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Citizen Science in Health and Wellbeing Research in Australia: Public perceptions and future directions

Emily Brindal

emily.brindal@csiro.au

CSIRO

Danielle Baird

CSIRO

Anna Harrison

ORIMA Research

Maddy Sandeman

CSIRO

Katie Wood

CSIRO

Jack Disher

ORIMA Research

Alison McLaverty

ORIMA Research

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Abstract

Background

This research explored public attitudes and preferences regarding citizen science in the context of health and wellbeing. It examined: (1) the level of interest in this method, (2) attitudes toward different terminologies, (3) perceptions of the costs and benefits of involvement, and (4) the types of health and wellbeing research topics the public would like to engage with.

Methods

Three complementary methods were used to gather community input: qualitative research (focus groups and online discussion boards), an online survey, and anonymous online submissions. Qualitative research (n = 63) sessions were conducted online (Feb–Mar 2024) and explored awareness of citizen science, perceptions around involvement, and topic interests. The online survey (Mar–Dec 2024) asked participants (n = 1137) open- and closed-ended questions on topics of interest, attitudes towards different citizen science terms, perceived value of participation, and prior experience. An anonymous online submission form (n = 21) allowed the public to propose project ideas.

Results

Qualitative research revealed low awareness of the term “Citizen Science”, and the term itself was perceived as too formal. After explanation, participants recognised potential benefits of the concept such as enhanced research quality, personal learning, and more community-relevant outcomes, but had concerns around data quality and variability in engagement levels. Interest was highest for topics that were personally relevant and where people felt they could make a positive difference (both personally and within the community). The survey found other terms were rated as clearer and more engaging than “Citizen Science”. Priority topic areas included environmental health, nutrition, specific medical conditions, mental health and wellbeing, ageing, community issues, and gender-specific health.

Conclusions

These findings highlight the public interest in these methods for public health research. They also give direction as to the importance of clear, inclusive language and personally meaningful topics in designing and promoting participation in health and wellbeing citizen science initiatives.

TRIAL REGISTRATION

Clinical trial number: not applicable

BACKGROUND

Citizen Science (CS) is an “umbrella term” that includes active involvement of community members in scientific research, working in collaboration with professionals to achieve genuine scientific outcomes(1). Broadly, CS projects share a goal of creating a community around scientific research, a sense of shared ownership of this new knowledge and information, and large-scale resource usage.

Citizen Science Organisations have attempted to standardise processes and provide resources for researchers and citizens alike to undertake collaborative research with good clinical practice, including a list of guiding principles(1). Academically, Marks et al (2) combined concepts from various CS frameworks to help visualize the hierarchy of public engagement from contributory through to citizen-led. Citizen-led describes work where citizens help guide researchers to topics and issues that are most relevant to them. This level of collaboration enables scientists to perform work that is robust and relevant to the community, increasing the likelihood of outcome implementation. The other end of public involvement is contributory designs in which citizens are only responsible for collecting and analysing data, or occasionally also assist in the interpretation and dissemination of results (3).

Despite great promise in achieving meaningful scientific impact in other areas, CS has historically been applied in ecological studies to provide a mass snapshot of an environment or ecosystem (e.g. the Great Southern Bioblitz) or large-scale monitoring and change tracking (e.g., Frog ID). While many ecological CS projects have achieved significant success, such as influencing policy change (4), some have argued that growing interest has not resulted in direct impact on policy(5). Those working in the health field have recently started to apply citizen science in areas such as disease prevention with a notable rise in publications since 2020 (2).

Public health research presents a compelling opportunity for CS, as it can leverage crowdsourcing to extend the reach and depth of public health monitoring, capturing observations that may be more relevant to the lived experiences of communities. Existing studies suggest people are willing to passively share personal data—including fitness device metrics, food journals, internet history, genetic data, infectious disease mapping, and GPS data(6, 7)—for large-scale observational studies. However, CS approaches that involve active, participatory roles for community members remain less common. Only a limited body of work has integrated public health concerns with environmental observations, such as air quality(8, 9), despite the potential for richer, more context-specific insights. As Rowbotham et al argue, CS in health promotion can enhance research capacity, foster public engagement, and generate evidence that is more responsive to policy and practice needs(10). They propose a knowledge mobilisation approach, where researchers and non-academic partners collaborate to ensure the co-produced knowledge is both relevant and actionable.

