

Survey Questions / Results

This document contains the survey questions as well as aggregate results. There was a separate survey for visualization researchers and domain experts. We did not send different surveys to visualization graduate students and visualization PIs.

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Visualization Researchers Survey

Introduction

Who We Are:

My name is [first author] and I am the primary investigator of the survey. I am a graduate student studying visualization at the [University]. If at any point in the survey, you have questions or concerns, please feel free to email me at [email address]. My co-investigators are [all co-authors / email addresses].

Introduction to the Survey:

We anticipate that this survey will take 5-10 minutes to complete.

The purpose of this survey is to understand the impact of collaborations between visualization researchers and collaborators in other domains.

Visualization design studies are performed widely, yet the research contributions outside of the visualization tool are still being investigated. Your participation in this survey will contribute to a better understanding of the lasting impacts of design study collaborations.

Consent

Participation in this study is voluntary. You may skip any questions you don't want to answer and you may end the survey at any time. If you participate in the survey, you will receive \$10 for your time. At the end of this survey, you will be given the option to consent to a follow-up interview. Consenting to the interview does not impact the compensation you will receive for participating in this survey. The information you will share with us if you participate in this study will be kept completely confidential to the full extent of the law.

Your information will be assigned a code number that is unique to this study. The list connecting your name and other personally identifying information, such as the name of the tool or the title of the publication to this number will be kept in a password protected computer and only the study investigators will be able to see the survey you participated in. No one else outside of the research team will be able to see your survey or know that you participated in this study. Study findings will be presented fully anonymized, and your name or identifying information will not be used in any report. Please note, while the investigators will keep your information confidential, there are some risks of data breaches when sending information over the internet that are beyond the control of the investigators.

You must be 18 or older to participate in this study.

If you have any questions about this study, please contact [first author, email address].

Contact the Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Also, contact the IRB if you have questions, complaints or concerns which you do not feel you can discuss with the investigator. The [University] IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu. Study IRB ID: [study IRB ID]

By completing this survey, you are consenting to participate in this study. Please print or save a copy of this form for your records.

If you do not wish to continue, please exit the survey now.

Survey Structure

The survey is broken into three parts:

1. questions regarding the collaboration
2. questions regarding the results of the design study
3. questions regarding the visualization tool

In the survey we will use the following terms:

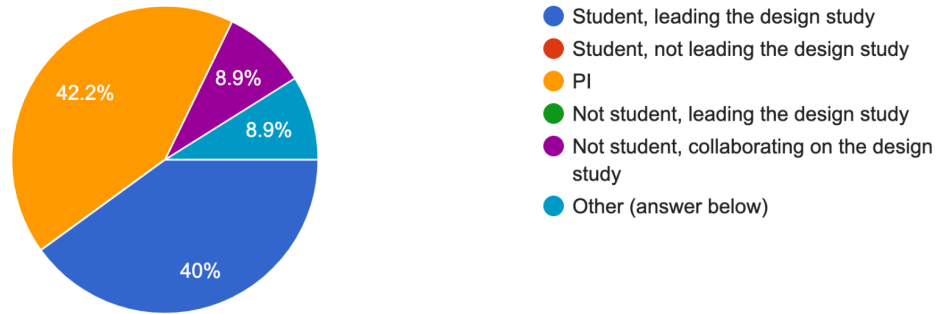
- the design study: this refers to the design study mentioned in the email we sent you
- the collaborators: this refers to the collaborators you worked with during the design study
- the paper: this is the paper that you published about this specific design study

Part 1: Collaboration

In this section, we want to understand more about the collaboration during the design study.

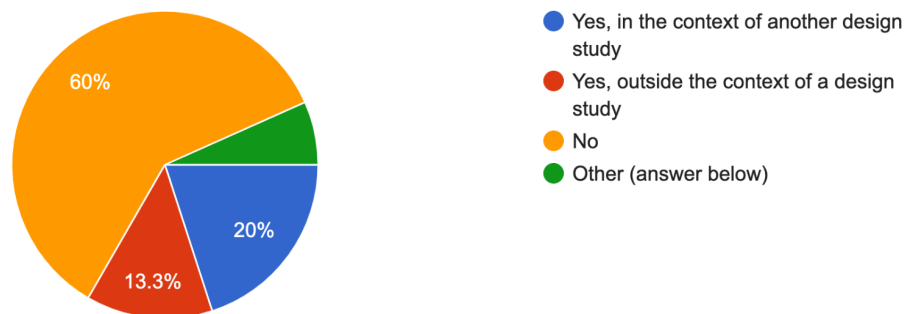
Q1A. During the design study, what was your role?

