



**e potential of
izen science
increasing
search
pacts**

**n Brouwer PhD &
rens Hessels PhD**

expectations of citizen science

engagement with research and innovation leads to:

scientifically literate society

diverse perspectives and creativity in research design and

projects

socially relevant and desirable research and

innovation outcomes

(European Commission, 2016)

citizen science as a key action to maximize research impact

(European Commission, 2017)



LAB – FAB – A

Investing in the
future we want

Report of the independent
group on maximising the impact
of EU Research & Innovation



usual patterns from CS to broader impacts

derived from the literature

enhance societal relevance (contextualization)

avoid skewed representation

include more diverse perspectives

improve scientific literacy

use open data

encourage peer review

promote acceptance of scientific outcomes

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

and research questions

more insight into the value and opportunities
ing audiences that typically are not engaged
nce

Research questions:

1. What is the influence of a targeted invitation strategy on the sample of participants in a science project?
2. How does the activity of participants relate to personal characteristics?
3. How do the effects of CS participation relate to personal characteristics?

Methods

Analysis of five citizen science projects in water domain

	Topic	Time	
Whiskiness of Water	microbiological stability of drinking water	2016	
The Clean Water Experiment	quality of urban surface water	2017	
CS - Lime	drinking water hardness and lime-scaling	2017	
CS -Lead	inventory of lead water pipes	2017	
CS - Hardness	drinking water hardness	2017-2018	
Total			



Response rates

	Recruitment strategy	Number of invitations	Response rate (positive completes)	Number of participants invited
Freshness of Water	General	N/A	N/A	
Clean Water Experiment	General	N/A	N/A	
CS - Lime	Randomly selected addresses	1500	8,9%	
CS -Lead	Randomly selected addresses	1255	8,5%	
CS - Hardness	Randomly selected addresses	2384	6,8%	