Beyond the design of CS projects, several practical considerations may influence their success, including how such initiatives are framed and communicated. For example, the Prevention Centre of Victoria Health deliberately avoided using the term “Citizen Science” in a collaborative public health project addressing harmful advertising. Their concern was that the term might alienate participants by implying

the project was only for people interested in science(11). Focus group data supported this caution, with some participants describing the term as “stand-offish” and “[not] very welcoming” or accessible(12). These findings underscore the importance of inclusive, community-oriented language and approaches—further reinforcing Rowbotham et al.'s emphasis on co-production and relevance to practice(10).

Consideration also needs to be given to the costs and benefits for individuals within projects. These include what the participants are getting in return – whether that be tangible (e.g., payment) or conceptual (e.g., learning) – and the degree of meaningful partnership, recognition and involvement they can expect. Despite broad recognition of the importance of these and various other factors, minimal research has asked the public whether and how they would like to be part of CS in health and wellbeing research.

Current Aims

This research aimed to explore public attitudes and preferences around CS in the context of health and wellbeing. Specifically, it investigated: (1) The level of interest in this method in the context of public health, (2) Attitudes toward different terminologies used in CS, (3) Perceptions of the costs and benefits of involvement, and (4) The types of health and wellbeing research topics the public would like to engage with.

METHODS

We used three different methods to elicit community feedback: Qualitative research (which included focus groups and online discussion boards), an online survey, and an anonymous online submission form hosted on our organisational webpage. All parts of this study were approved by CSIRO’s Low Risk Human Research Ethics committee (2023_072_LR) in accordance with the National Statement on Ethical Conduct in Human Research 2007 (Updated 2018).

Method 1: Qualitative Market research

We aimed to recruit 30 people aged 18–35 years and 30 people aged over 35 years from the general Australian public who had not been involved in market research in the last 12 months and were not employed in research organisations or groups with an interest in policy. Participants were recruited via ISO-accredited specialist qualitative research recruiters. A screening questionnaire was used to ensure a spread of ages, genders, locations, life situations and educational attainment levels.

A combination of four online focus groups and two online discussion boards were conducted between February and March 2024 with a total sample of 63 participants. All participants were offered a reimbursement payment of $100 to attend a focus group of 1.5 hours in duration, or $60 to participate in a 4-day online discussion board with approximately 1.5 hours of total time commitment.

Figure 1 shows the key topic areas covered during the focus group sessions and discussion boards based on a purpose-built discussion guide (refer to supplementary file). Participants were first asked about their familiarity with citizen science projects, before being provided with additional information about the topic. This approach aimed to understand their baseline familiarity with the term, possible areas of involvement or creation for future projects in health and wellbeing and general support for the approach.

The online discussion boards were used to systematically test and validate the findings identified during the focus groups using a mixture of fully open-ended questioning and targeted prompting, based on findings from the focus groups. This included iteratively refining lists of potential health and wellbeing topics, research activities, types of research, and strategies for supporting project engagement with participants to better understand their priorities and preferences.

Method 2: Online survey

Our aim for the survey was to reach out to an audience of the Australian public already engaged with science. A short survey was created in Qualtrics and promoted via paid promotion on the Facebook page of our Research Organisation between March and April 2024. The survey remained open until December 2024 and all participants were offered the chance to win a $100 voucher for completing the survey. The survey comprised 3 sections and took 15 minutes to complete. 2612 respondents started the survey, 1110 completed all components of this survey. Most drop-out occurred on the first page with 1245 completions.

The first three questions of the survey were open-ended and asked participants: *What is something you've always wanted to know more about when it comes to health and wellbeing and how it relates to the world around you?*; *What things routinely make you feel good/happy? (data not presented)*; *What things routinely make you feel healthy? (data not presented)*. After this, participants were shown a list of 12 topics and asked to select their top three areas of interest. The next section of the survey asked participants whether, prior to the survey, they had heard of citizen science and then presented a short overview. After which, they rated attitudes to terms used in the literature (Citizen Science, Participatory Science, Co-Design and Collaborative Science) using bipolar attitude scales assessing (unpleasant/pleasant, useless/useful, confusing/clear, disengaging/engaging). Ratings for each attitudinal scale were averaged to create a total attitude score out of 7. Participants were also asked about former participation in CS, perceived value of input, barriers, and motivators, using a combination of rating scales and categorical responses. The final sections asked for demographics including age in 5-year age groups, gender, highest level of education, and self-perceived standard of living.

Method 3: Open submissions to website

The CSIRO health and wellbeing citizen science website was promoted through different avenues and people had the opportunity to make anonymous submissions of ideas for future CS projects through a form on the webpage. No personal or demographic information was collected to ensure this section retained anonymity. No sampling targets were defined for this method. Throughout the active data collection period (March to December 2024), 3,524 people visited the homepage, 71 visited the submission page, and 21 (29.6%) submitted ideas via the submission portal.