45 responses



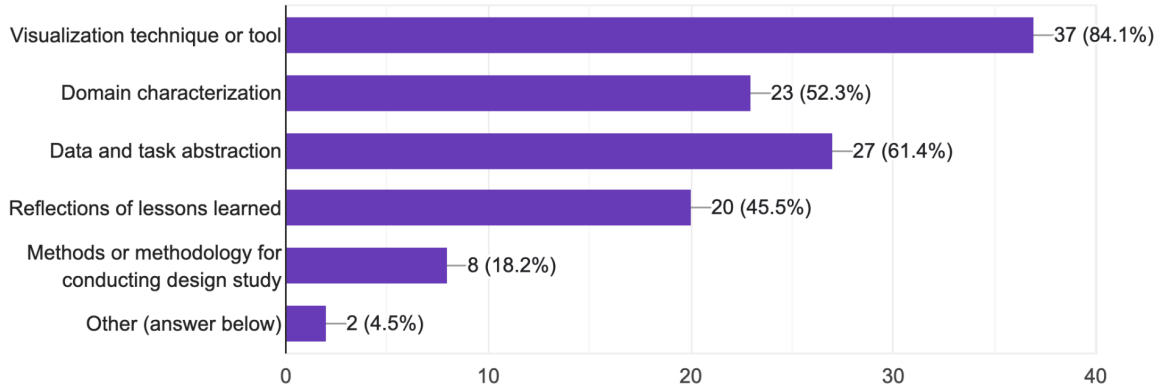
Q1B. Had you worked with these collaborators prior to the design study?

45 responses



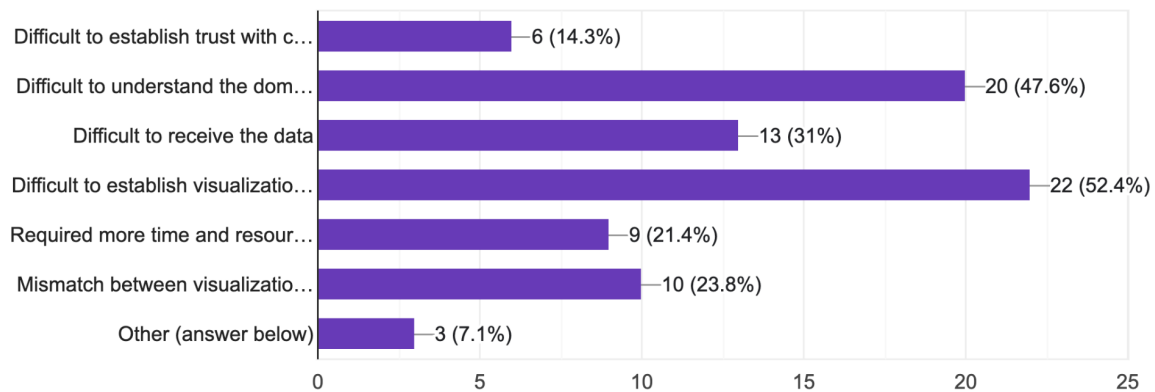
Q1C. What would you describe as the visualization contributions of your paper? Check all that apply.

44 responses



Q1D. What were challenges faced in the collaboration? Check all that apply.

42 responses

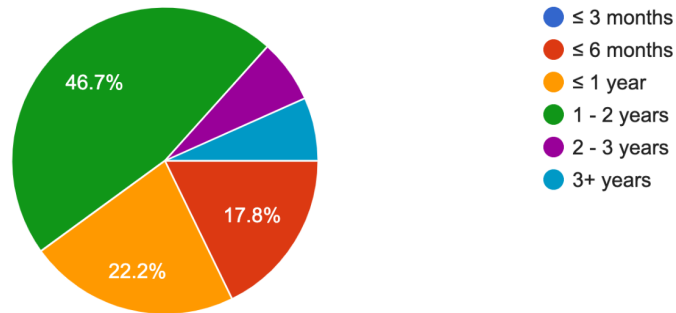


Q1D Options:

- Difficult to establish trust with collaborators
- Difficult to understand the domain problem
- Difficult to receive the data
- Difficult to establish visualization contributions
- Required more time and resources than the outcomes warranted
- Mismatch between visualization research goals and the collaborators' goals
- Other (answer below)

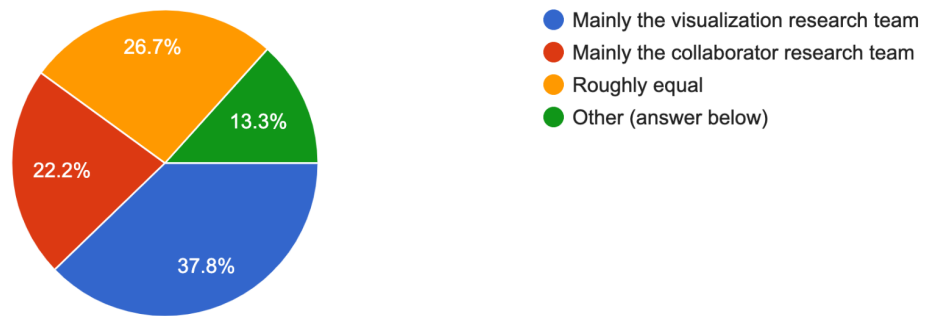
Q1E. How long did the collaboration last?

