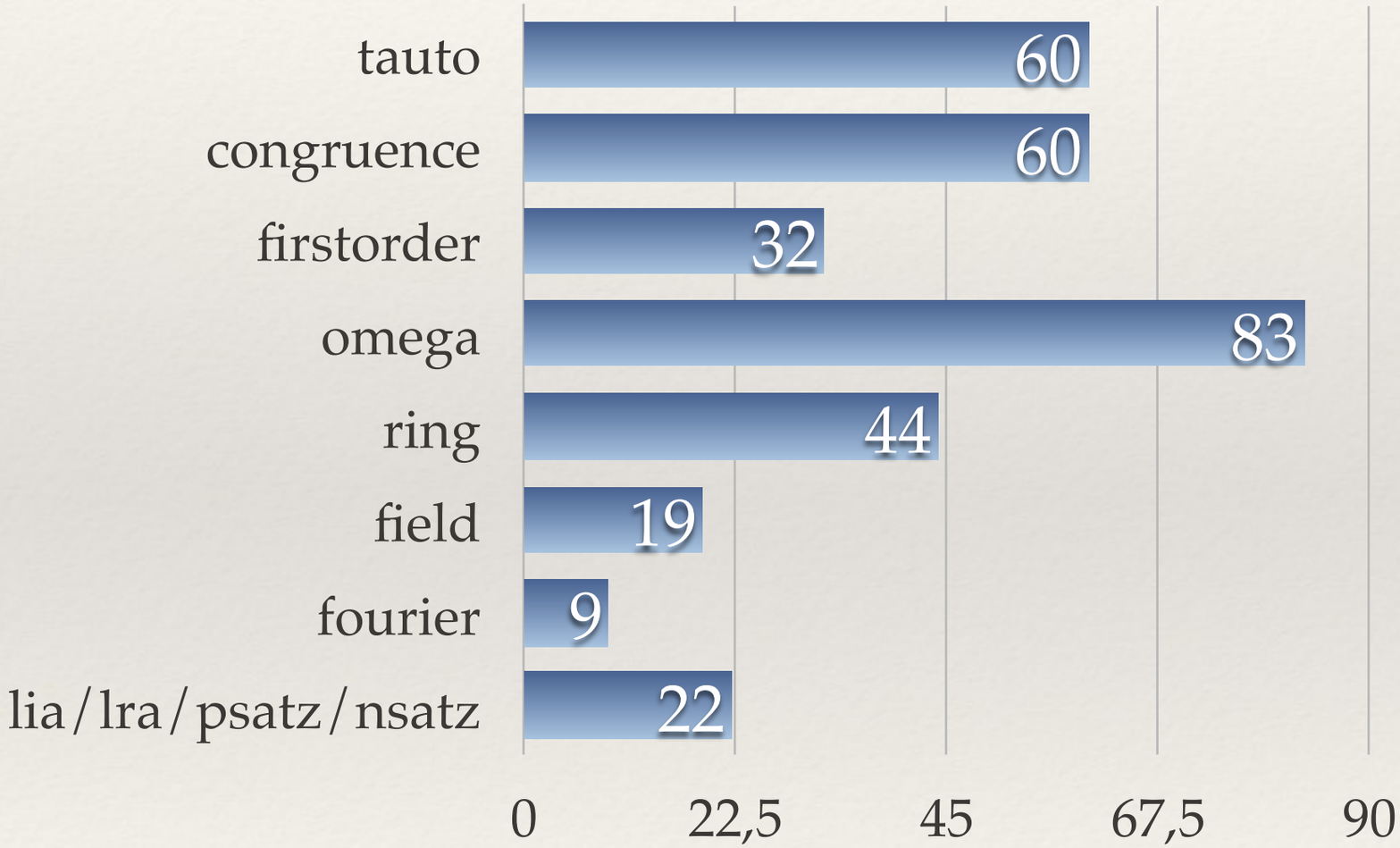
Std lib


Init
Logic
Structures
Bool
Arith
?Arith
Numbers
Relation
Sets
Classes/Setoids
List
Vectors
Sorting
Well-founded
MSet
FSets
Strings
Reals
Program
Unicode
103
84
25
72
94
55
18
37
20
46
95
22
10
44
9
21
24
16
40
23
0
27,5
55
82,5
110