Analysis

Qualitative market research: Focus group and discussion board findings were analysed using a manual, systematic and tailored approach which was underpinned by grounded theory. The same team of qualitative specialist researchers conducted all moderation and analysis to ensure analysis was done with a full appreciation and understanding of the context in which responses were provided (e.g., non-verbal cues, language and tone). After each session, researchers produced a summary of findings and key themes in relation to the main areas of investigation, and regular analysis sessions were held to cross-check and validate emerging findings. As the research progressed, key themes and findings were iteratively developed and refined.

Online Survey and online submissions: Survey results for scale items were summarised into descriptives based on scale responses. Open-ended text was coded by three coders into broader themes through an iterative process in which the coders refined and tested categories. Comments were coded thematically and could span as many categories as relevant. The final categories which represented 5% or more of the responses were then coded into sub-themes by a single coder. Throughout this process, categories were also assessed for accuracy. There was a 3.9% error rate in classification across all categories. Categories wrongly assigned were recoded. The resulting 24 categories defined in the survey responses were used to code the open text submissions coming through from the website.

Data were analysed descriptively using SPSS version 29 using all available data.

RESULTS

Sixty-three people participated in the qualitative research (via 4 online focus groups and 2 online discussion boards), while the online survey was commenced by 2612 people (of which 1110 completed all sections). The demographic profile of research participants for each method is shown in Table 1. Focus group participants were from a range of demographic backgrounds while the survey attracted a sample more biased towards females with higher education.

Table 1
Characteristics of participants in the qualitative research and the online survey

Females	**Qualitative research (n = 63**)**	**Online Survey* (n = 1113)**
	30 (49.2%)	**855 (76.8%)**
Males	29 (47.5%)	222 (19.8%)
Non-binary/other	2 (3.3%)	38 (3.4%)
Age(years)		
18–25	6 (9.8%)	20 (1.8%)
26–30	9 (14.8%)	50 (4.5%)
31–35	13 (21.3%)	54 (4.9%)
36–40	6 (9.8%)	68 (6.1%)
41–45	8 (13.1%)	91 (8.2%)
46–50	3 (4.9%)	110 (9.9%)
51–55	0 (0%)	120 (10.8%)
56–60	5 (8.2%)	148 (13.3%)
61–65	6 (9.8%)	173 (15.5%)
Older than 65	5 (8.2%)	279 (25.1%)
Education*		
Less than university	31 (50.8%)	297 (26.8%)
Undergraduate	14 (23%)	297 (26.8%)
Postgraduate	16 (26.2%)	516 (46.5%)
*Three respondents missing data in survey; **Two participants did not provide demographics		

General perceptions of citizen science

Most qualitative research participants had limited awareness of CS. While many were aware of data collection related contributions, they had not considered collaborative approaches. Few were aware of CS named projects related to the environment. Once they were familiarised with the concept of CS, participants saw multiple benefits, such as gaining knowledge, access to better data and better alignment of research outcomes:

Involving people in scientific research will benefit the participant in terms of gaining new knowledge about the area researched (Participant, 18–35 years)

Participants identified possible risks including limited scientific skill from the general public and a possible lack of rigour given the voluntary nature of involvement:

A lot of these [research tasks] are things you need to be qualified to do… those are things that should be left to experts (Participant, 36 + years)

Overall, most participants indicated that the benefits of CS outweighed any drawbacks or that risks could be easily mitigated.

In contrast to the qualitative research participants, over half of the survey respondents (53.1%) had participated in a citizen science project. Close to 70% (761/1154) had heard the term. There was also high interest in being part of a community that addresses scientific challenges in Health and Wellbeing with a mean interest of 5.89 (SD1.27) out of a possible 7.

Terminology

In the qualitative research, there was a general lack of consensus and shared understanding as to the meaning of the term citizen science. Overall, participants felt that 'citizen' was not a frequently used term, that it was associated with citizenship, and/or that science was "too formal", suggesting the need for a qualification. Alternatives such as participatory, collaborative and co-design were also seen as overly complex. Participants preferred the use of terms such as 'community', 'public', 'people' and 'crowd-sourced' to describe the approach:

It needs to be more of a general term that the average person can understand and resonate with. Both words don't actually describe what it is, it should be something really simple to communicate the idea of people coming together (Participant, 36 + years)

In the survey, preferences for terminology were distinct based on previous knowledge of citizen science (Fig. 2). Those familiar with the term (n = 761), rated this more favourably than alternatives. In contrast, those unfamiliar (n = 393) with the term, had a slight preference for Collaborative Science. Overall, all terms fell above the midpoint, suggesting that none were on the whole considered unfavourable.

