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Citizens in knowledge generation The value of diversity

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7 causal patterns from CS to broader impacts

Deducted from the literature

1. Improve societal relevance (contextualization)
2. Reverse skewed representation
3. Including more diverse perspectives
4. More data
5. Scientific literacy
6. Extended peer review
7. Enhance acceptance of scientific outcomes

Four of these patterns depend on a crucial assumption: the participation of a diverse or representative sample of citizens

Citizen science as a key action to maximize research impact (Lamy Committee, 2017)



Methods

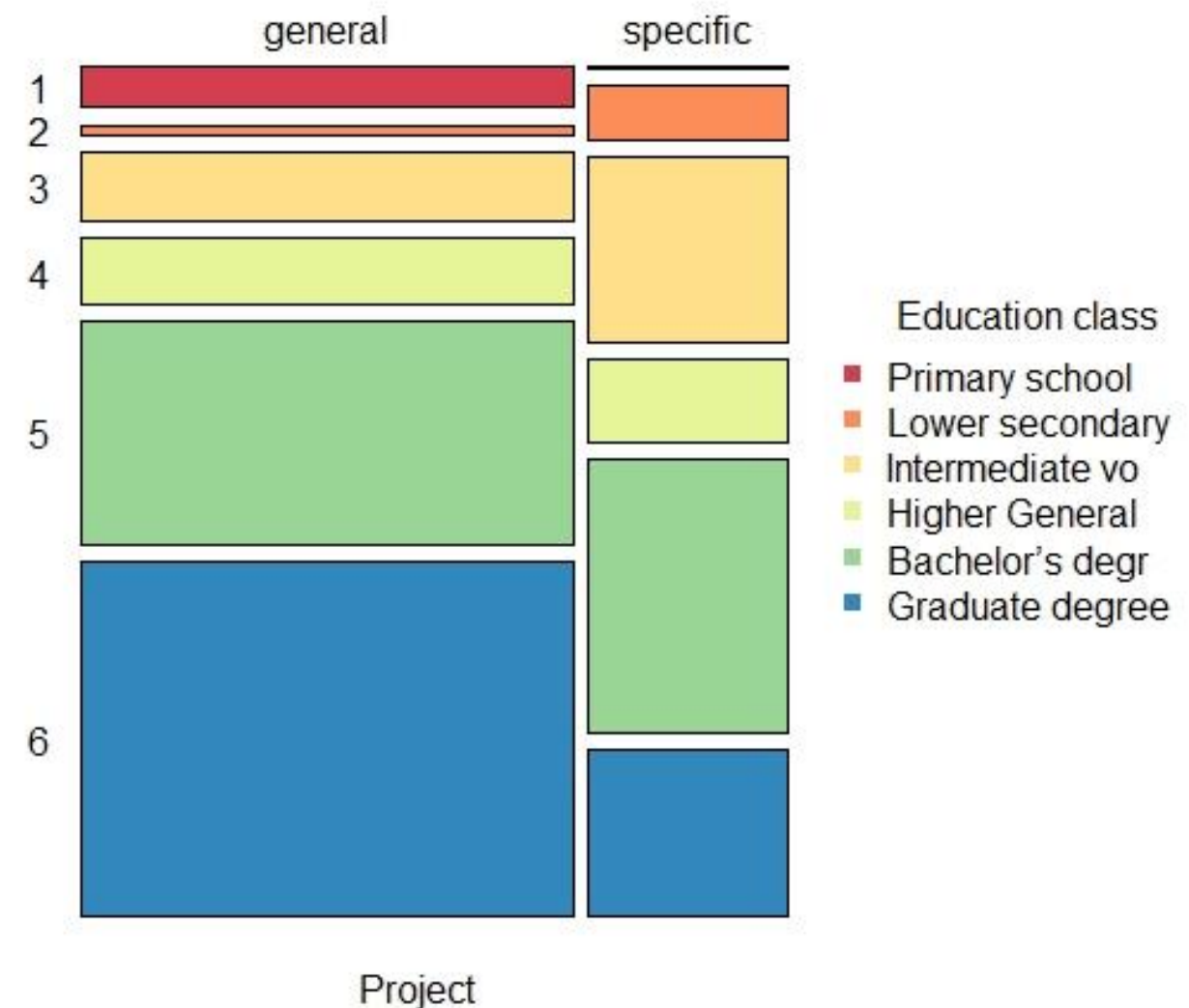
Meta analysis of five citizen science projects in the water domain