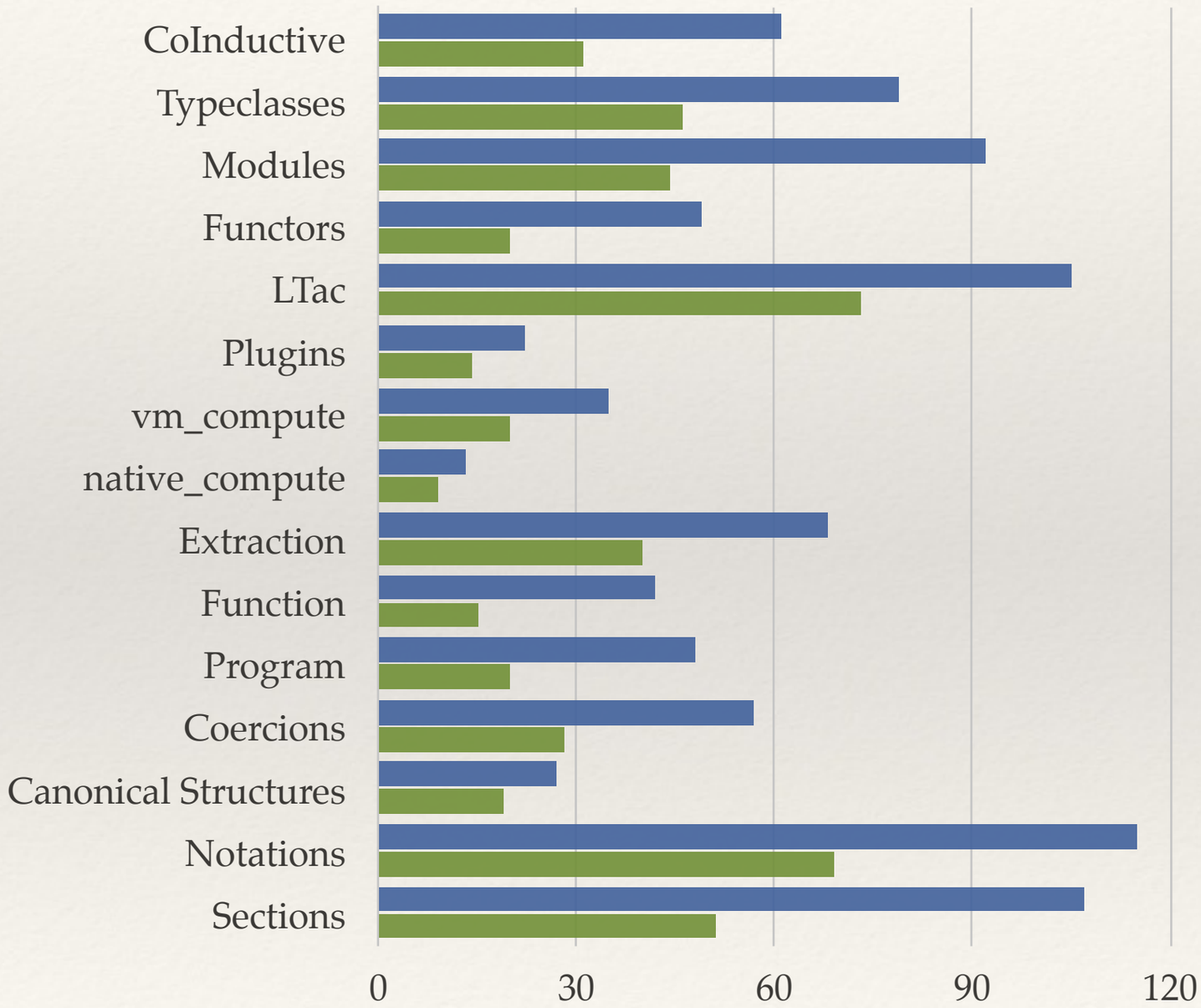
Tactic language (main)