Figure 2. Mean attitude score (out of 7*) for "What impressions do the following terms have on you?" by familiarity with the term "Citizen Science"

Yes (n = 761); No (n = 393); Unsure not presented (n = 69)

Motivators, barriers and style of participation

Qualitative research participants discussed a range of motivators and barriers to participating in health and wellbeing CS projects. These motivators and barriers were both intrinsic (e.g. internal and/or unique to the individual) and extrinsic (e.g. external to the individual). Six key intrinsic motivators for involvement were: interest in the research topic; wanting to make a positive difference in the community; being interested in scientific research/activities; satisfaction from contributing personal knowledge or experience; wanting a "fun" or enjoyable experience; and gaining a sense of community or belonging:

Personal interest is a major factor for me. I need to have personal interest in the topic to want to be involved at all (Participant aged 18–35 years).

Extrinsic motivators included: reward or compensation; direct benefits to own health/wellbeing; and a chance to build skills/credentials for a resume (for a few interested in careers in science).

Barriers included limited interest in, or 'embarrassment' or 'shame' about, the specific topic, and/or feelings of being 'unqualified':

It's sometimes difficult to be honest in your answers, especially when it comes to sharing details about my health and wellbeing or my eating habits. I may not want to share those details (Participant aged 36 + years)

The online survey results revealed that general interest in the research topic was highly rated as a motivator while disinterest was a barrier (Table 2). Learning and relevance were also seen as motivators. Great time investment was also rated highly as a barrier, echoing comments in discussion groups.

Finally, when focus groups were asked how they wanted to be involved, data collection activities were top-of-mind for most participants. When prompted with a larger list of activities (Fig. 3), activities perceived to be more 'time consuming' or requiring greater expertise or knowledge received less interest and less comfort from most participants. In the survey, there was limited preference for level of involvement, with most participants selecting any of the above for the presented options (Table 2).

Table 2
Mean score (out of 7*) for motivators and deterrents to participating in Citizen Science, and frequency (N) for appeal by engagement type.

	Mean (/7)	SD
How much would the following components motivate you to participate in a Citizen Science project? (n = 1129)		
Being part of a community (e.g. scheduled in person or digital events; forums to share experiences and ideas)	4.50	1.777
Personal learning (e.g. being able to learn more about health or science)	5.81	1.271
Relevance to my experience and/or interests	5.77	1.219
Optional Learning Modules (e.g. educational videos/posts/content on the topic)	5.07	1.516
Health or wellbeing benefits (e.g. more physical activity)	5.58	1.445
Monetary payment	3.74	2.158
General interest in the topic	5.94	1.095
Another type of reward	3.62	1.919
How much would the following deter or stop you from participating in a Citizen Science project (n = 1123)		
Not enough reward (monetary, education)	2.46	1.737
Not interested in the topic	5.08	1.768
Requires too much time	5.02	1.619
Concerns over privacy, respect, or trust	4.77	2.079
Length of ongoing commitment	3.85	1.745
	n	%
Which of the following approaches appeals most to you? (n = 1180)		
Citizens define problems, challenges and research topics to explore	108	9.2
Citizens partner with scientists to co-design questions, research methods and other first steps	260	22.0
Citizens review and refine research questions and data interpretation	72	6.1
Citizens collect, provide, or interpret data	198	16.8
I don't know/understand	31	2.6
Any of the above	511	43.3
*Ranged from 1 – “not at all”, to 7 – “completely”		

Ideas for future co-creation

Open-text responses from the survey were themed in 24 categories (Table 3). The most commented theme was regarding the environment, including mentions of pollutants as well as the possible benefits of outdoor spaces for health and wellbeing. Topics on diet or nutrition, wellbeing, mental health, healthy ageing, and education were mentioned across all three data collection formats. Qualitative participants were able to indicate if topics were important at a national or personal level. Gender-specific health was seen as more personally relevant.

Table 3
Themes emerging as topics of interest for future citizen science projects in health and wellbeing from the online survey (proportion of total topics), qualitative research (X=emerging theme), and website submissions (X=emerging theme), with prominent sub-themes topics listed

Themes	**Online Survey (n = 1867)**	**Qualitative Research n = 63**		**Website Submissions(n = 21)**	**Sub-themes in order of frequency Bolded mentioned in other groups**
		PERSONAL	**NATIONAL**		
Environment	10.6			X	• **Environmental pollutants** • Being outside/nature • Climate concerns • Ecosystem and health
Diet, Specific dietary patterns or nutrients	8.8	X	X	X	• **Specific diets or nutrients (Meat versus plants)** • Foods for ideal health challenges • General nutrition or diet • Best foods to eat • Broader impacts of eating
Specific medical conditions or diagnoses	7.6	X	X	X(2)	• **Chronic disease** • **Cancer** • Pain/migraine • Allergies/skin • Arthritis and joints • Fatigue
Community and societal issues	7.6	X		X	• Societal challenges • **Community and culture** • **Digital/technology**
Wellbeing	6.3	X	X	X(2)	• Better understanding