Targeted invitation strategy

Targeted invitation improves diversity in education

Distribution of education levels of the participants

is significantly related to the type of invitation

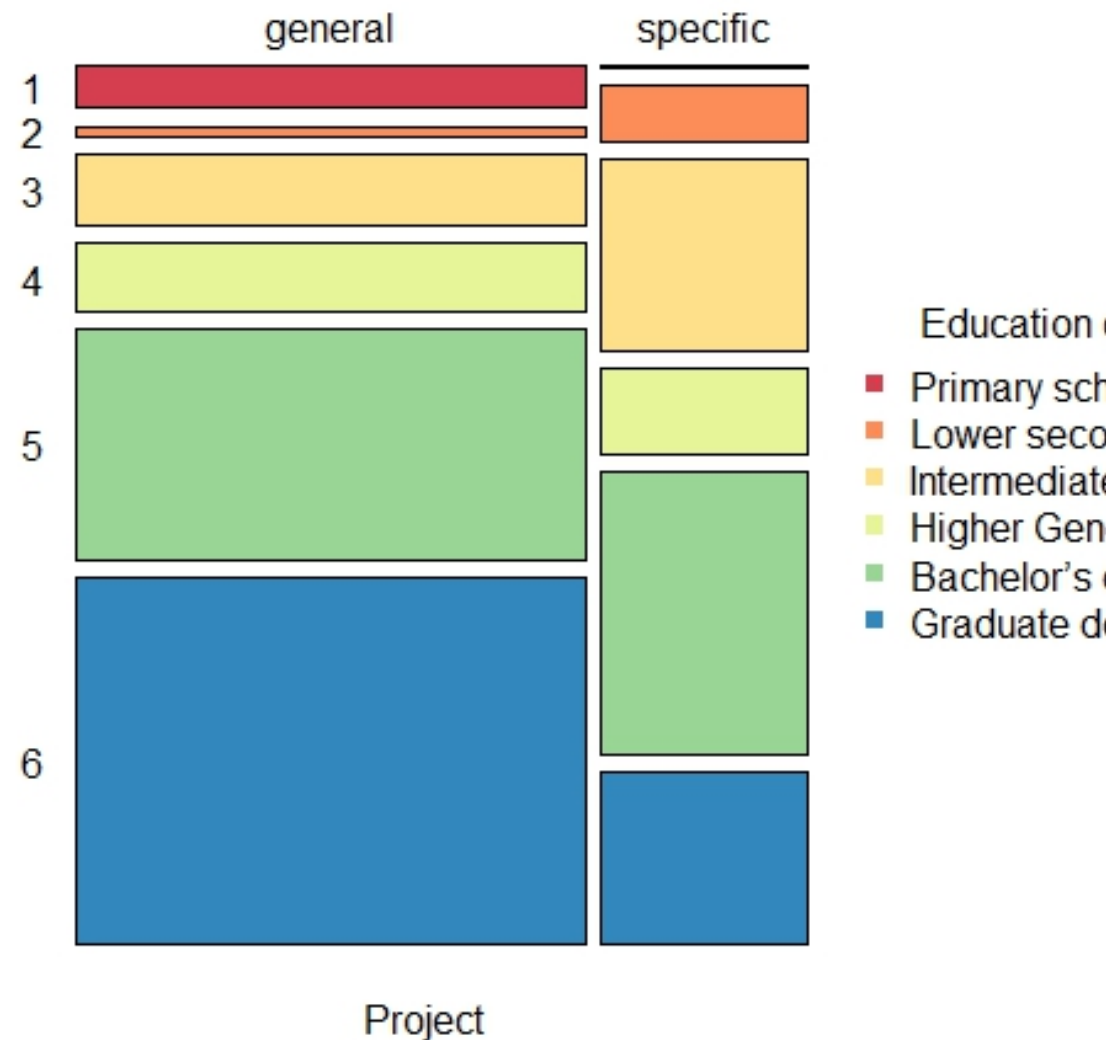
strategy*

Projects that used a targeted invitation strategy

showed that the overrepresentation of highly educated

participants can be overcome

* tested with chi-square test



Evolution

Pattern across age groups*

participants: special

st in the subject of the

(+)