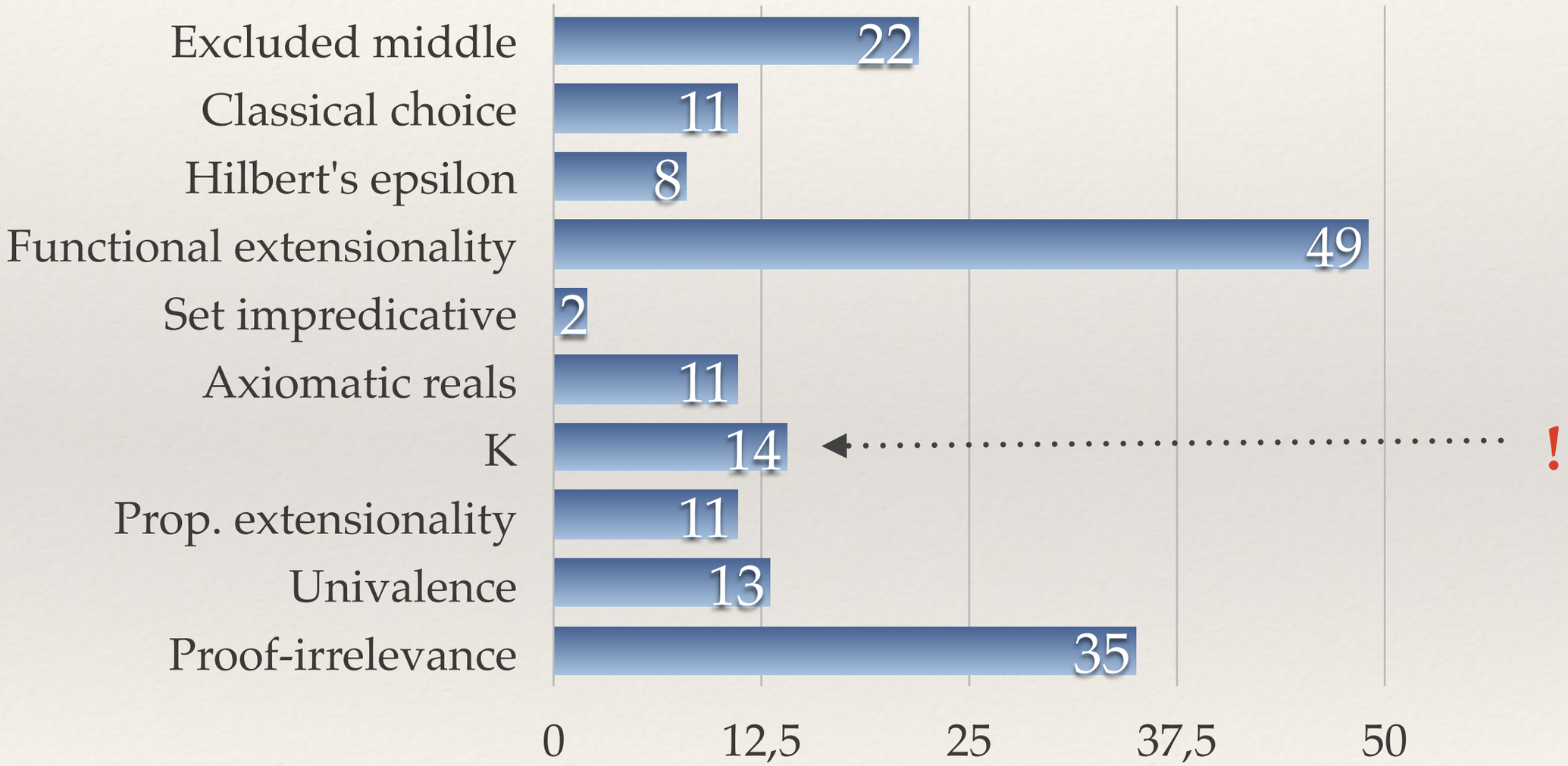
Tactics


tauto
congruence
firstorder
omega
ring
field
fourier
lia / lra / psatz / nsatz
60
60
32
83
44
19
9
22
0
22,5
45
67,5
90