45 responses



Q1F: Who acquired and contributed funding for this project?

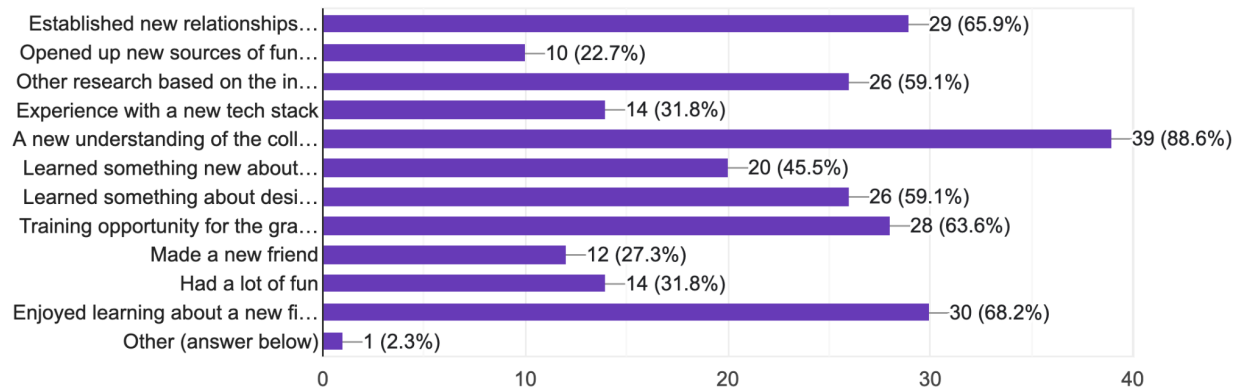
45 responses



Part 2: Impact of Design Study

Q2A. What do you think is the impact of the design study on you and your research beyond the paper? Check all that apply.

44 responses



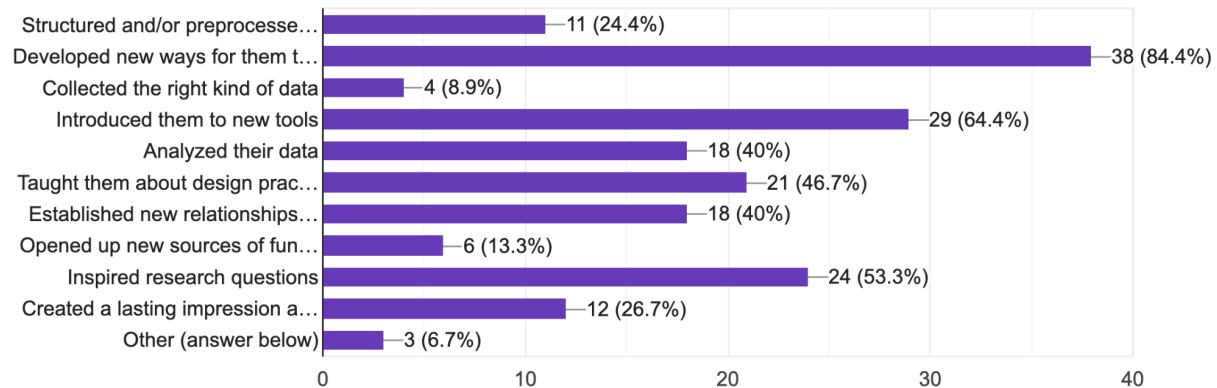
Q2A Options:

- Established new relationships or connections
- Opened up new sources of funding or resources
- Other research based on the insights from the design study
- Experience with a new tech stack
- A new understanding of the collaborator's domain
- Learned something new about collaboration
- Learned something about design practice
- Training opportunity for the graduate student
- Made a new friend
- Had a lot of fun
- Enjoyed learning about a new field
- Other (answer below)

Q2B. What do you think is the impact of the design study on your collaborators beyond the tool?

Check all that apply.

45 responses

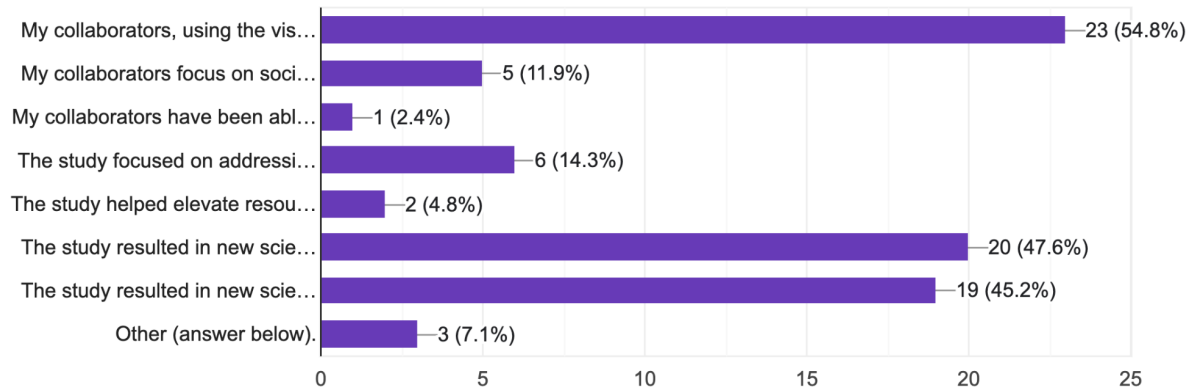


Q2B Options:

- Structured and/or preprocessed their dataset
- Developed new ways for them to see their data
- Collected the right kind of data
- Introduced them to new tools
- Analyzed their data
- Taught them about design practices
- Established new relationships or connections
- Opened up new sources of funding or resources
- Inspired research questions
- Created a lasting impression about computer scientists
- Other (answer below)

Q2C. What do you think is the impact of the design study on society? Check all that apply

42 responses



Q2C Options:

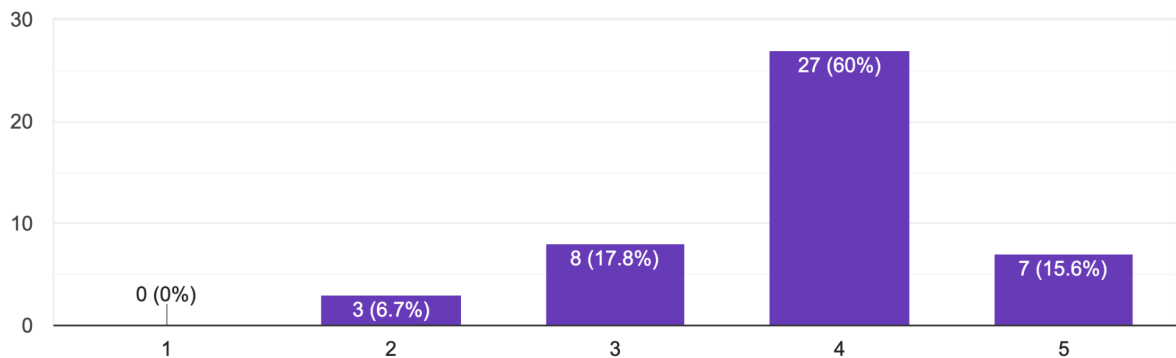
- My collaborators, using the visualization tool, can produce beneficial work that will impact society.
- My collaborators focus on socially impactful work.
- My collaborators have been able to hire more staff.
- The study focused on addressing a societal concern.
- The study helped elevate resources for a specific social cause.
- The study resulted in new scientific knowledge in visualization.
- The study resulted in new scientific knowledge in the domain space.
- Other (answer below).

Part 3: Deployed tool questions

In this section, we want to understand the state of the visualization tool after the design study ended.

Q3A. At the end of the study, how satisfied were you with the state of the visualization tool?

45 responses



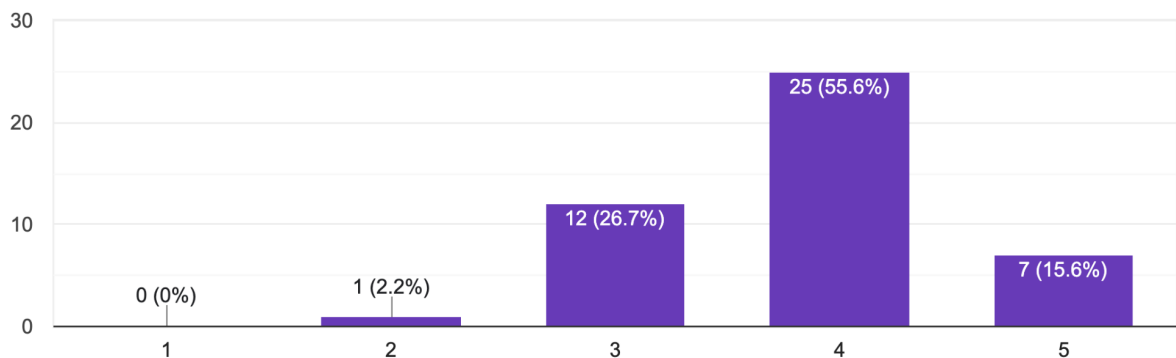
Q3A Options:

1 — Strongly dissatisfied

5 — Strongly satisfied

Q3B. How successful do you think the design study was?