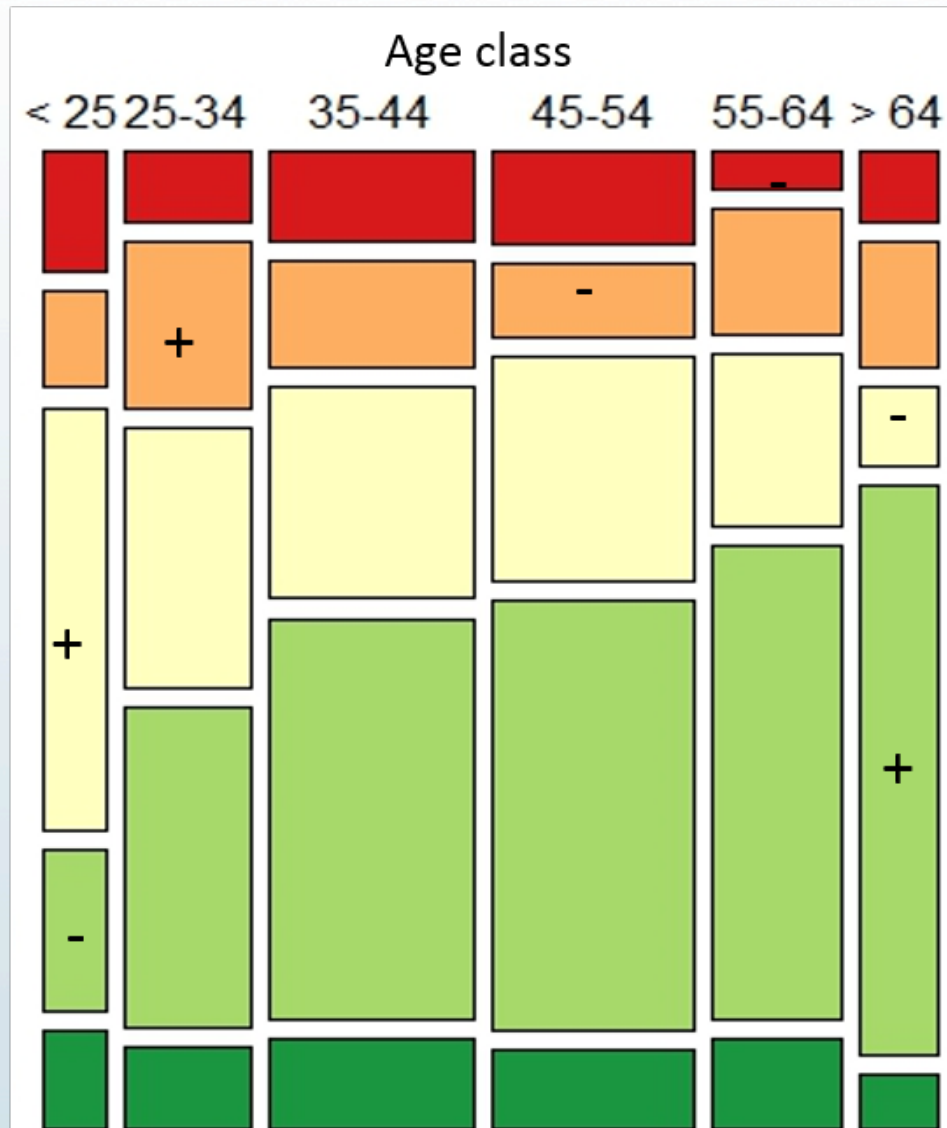
er participants: the fun

nt (+); special interest in

bject (-)

%

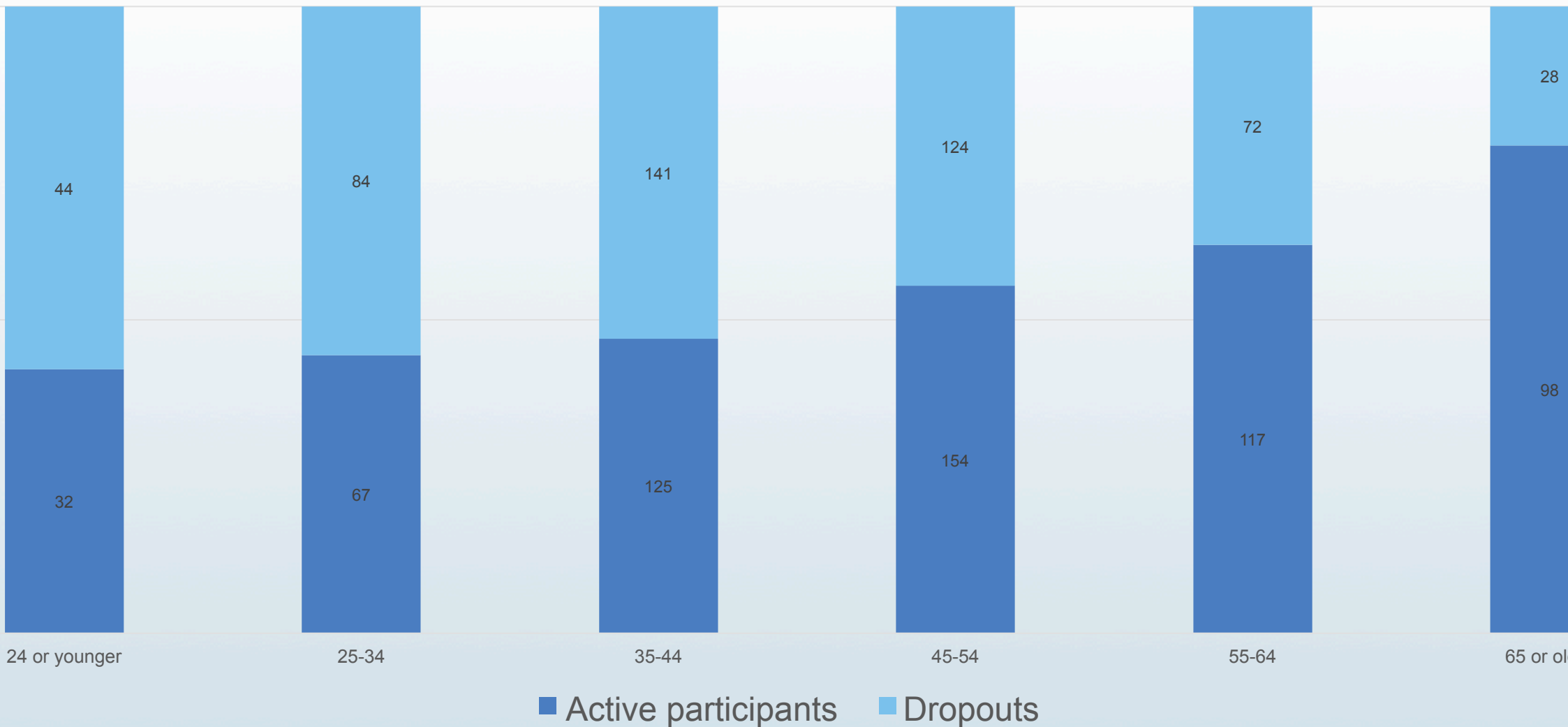
with chi-square test



- Acquiring new knowledge
- Contributing to science
- Fun/interest to carry on
- Special interest in subject
- Other

