

Who's who: getting to know Flemish citizen scientists and project initiators

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Citizen science (CS) is rapidly on the rise. This is also the case in Flanders, the Dutch speaking region of Belgium. Little is known about who these citizen scientists in Flanders are, why they take part in CS projects, and how they experience these projects. Answers to these questions would be very valuable for researchers setting up new CS projects. There is also little known about how many researchers know about CS or have experience with CS, and if they have experience with CS, their motivations for choosing a CS approach for their research, as well as barriers that they have faced. Scivil, the Flemish knowledge centre for Citizen Science, carried out two surveys in 2020 to gain insight into these questions: one survey was among citizen scientists and was used to gain insight into the personal characteristics of citizen scientists and their motivations for participating in a CS project. The other survey was conducted among Flemish scientists and probed their knowledge, experiences, and interest in CS. This paper highlights the findings of both surveys as well as the discussion of these findings that took place during the poster session at the Engaging Citizen Science Conference 2022 in Aarhus, Denmark.

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1. Introduction

Citizen science (CS) is on the rise in Flanders (Belgium). While some organizations already have a long tradition of public participation in science, CS is now more popular than ever in Flanders thanks to the regional policy support [1] and CS success stories, such as Curieuzeneuzen [2]. More CS projects are being set up, and more and more citizens are taking part.

To investigate experiences with and motivations for doing CS, Scivil, the Flemish knowledge center on Citizen Science, organized two surveys in 2020: one among Flemish citizen scientists and one among Flemish scientists. In 2015, The Young Academy of Flanders organized a similar survey among Flemish scientists, assessing their knowledge of and attitudes towards CS as a research method [3]. Comparing the results of 2020 and 2015, allows us to look at the evolution of the knowledge and attitudes of scientists towards CS in these five years.

In this paper, we look at the characteristics, motivations and experiences of the Flemish citizen scientists who filled out our survey; the knowledge of CS of the Flemish scientists who filled out our survey and what they considered to be the benefits and challenges of CS; and how this information can help future CS projects. This paper is based on the poster we presented at the Engaging Citizen Science Conference 2022 and draws on insights from discussions during the conference.

2. Methods

The survey aimed at citizen scientists [4] investigated personal characteristics, such as age and education of the citizen scientists, as well as their motivation to participate in a CS project and their experiences after participating. The questionnaire was launched in 2020 and disseminated through many different channels: the Scivil website, social media and newsletter; the newsletter and website of the Flemish CS platform Iedereen Wetenschapper; and the newsletters and social media of CS projects in Flanders. Of the 311 citizen scientists who started the survey, 195 people completed the questionnaire in full.

The survey aimed at scientists [5] investigated the knowledge, experiences, and interest in CS of Flemish scientists working in research institutions. Most of the questions of the survey were based on the survey organized by the Young Academy of Flanders in 2015. This allowed for a comparison of the results between 2020 and 2015. The survey of 2020 was conducted in collaboration with the Young Academy of Flanders and the platform Iedereen Wetenschapper. The survey was widely disseminated through the channels of the Young Academy and those of Flemish research institutes. The survey was deliberately not distributed through Scivil's channels to limit the bias in the data. After all, Scivil mainly reaches scientists who are already interested in CS, while with this survey we wanted to map the general knowledge of and interest in CS among all Flemish scientists. A total of 119 participants completed the survey.

3. Findings

3.1 The citizen scientists survey: results

The survey among citizen scientists questioned four main areas: 1) demographics, such as age, education and gender; 2) the CS projects in which they participated; 3) the motivations for participation; and 4) the experience of participating.

The average citizen scientist in our survey was older (52% above 56 years old), highly educated (80% had a higher education diploma) and male (59%). However, there were notable differences in age and gender depending on the specific project and the project’s theme (figure 1). Also the type of activity influenced who participated. For example, projects using apps or artificial intelligence attracted a younger audience.