Features


CoInductive
Typeclasses
Modules
Functors
LTac
Plugins
vm_compute
native_compute
Extraction
Function
Program
Coercions
Canonical Structures
Notations
Sections
0
30
60
90
120

Axioms


Excluded middle
22
Classical choice
11
Hilbert's epsilon
8
Functional extensionality
49
Set impredicative
2
Axiomatic reals
11
K
14
!
Prop. extensionality
11
Univalence
13
Proof-irrelevance
35
0
12,5
25
37,5
50

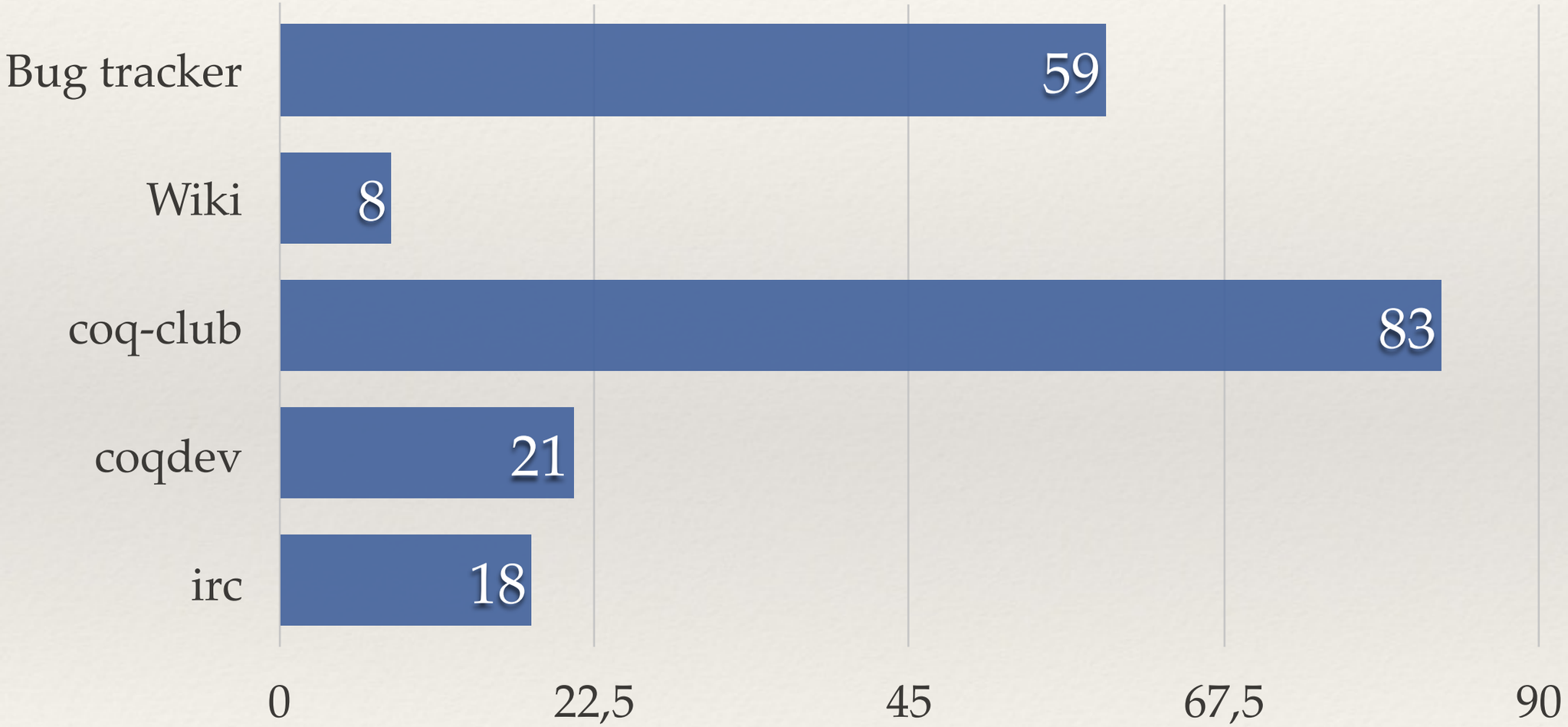
Future

Priorities
Dev. process
Wishes