45 responses



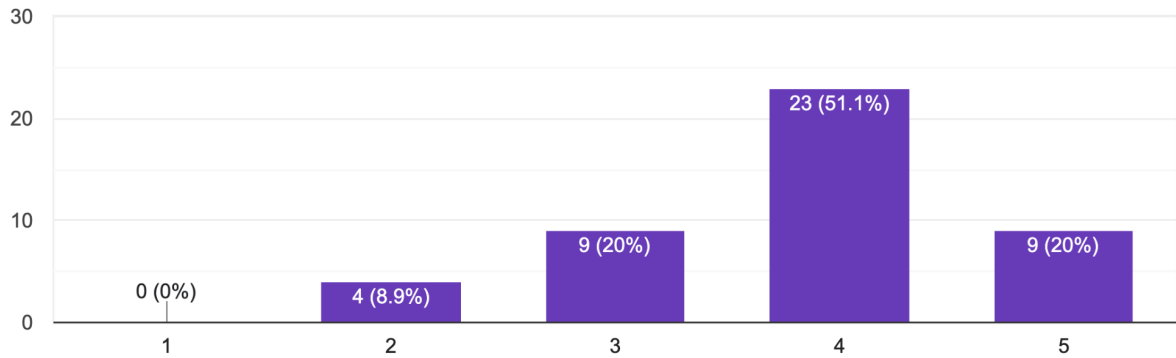
Q3B Options:

1 — Unsuccessful

5 — Very successful

Q3C. How successful do you think that your collaborators think the design study was?

45 responses



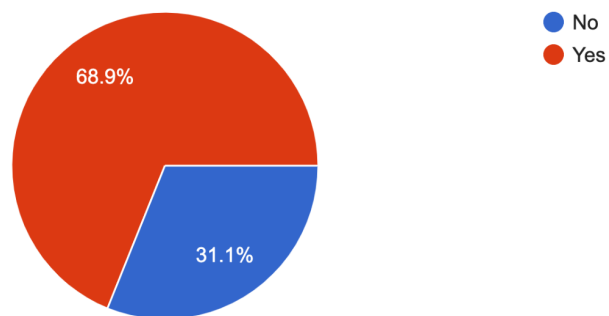
Q3C Options:

1 — Unsuccessful

5 — Very successful

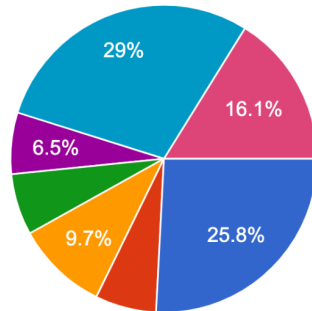
Q3D. Was the tool deployed?

45 responses



Q3E. Do your collaborators still use the tool, if so how often?

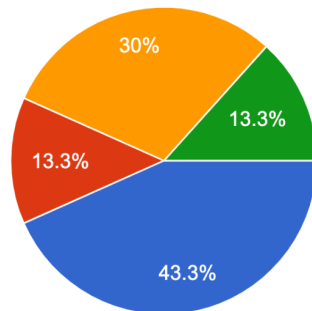
31 responses



- No, they no longer use the tool
- Yes, they use it regularly
- Yes, they use in infrequently
- Yes, but they preferred using it with our assistance
- Yes, but we were not able to provide the needed maintenance.
- Not sure
- Other (answer below)

Q3F. Has the tool required maintenance?

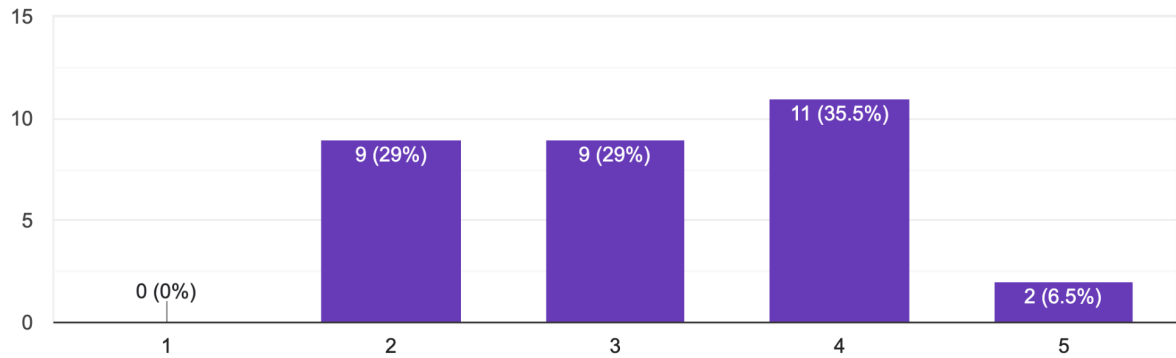
30 responses



- No
- Yes, and the collaborators have taken the responsibility for maintenance
- Yes, we have taken the responsibility for maintenance
- Other (answer below)

Q3G. To what extent is the tool "polished"?

31 responses



Q3G Options:

1 — Has many glitches, does some tasks well, usable with a good amount of assistance

5 — Has few glitches, does most or all tasks well, can be used without any assistance

Q3H: Describe the main shortcomings of your tool at the end of the collaboration (if any):

— various responses.