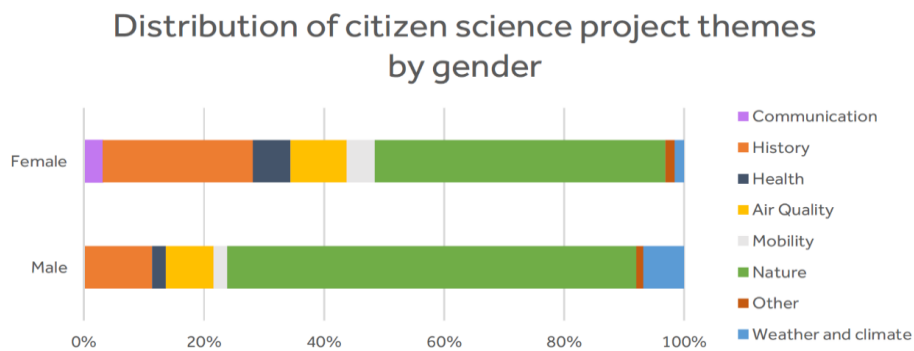


Figure 1: Distribution of CS project themes by gender

The type of project that citizens take part in is also influenced by their motivation and context in which they live. For example, results showed that citizens from lower populated areas participated more often in nature themed projects compared to more densely populated areas, whereas citizens from densely populated areas more often took part in mobility or air quality themed projects compared to less densely populated areas (figure 2)

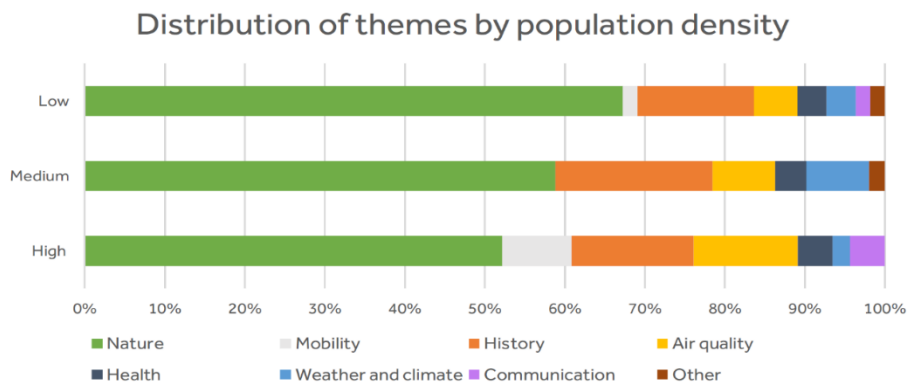


Figure 2: Distribution of themes by population density

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When asked about their motivation to take part in citizen science, we found that "to influence my environment" mattered more for citizens participating in mobility and air quality projects compared to citizens in other projects. The motivations with the highest overall scores are "to contribute to research", "because it's fun" and "to learn something" (figure 3).



Figure 3: Motivations for participation

When asked how they experienced their participation in the CS projects, responses were very positive. 70% of the participants gave a score of 5 out of 5 on how much they enjoyed participating in the project. 57% found their participation very instructive. Citizen scientists who enjoyed participating in a project usually found it instructive as well. The citizen scientists often found their participation moderately challenging. The three most frequently mentioned words to describe participation in CS projects were “educational”, “interesting” and “fun”.

3.2 The scientists survey: results

The survey among Flemish scientists questioned four main areas: 1) demographics, such as age, gender and job description; 2) their knowledge about CS; 3) their experience with CS; and 4) their views on the future of CS.

Also for this survey, more men than women participated. The two most common positions mentioned were "full professor" and "senior lecturer", indicating more senior profiles, followed by "PhD student" and "Post-doc", indicating more junior profiles. 40% of the participants were working in the social sciences and the humanities, followed by 25% in the natural sciences and 16% in the biomedical and medical sciences.

Compared to the results of the survey of 2015 [3], the results of this survey show that there is a large increase in knowledge of CS. Only 10.3% do not know what "citizen science" means, compared to 58.9% in 2015 (figure 4). When asked to describe CS in their own words, the words used most often were "research", "citizen", "data" and "collect".