Themes	Online Survey (n = 1867)	Qualitative Research n = 63		Website Submissions(n = 21)	Sub-themes in order of frequency Bolded mentioned in other groups
		PERSONAL	NATIONAL		
					• **Emotions** • Natural environment interactions
Mental Health	6.1	X	X	X(2)	• Links between MH and… • **Specific disorders** • Treatment/causes and management • Improving MH • General MH
Ageing, longevity and death	5.9	X	X	X(2)	• General mention healthy ageing • Ageing general • **Effects of ageing** • **Longevity**
Gender-specific	5.4		X	X	• **Women's health** • Hormones other genders
Foods food processing and systems	5.0			X(2)	• **Food processing** • **Single food or vitamin** • Markets regulation and labelling
Exercise and fitness	4.8			X	
Brain health and cognition	4.0				
Individual factors, psychology	3.9				
Healthcare systems	2.9				

Themes	Online Survey (n = 1867)	Qualitative Research n = 63		Website Submissions(n = 21)	Sub-themes in order of frequency Bolded mentioned in other groups
		PERSONAL	NATIONAL		
and processes					
Digestive Processes and Health	2.7				
Prevention and other preventative health	2.6	X			
Weight and obesity	2.3				
General body biology and parts	2.0			X	
Education, communication, and misinformation	1.8	X	X	X	
Alternative medicine or approaches	1.6				
Genetics	1.7				
Sleep	1.8	X	X		
Drugs and medication	1.5				
Viruses and vaccines	1.3			X	
Pregnancy and children's health	1.0			X	

(Table 3 here)

When existing areas were presented in survey, most respondents were interested in the intersection between health, wellbeing and behaviour (Table 4). Many of the topics coded in the open-text data also overlapped with these responses.

Overall, most qualitative participants indicated interest in CS, but their levels of interest were dependent on the specific health topic, its personal perceived relevance, and the requirements of participation.

It really just depends on the type of study and what I'm being asked to do… [the topic] would need to feel very relevant to me … and [I'd only be] interested in studies I feel I can make a meaningful contribution to. Participant aged 18–35 years

Therefore, participants presented ideas based on their perception of the topic being personally or nationally relevant.

Table 4
Frequency (N/%) of responses to the survey question "Which of the following health and wellbeing topics are you most interested in exploring?"*.

Exploring how health, wellbeing and behaviour relate	**n**	**%**
	648	**47.4**
Diet, food, and eating habits	469	34.3
Sleep	446	32.6
Mood and mental health	446	32.6
Exploring what impacts health	368	26.9
Exploring what impacts wellbeing	357	26.1
Physical activity	355	26.0
Exploring how digital factors (social media, advertising etc) relate to wellbeing	175	12.8
Seeing how my individual health compares to others	158	11.6
Exploring how digital factors (social media, advertising etc) relate to health	134	9.8
Seeing how my individual wellbeing compares to others	87	6.4
Alcohol consumption	64	4.7
None of the above	31	2.3

***** Multiple items could be selected.

DISCUSSION

We aimed to better understand the Australian public's perception, interest, understanding, and priorities of CS in public health research. Specifically, this included whether people think CS is a good idea, what they think about the terminology, how they would like to be involved, and what topics they would like for future science.

Using a variety of methods, we have observed that Australians are largely supportive of CS in public health research. Most people were content to be involved with only the data provision aspect of research, which sits at the lower end of the spectrum of possible participation. This may be due to the

relative novelty of CS in health and wellbeing, as people were generally not familiar with the term “Citizen Science” and when they were, they associated it with ecological research. Limited awareness of the CS method and its formal terminology may deter interest and participation, due to lack of awareness and/or a resulting feeling of lack of qualification. This echoes statements made by Australian health bodies(11). Other studies have also highlighted that CS methods are beneficial as they tackle perceptions of intellectual inaccessibility (13) by distancing themselves from traditional data gathering. Interestingly, our data finds no mention of lack of trust or perceived elitism that has been reported in the literature (14, 15). This may be an artefact of the current recruitment methods which clearly identify this study as being performed by a large, national research organisation.