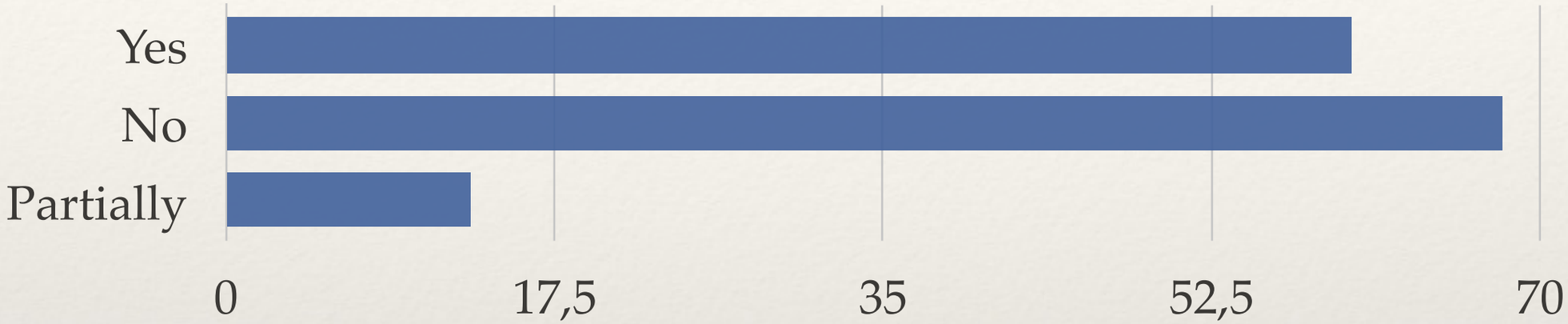
Priorities

Single transferable vote	s = 1.1	s = 1.5
Term language	Quality of std lib	Quality of std lib
Quality of std lib	Search tools	Term language
Search tools	Term language	Search tools
New tactic language		
Logical expressiveness	Performance	Logical expressiveness
Performance	LTac (eff., expr.)	LTac (eff., expr.)
Package manager		

How do you report problems?



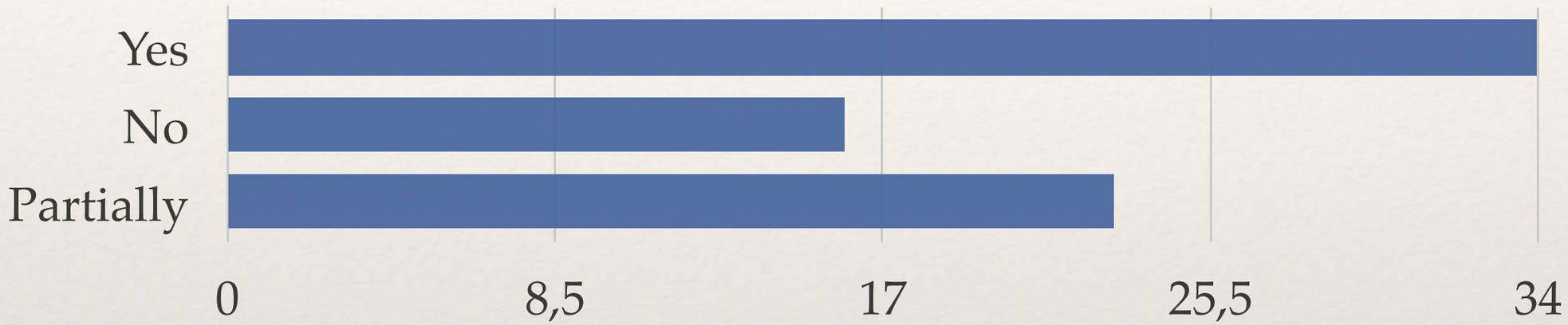
Feeling informed about the future?