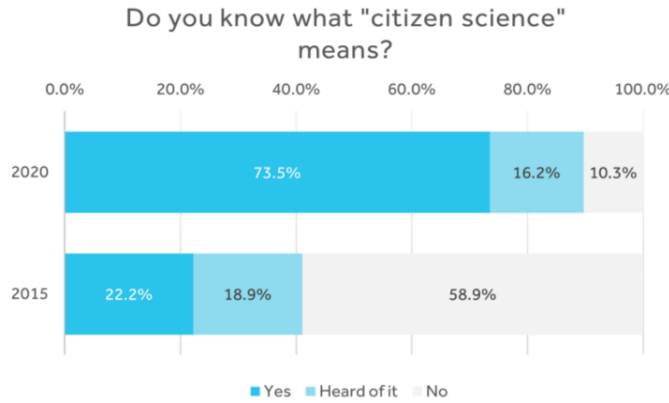


Figure 4: Knowledge of the meaning of "citizen science" by scientists

Two out of five participants already had experience with CS. This experience was overall rated very positively. The main opportunities seen for CS projects were to collect lots of data, to conduct socially relevant research, and to educate participants about science. Scientists with and without experience in CS indicated the same opportunities for CS (figure 5).

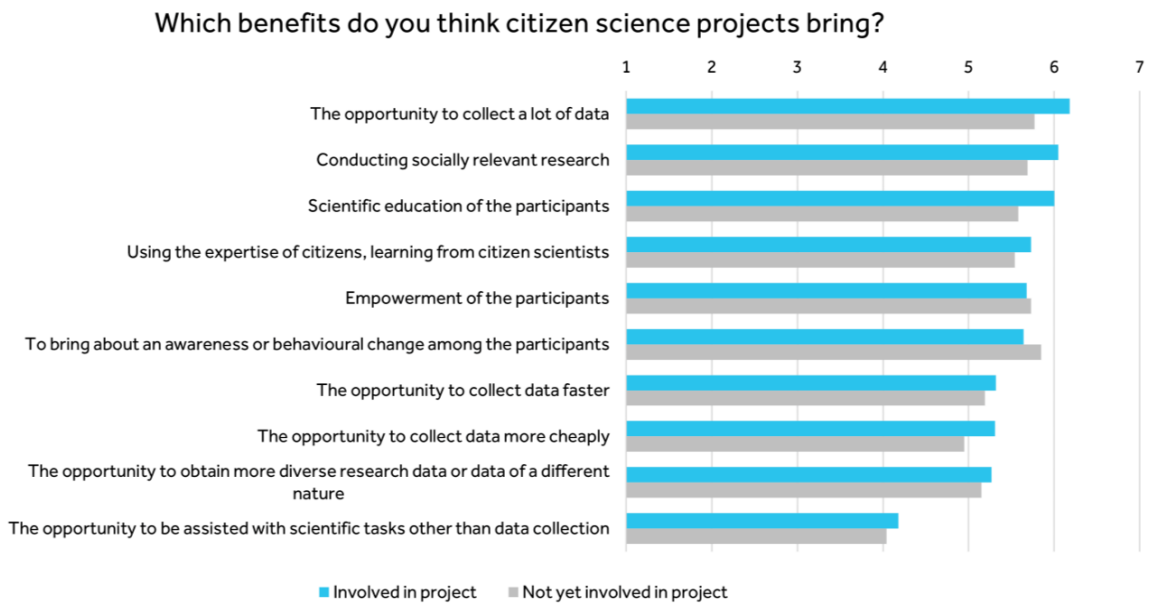


Figure 5: Benefits of CS projects as seen by scientists involved in a CS project and not involved in a CS project

When looking at the challenges, there were differences between the opinions of scientists with and without CS experience (figure 6). Scientists with CS-experience mention the additional communication work as the main challenge, next to engaging citizens over a longer period and the additional administrative work. Scientists without experience in CS indicated as main challenges finding sufficient funding for the long term, next to finding initial funding and engaging citizens over a longer period. The additional communication work is scored lower for scientists without CS-experience compared to those with CS-experience. The item on "legal, ethical and privacy issues or concerns" is scored higher for scientists without CS-experience compared to those with CS-experience.

Most participants of the survey (87%) think CS has a future. This is a considerable increase since the survey of 2015 (75%). Still, only 38% of the surveyed scientists considers starting a CS project (again) themselves. When asked what information is needed most, guidelines for funding and guidelines for legal, ethical and privacy aspects receive the highest scores.