The importance of personal relevance was salient across methods and is likely to be relevant for those with less experience or knowledge of CS. It was clear from suggested research topics that areas such as the environment, mental health, nutrition, and healthy ageing are likely to have broad appeal. Public health research includes the risk that participants may expect the bidirectional feedback to resemble treatment, diagnosis or medical advice, and that they may be asked to share personal information. This latter concern was not raised by members of the public but may be viewed as a limitation of CS methods by health researchers.

Most preferred incentives were simple and resembled those identified in previous research in different fields. Financial incentives are widely reported as being motivating (11, 13). Educational benefits may be motivators either through a simple desire to learn, such as curiosity (14), or because there is an interest in the particular skill, such as scientific training or the topic or content being provided(11, 12, 15–19). Ongoing opportunities to learn, such as mentorship, are useful also (15). This is certainly the case, in the biodiversity area, where the main motivator for participation is an interest in nature, learning about nature, or spending time in nature (17–20). The motivating factor of health benefits, such as improved physical or mental health, were also reported(12).

Finally, we discovered several key topics of interest for the Australian public which we aim to validate and seek interest in co-developing into projects in the future. These areas of interest for future involvement crossed a variety of themes. There was a notable difference between survey and focus group participants, with interactions with the environment key to survey participants but not mentioned in focus groups. Survey participants had greater awareness of CS and may have participated in previous ecologically focussed studies orientated to these topics.

The sample for the research was drawn from a recruitment panel database comprising individuals who registered for invitations to participate in market research. While this area of interest is distinct from citizen science, this sample may have an above average interest in participating in research compared to the general population. In addition, panel participants regularly receive reimbursement payments for their involvement in research. As such, this may set a precedence and influence their perceptions and expectations in relation to the public’s role in research, particularly regarding expected remuneration, and their reported likelihood of engaging in research.

The main strength of this study is the broad capture of information through multiple data collection methods. Focus groups offer rich, in-depth insights through interactive and dynamic participation. They allow facilitators to explore emerging themes, gain clarification, and delve deeper into topics as they arise. Online surveys, on the other hand, enable broader reach, facilitate the collection of both qualitative and quantitative data, and offer advantages such as anonymity and efficiency. The integration of these methods is a deliberate strategy to help overcome the inherent limitations of each approach. For example, while focus groups may suffer from limited generalisability due to small, non-random samples and the potential for group dynamics or social desirability bias to influence responses, surveys can address these issues by engaging a wider and more diverse audience. Conversely, the depth gained from focus group discussions help to enrich the more structured responses obtained via the survey. Together, these methods provide a more comprehensive and balanced understanding of public perceptions and preferences related to citizen science in health and wellbeing.

CONCLUSION

Greater communication of citizen science and its application is needed outside of academic circles for it to reach its potential. Most people are happy to provide data, but to gain deeper and more meaningful collaboration it would be beneficial to have the public involved with more components of research.

"Generally speaking, there should be more awareness of citizen science – it's the first time I've heard about projects that I could contribute to. I feel like this is probably the biggest barrier in that people don't know that they can contribute to research" (Participant, aged 36 + years)

Abbreviations

CS	Citizen Science
CSIRO	Commonwealth Scientific and Industrial Research Organisation

Declarations

TRIAL REGISTRATION

Clinical trial number: not applicable

Ethics approval and consent to participate

All parts of this study were approved by CSIRO's Low Risk Human Research Ethics committee (2023_072_LR) in accordance with the National Statement on Ethical Conduct in Human Research 2007 (Updated 2018). All participants involved in this study provided informed consent before taking part.

Consent for publication

All participants involved in this study were made aware of the possible publication of these results.

Availability of data and materials

We have not sought ethical approval to share the database publicly. The corresponding author can seek ethics approval to share data with other investigators upon request.

Competing interests

Staff at ORIMA (AH, AM, JD) were paid to conduct focus groups and online discussion boards as part of this research project. Other authors have no conflict of interest to declare and completed the work as part of their ongoing salary.

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Authors' contributions

EB designed the study, prepared the first full draft of the manuscript and prepared survey results. DB and MS contributed to the design of survey components, reviewed the literature and contributed to and reviewed the final manuscript. KW supported data collection. DB, MS, KW, EB coded open-ended survey responses. AH, AM designed the focus group components based on a project proposal. AH, AM, JD analysed focus group data and wrote sections of the draft manuscript. All authors have reviewed the final version.