"I discover changes when you release beta versions, i.e., when it is too late to provide feedback"

"A website would help"

Feeling better about the future?



"Coq is operated like a research project, not a project maintaining production software"

Shortcomings? Wishlists?

"Automation", "Quickcheck", "Sledgehammer", SAT/SMT

"Document heuristics"

"Revoke notations/ coercions", more local stuff

"Import too coarse grained"

~15 pages of raw text

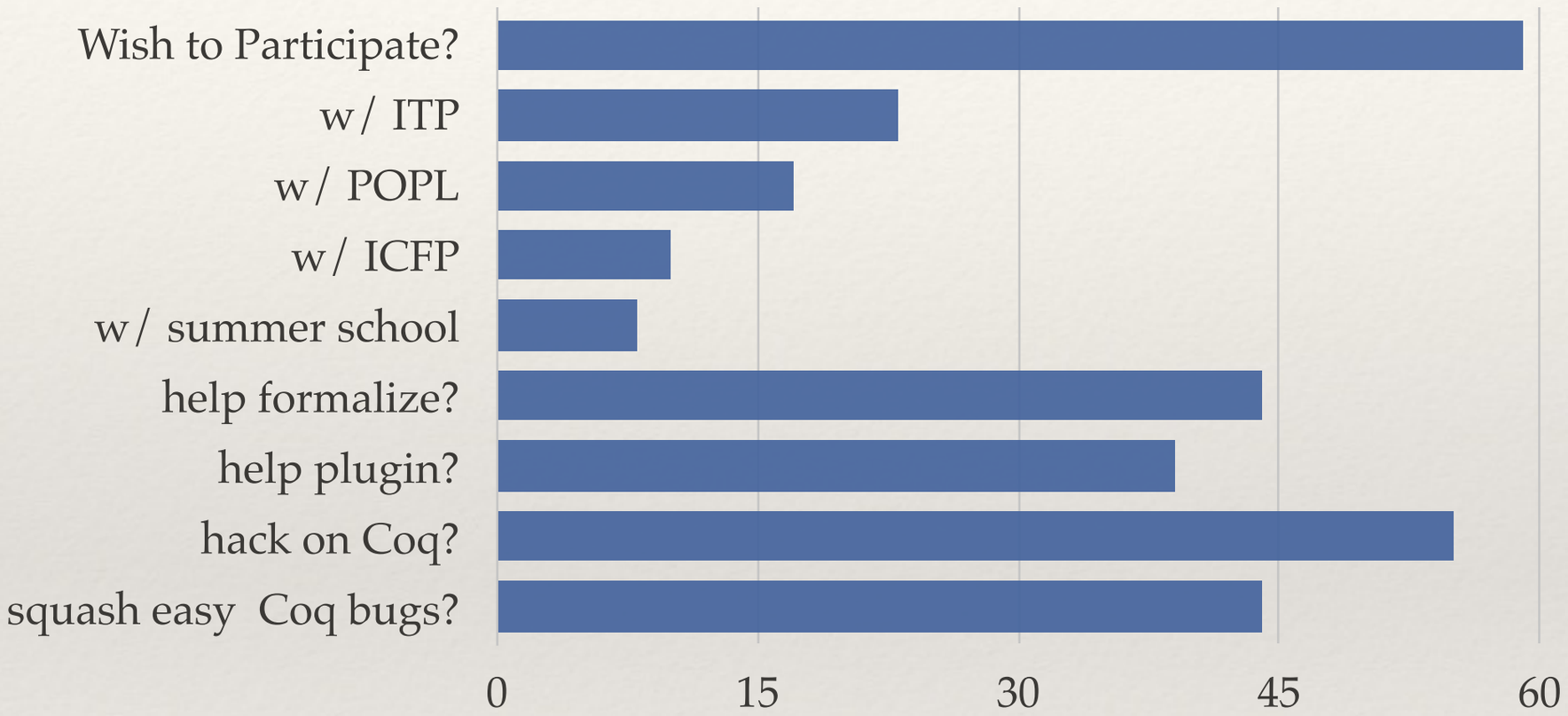
"Check/About/Search"