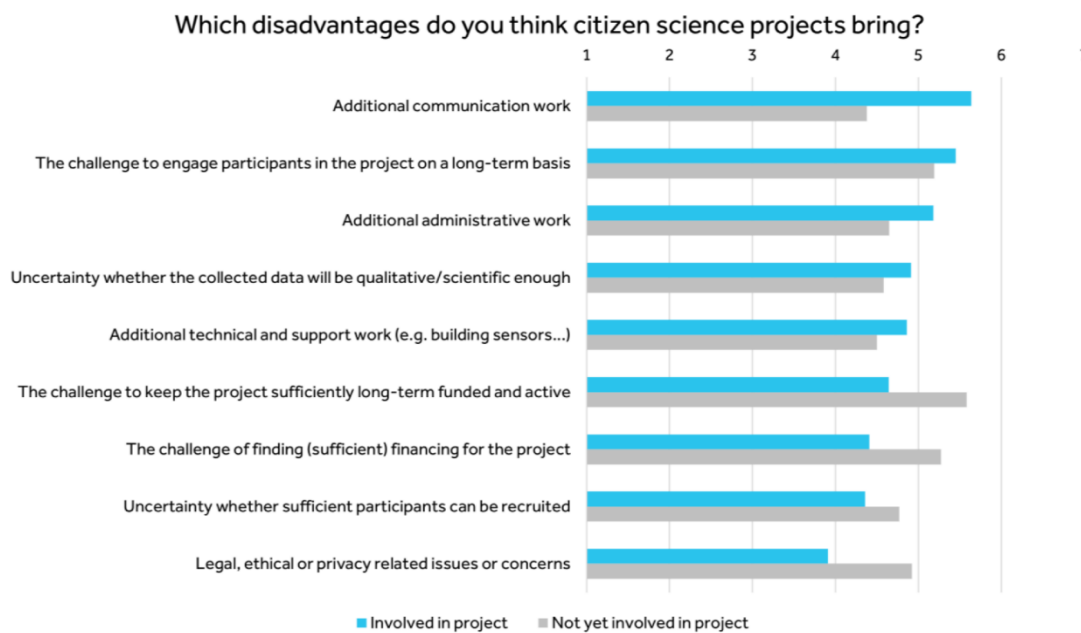


Figure 6: Disadvantages of CS projects as seen by scientists involved in a CS project and not involved in a CS project

4. Discussion

With the surveys among Flemish citizen scientists and Flemish scientists, we researched their demographics, motivations for and experiences with CS. This information is very valuable for researchers setting up new CS projects. While the data provided interesting results, we also need to take into account the limitations of the data. Both survey results are influenced by the channels through which they were distributed. This depended on the willingness of scientific institutions and CS projects to promote our surveys.

One of the main challenges indicated by scientists was engaging participants on a long-term basis. By keeping track of the motivations of citizen scientists and aligning project activities with these motivations, project initiators can boost the long-term participation. Motivations are highly dependent on the specific target groups and even individual people, so it is important to question the motivations of participants when one is a project initiator.

While 87% of the surveyed scientists think CS has a future, only 38% consider starting a CS project (again). From conversations with scientists, we learned that some reasons for not starting a CS project (again) are 1) difficulties finding funding; 2) difficulties publishing in scientific journals due to a lack of trust in the data quality in some scientific fields; and 3) the large amount of time spent on communication and additional administrative work, which interferes with writing peer publications. Due to these aspects, some scientists feel that, while doing CS was a very positive experience, it was also bad for their academic career.

Citizen scientists are often higher educated. Reaching citizens without a higher education degree or hard to reach audiences remains a great challenge for CS projects. It would be interesting to look into success stories and the factors for the success.

While these two surveys focused on scientists and citizen scientists, there are also other stakeholder groups, such as cities and municipalities, civil society organizations and teachers with high interest and experience in setting up, supporting, or taking part in CS projects. It would be a valuable addition to research on CS to also survey these stakeholder groups about their motivations for and experiences with CS.

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