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Figures

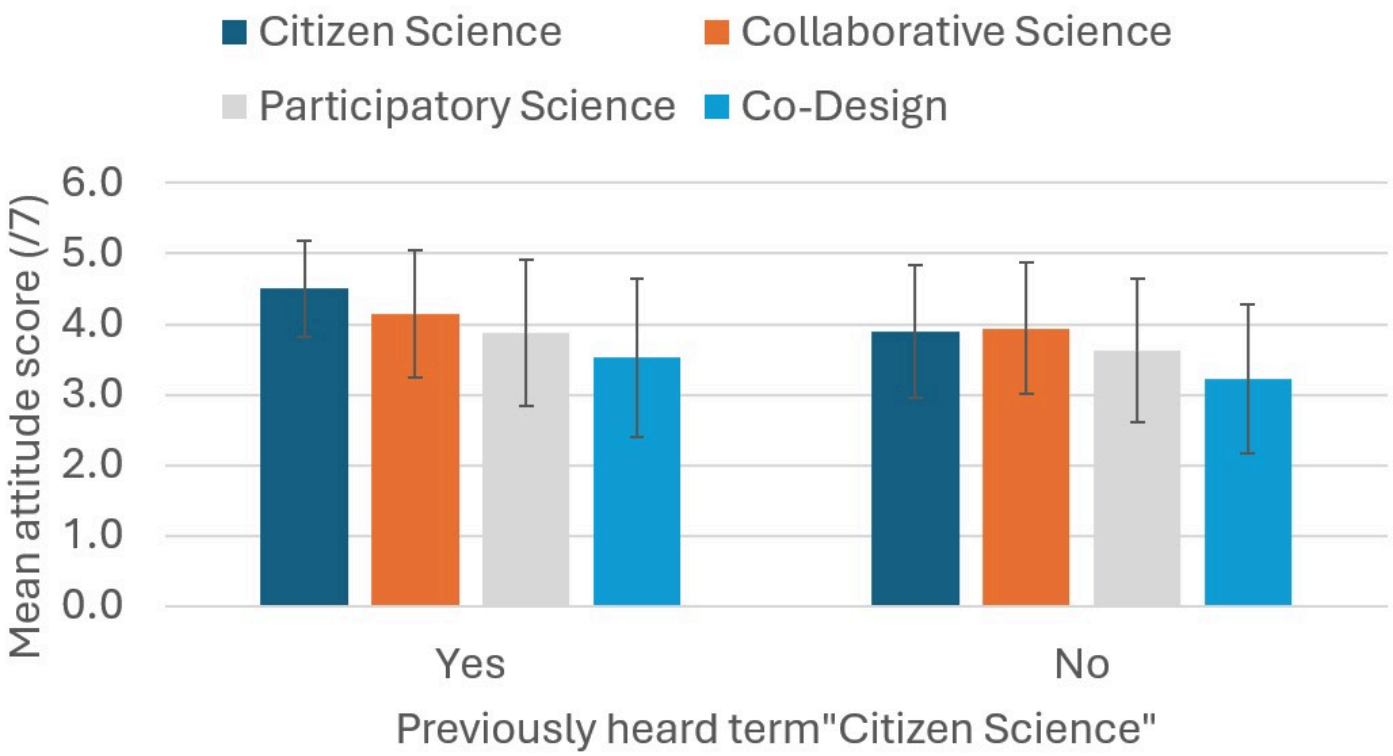


Figure 1

Mean attitude score (out of 7*) for “What impressions do the following terms have on you?” by familiarity with the term “Citizen Science”