Participant activity

Older participants show a larger probability to drop out*



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

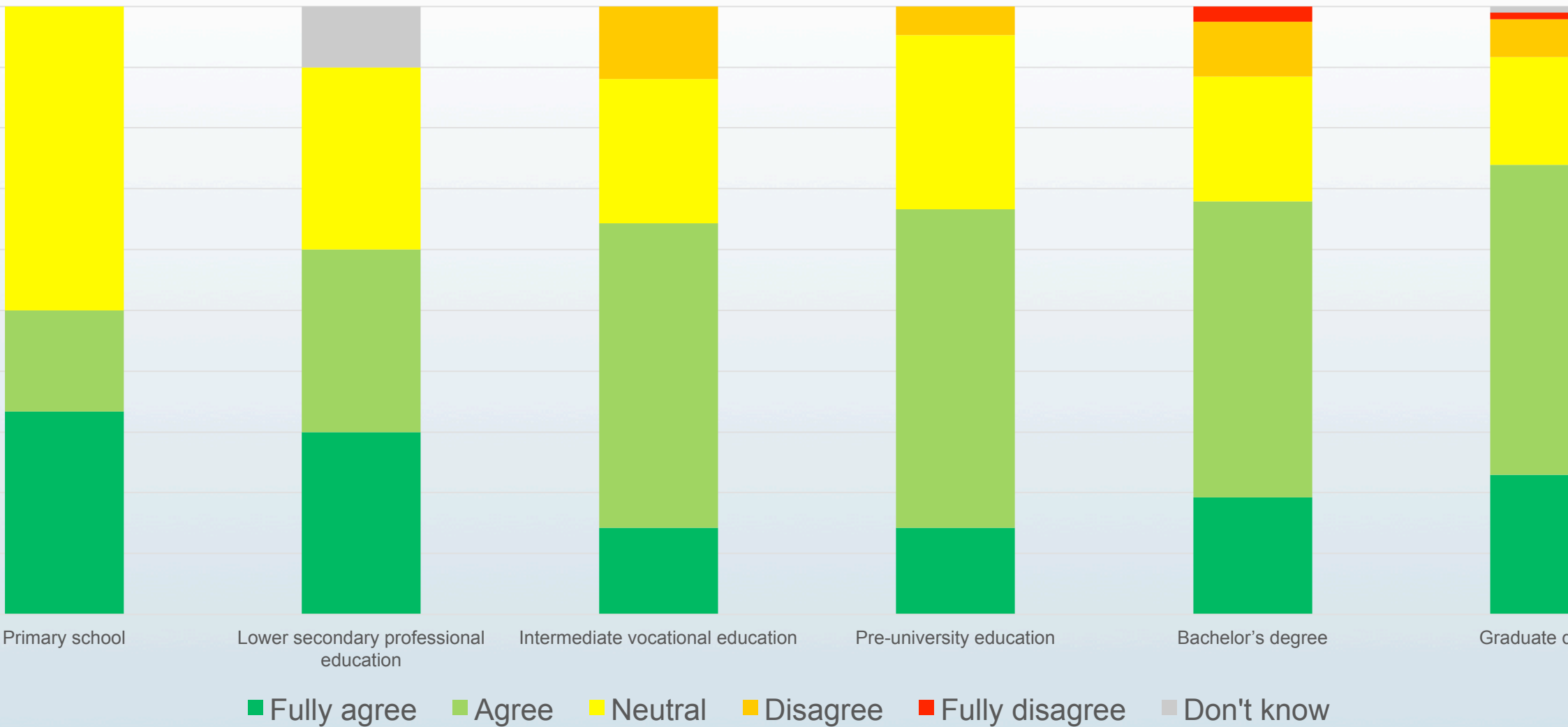
Change in water awareness

Participants are affected; in particular the younger groups



Change in water awareness

Relationship with education



Conclusions

People across all age and education groups can participate meaningfully

Diverse sample of participants requires a targeted invitation strategy

Additional efforts needed to keep younger (and lowly educated) participants engaged: both to prevent dropout and to keep them interested in repeated participation