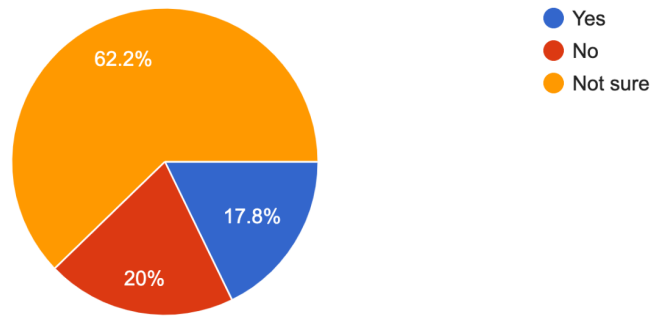
Wrapping Up

This marks the end of the survey. Thank you for your time!

The next few questions are regarding follow-up and compensation.

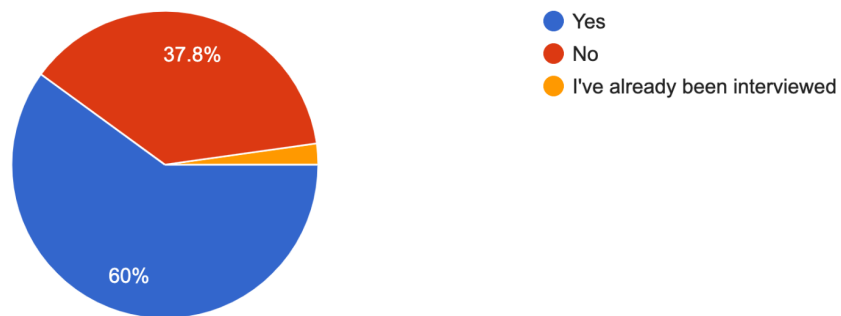
Could we follow-up with your collaborators from this project?

45 responses



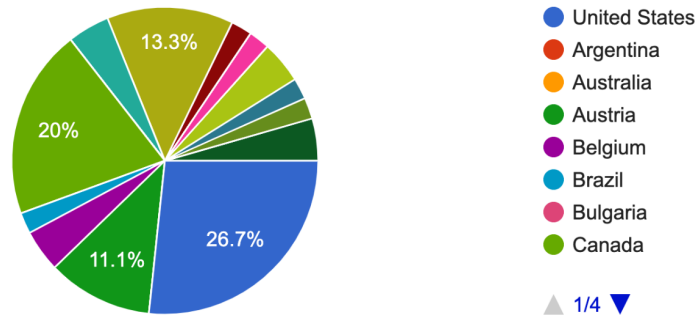
Would you be willing to talk to us in a 60-min compensated follow-up interview?

45 responses



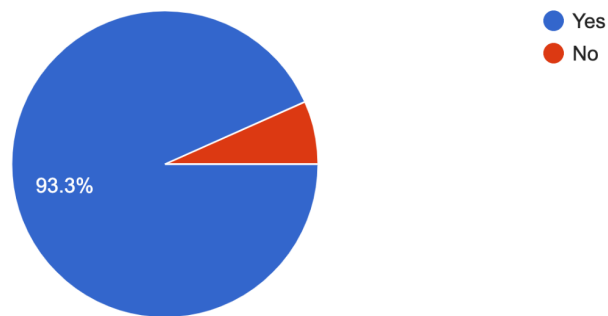
For purposes of compensation we are required to know what country you are located in:

45 responses



Would you prefer to donate your \$10 compensation for this survey? We will be donating to Black Girls Code.

45 responses



At the time of the survey we told participants that we would donate to Black Girls Code. When time came to donate the money the organization was undergoing a legal battle and we were not able to donate there. Instead we chose THRIVE Lifeline.

Domain Experts Survey

Introduction

Who We Are:

My name is [first author] and I am the primary investigator of the survey. I am a graduate student studying visualization at the [University]. If at any point in the survey, you have questions or concerns, please feel free to email me at [email address]. My co-investigators are [all co-authors / email addresses].

Introduction to the Survey:

We anticipate that this survey will take 5-10 minutes to complete.

The purpose of this survey is to understand the impact of collaborations between visualization researchers and researchers in other fields. We are reaching out to you specifically because of your collaborative work with visualization researchers.

Visualization design studies are performed widely, yet the research contributions outside of the visualization tool are still being investigated. Your participation in this survey will contribute to a better understanding of the lasting impacts of design study collaborations.

Consent

Participation in this study is voluntary. You may skip any questions you don't want to answer and you may end the survey at any time. If you participate in the survey, you will receive \$10 for your time. At the end of this survey, you will be given the option to consent to a follow-up interview. Consenting to the interview does not impact the compensation you will receive for participating in this survey. The information you will share with us if you participate in this study will be kept completely confidential to the full extent of the law.