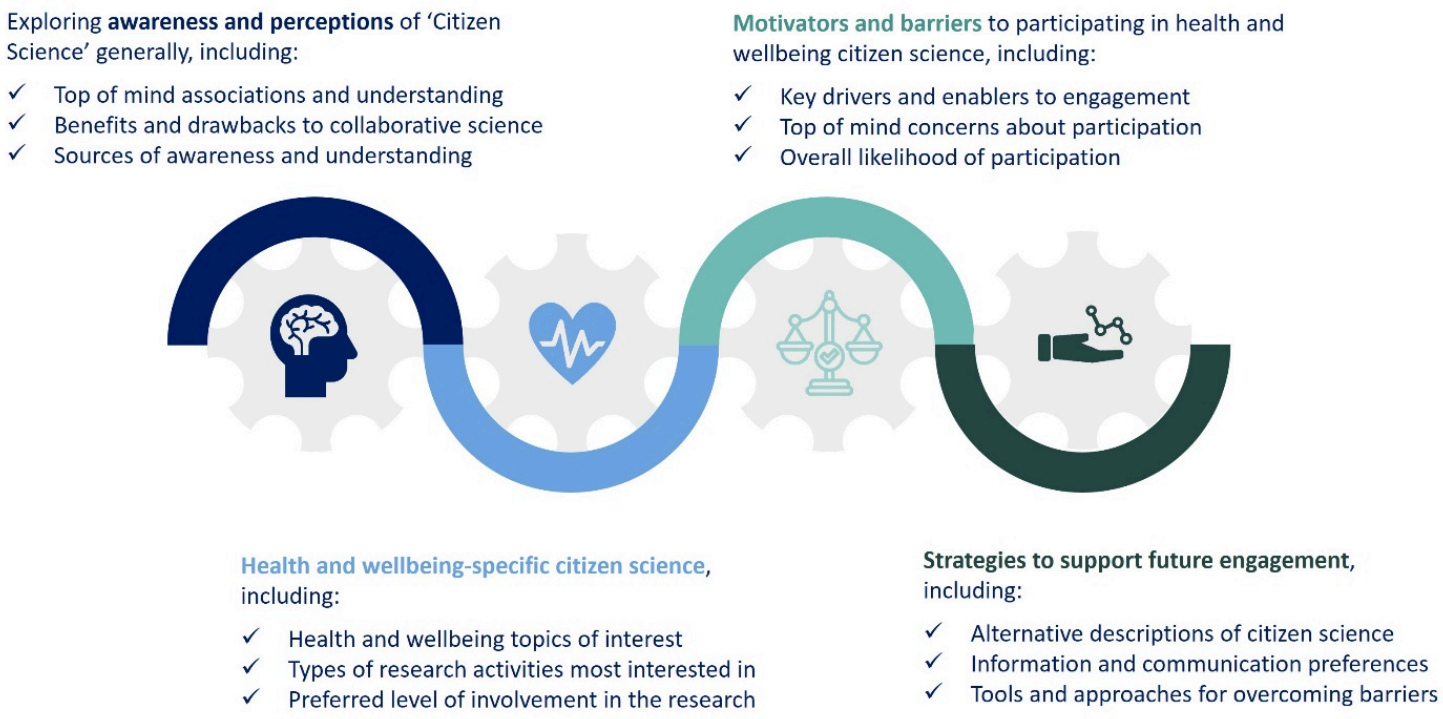


Figure 2

Flow of discussion during the focus groups and discussion board

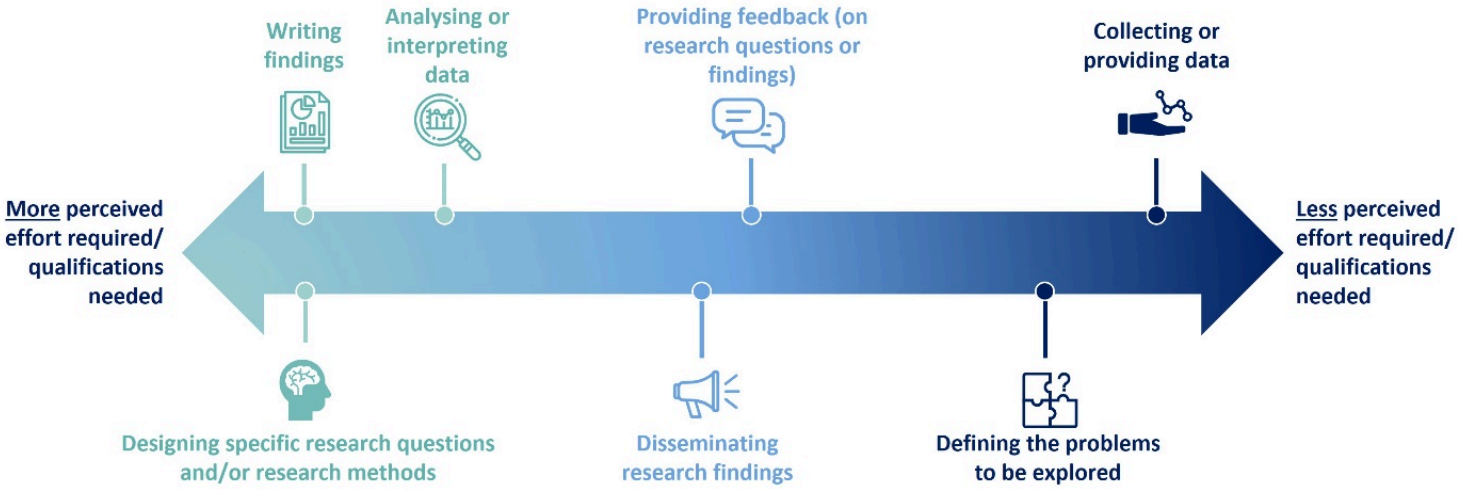


Figure 3

Citizen science activities of interest among qualitative participants

Supplementary Files

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