Project	Topic	Time	Recruitment strategy	Number of invitations	Response rate (+)	N participants invited (and accepted)
The Freshness of Water	microbiological stability of drinking water	2016	General	N/A	N/A	43
The Clean Water Experiment	quality of urban surface water	2017	General	N/A	N/A	667
CS - Lime	drinking water hardness and lime-scaling	2017	Randomly selected addresses	1500	8,9%	133
CS -Lead	inventory of lead water pipes	2017	Randomly selected addresses	1255	8,5%	91
CS - Hardness	drinking water hardness	2017-2018	Randomly selected addresses	2384	6,8%	163

Effect invitation strategy

Targeted invitation improves diversity in education

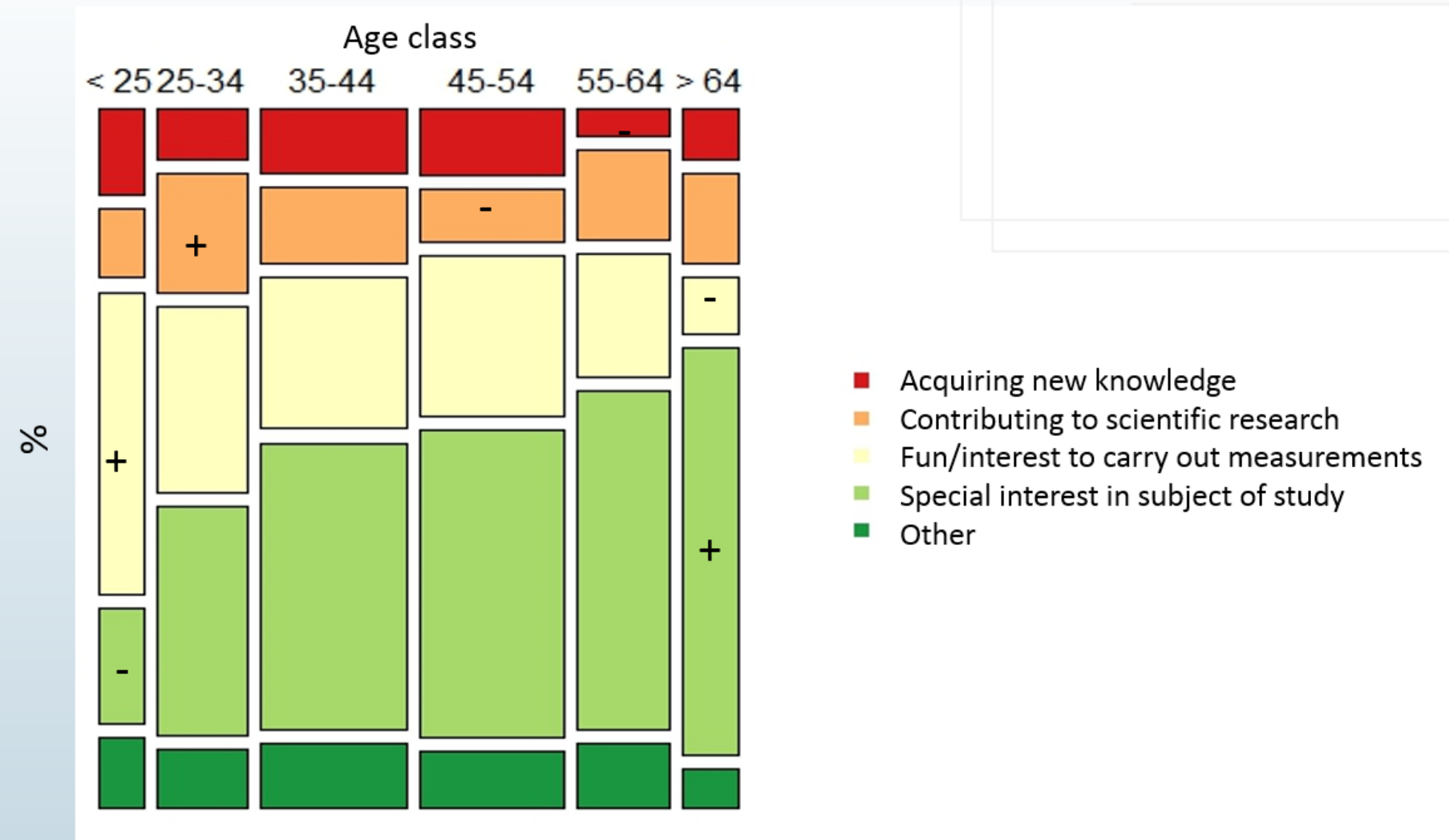
- Distribution of education levels of the participants were significantly related to the type of invitation strategy*
- The projects that used an targeted invitation strategy show that the overrepresentation of highly educated citizens can be overcome