"Type class inference loops"

"Document the code"

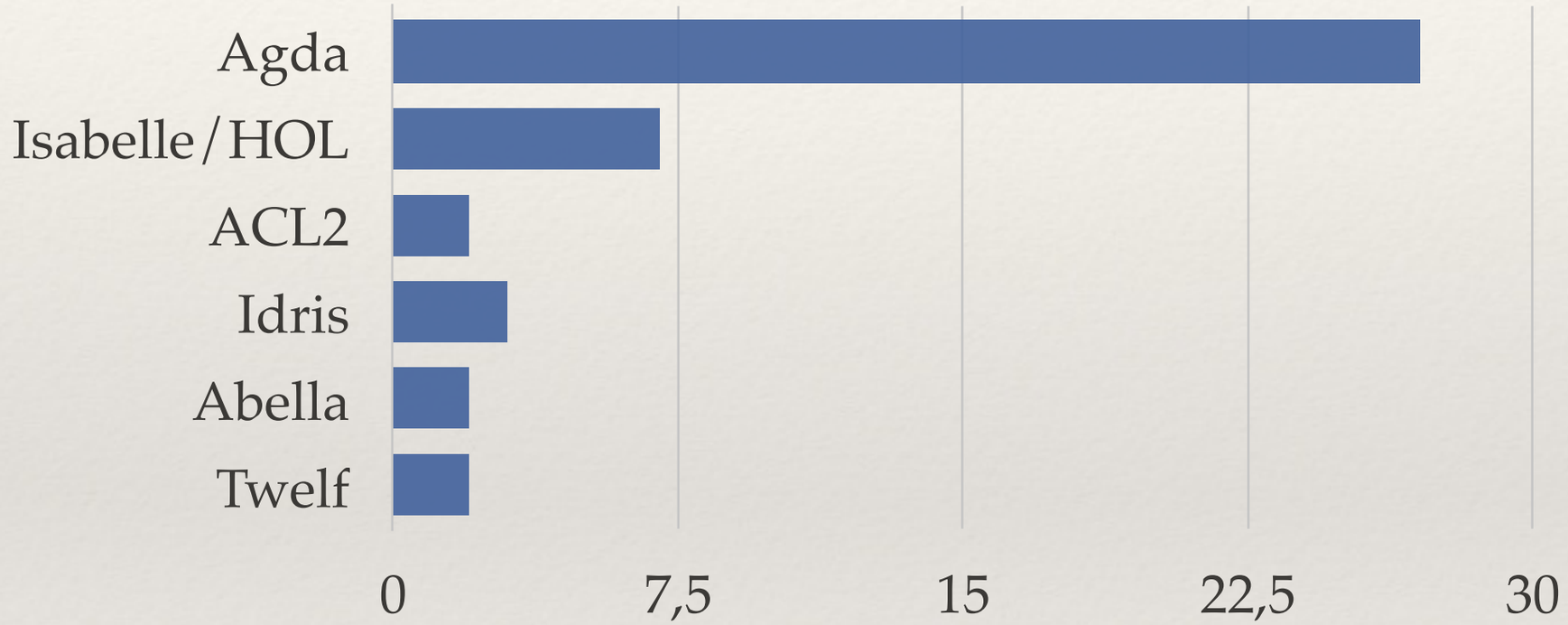
Tooling: build system, documentation, package management …

Bootcamp



Most people can transfer copy-rights to Inria for contributions on the Coq code

The competition :)



TL; DR

backward compatibility with OCaml 3.12 is not a requirement

most people do not care about camlp4/camlp5

most people compile Coq themselves

if it worked, people would use a package manager for Coq

Thanks for your attention

Conclusion

- too much data
- crowdsource processing?
- too early to get feedback