Motivation

Clear pattern across age groups*

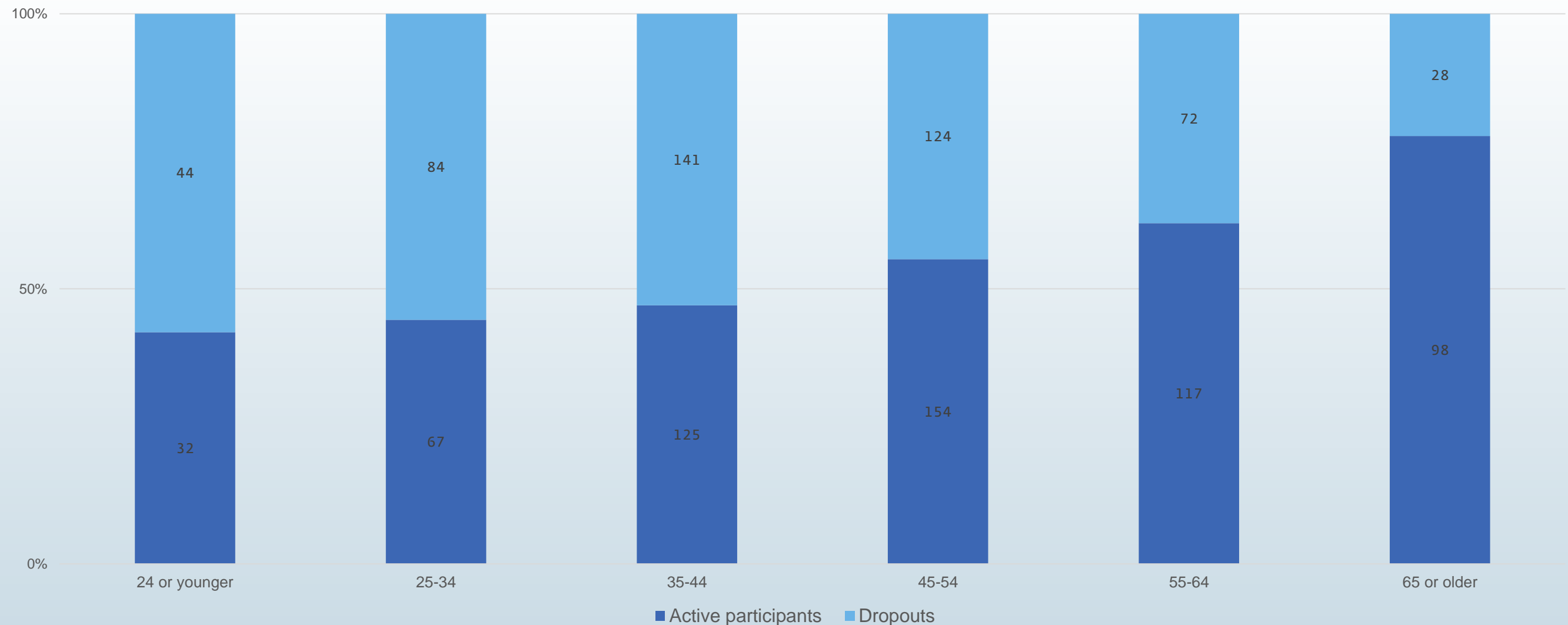
- Older participants: special interest in the subject of the study (+)
- Younger participants: the fun element (+); special interest in the subject (-)



* $p < 0.001$ with chi-square test

Participant activity

Younger participants show a larger probability to drop out*



* $p < 0.001$ with Mann-Whitney's U test

Conclusions

- **People across all age and education groups can participate meaningfully in CS**
- **A diverse sample of participants requires a targeted invitation strategy**
- **Additional efforts needed to keep younger participants active**

Thank you

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