Your information will be assigned a code number that is unique to this study. The list connecting your name and other personally identifying information, such as the name of the tool or the title of the publication to this number will be kept in a password protected computer and only the study investigators will be able to see the survey you participated in. No one else outside of the research team will be able to see your survey or know that you participated in this study. Study findings will be presented fully anonymized, and your name or identifying information will not be used in any report. Please note, while the investigators will keep your information confidential, there are some risks of data breaches when sending information over the internet that are beyond the control of the investigators.

You must be 18 or older to participate in this study.

If you have any questions about this study, please contact [first author, email address].

Contact the Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Also, contact the IRB if you have questions, complaints or concerns which you do not feel you can discuss with the investigator. The [University] IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu. Study IRB ID: [study IRB ID]

By completing this survey, you are consenting to participate in this study. Please print or save a copy of this form for your records.

If you do not wish to continue, please exit the survey now.

Survey Structure

The survey is divided into three parts, and is based on the paper in which you were a collaborator.

1. questions regarding the collaboration
2. questions regarding the visualization tool
3. questions regarding your field

In the survey we will use the following terms:

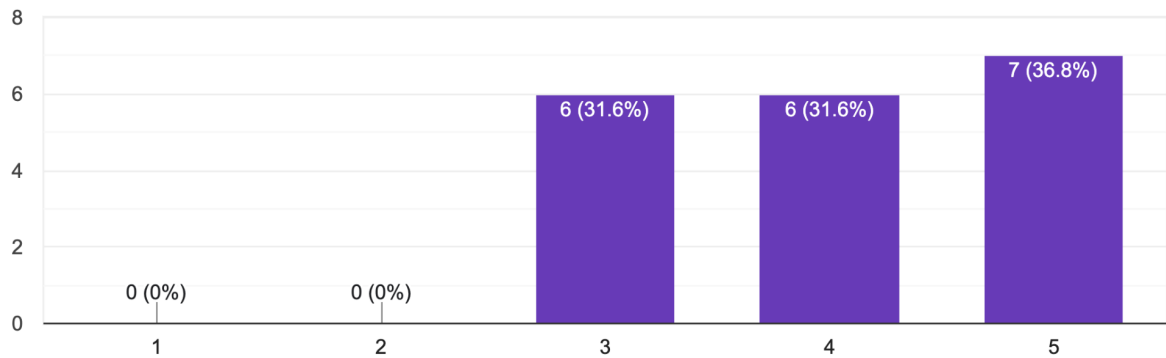
- the visualization researchers: this refers to the collaborators you worked with
- the paper: this is the paper that was published about this specific collaboration with the visualization researchers

Part 1: Collaboration

In this section we'd like to learn more about your collaboration with the visualization researchers.

Q1A. Please rate the overall impact of the collaboration on your work:

19 responses



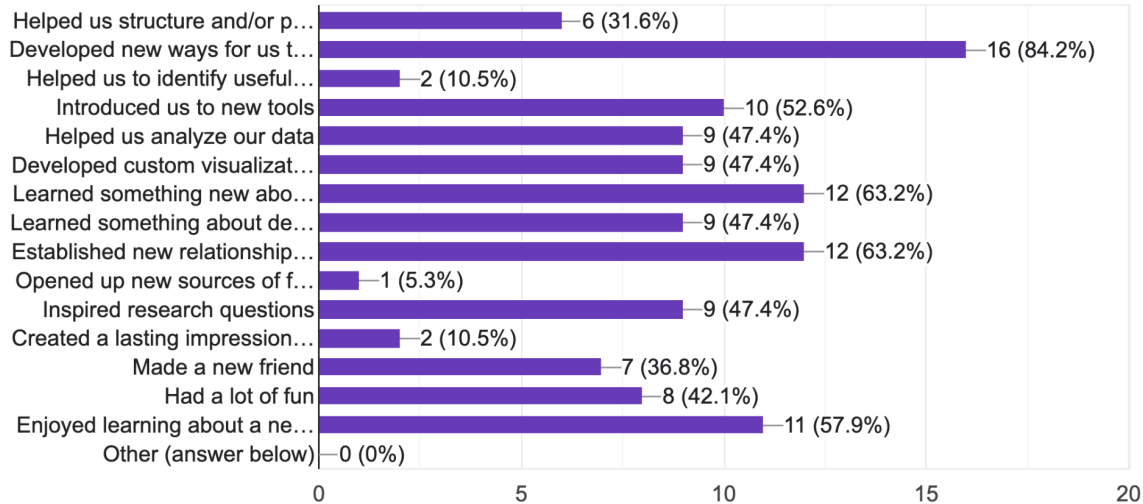
Q1A Options:

1 — Not impactful

5 — Very impactful

Q1B. What was the impact of the collaboration with the visualization researchers? Choose all that apply:

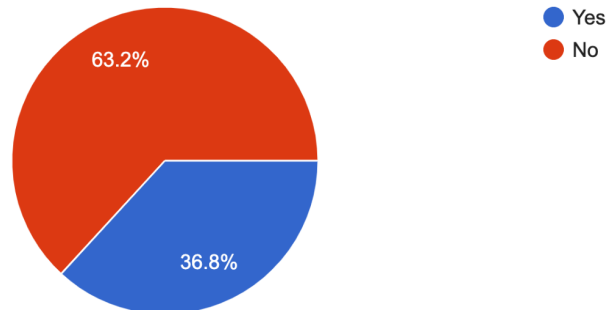
19 responses



- Helped us structure and/or preprocess our dataset
- Developed new ways for us to see our data
- Helped us to identify useful data to collect
- Introduced us to new tools
- Helped us analyze our data
- Developed custom visualization software for us
- Learned something new about collaboration
- Learned something about design
- Established new relationships/connections
- Opened up new sources of funding or resources
- Inspired research questions
- Created a lasting impression about computer scientists
- Made a new friend
- Had a lot of fun
- Enjoyed learning about a new field
- Other (answer below)
 - “The collaboration led to a prototype, mostly written by the viz team, which I used to secure grant funding to develop an open source tool (Overview).”
 - “helped structure the project”

Q1C. Did the collaboration have broader impact outside the specific project?

19 responses

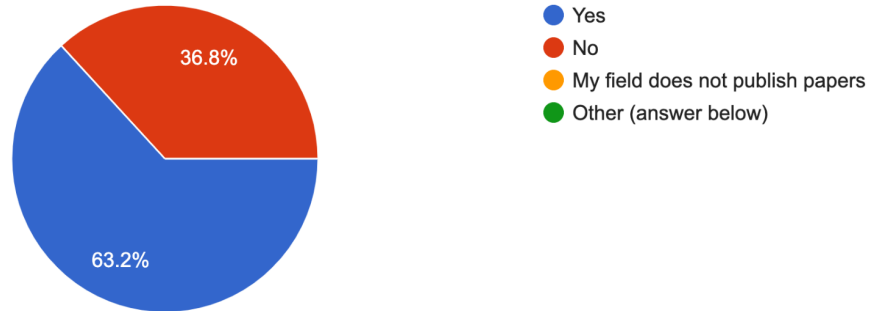


Q1D. If yes, briefly describe the broader impact of this collaboration.

- “The resulting tool was used to complete a variety of stories. See [redact]”
- “Technical: the work was useful in learning how to _think_ about the problem at hand. Programmatic: the project kick-started ongoing collaborations with the participants.”
- “The prototype presented in the paper has led to the development of an actual tool that is now being used on a daily basis.”
- “Inspired learning analytics projects”
- “It inspired new projects. It supported a deeper stakeholder engagement to the point that they were willing to participate actively in the following project. It demonstrated to highly technical colleagues that visualisation and aesthetics bring a lot of impact to the project.”
- “Steer research work more towards the collaboration of people and machines for solving exploratory data analysis problems.”
- “Researchers in the field have shown an interest in the tool developed. It will hopefully be widely used to analyze data in my field.”
- “Too early to say. We need a company-wide roll-out and real project data to understand if the impact will be big or not.”

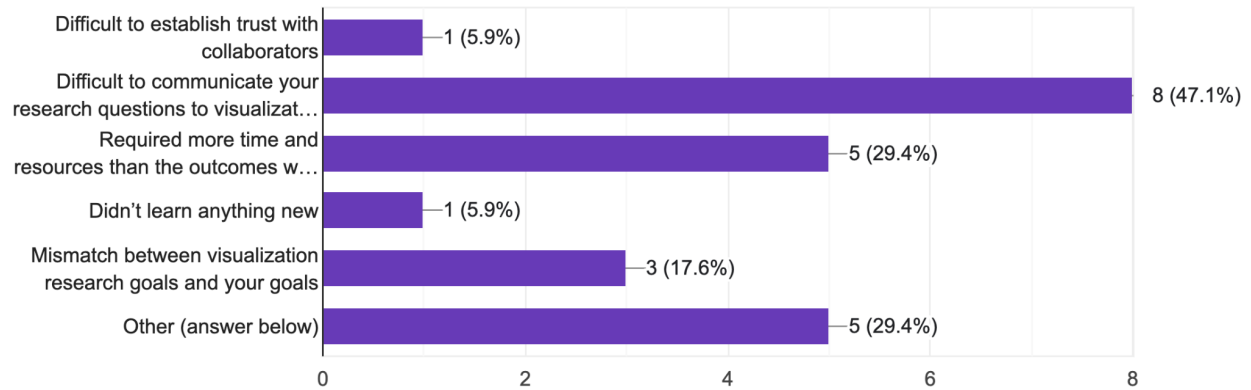
Q1E. Did the collaboration contribute to research that you have published in your field?

19 responses



Q1F. What were challenges faced in the collaboration? Check all that apply.

17 responses

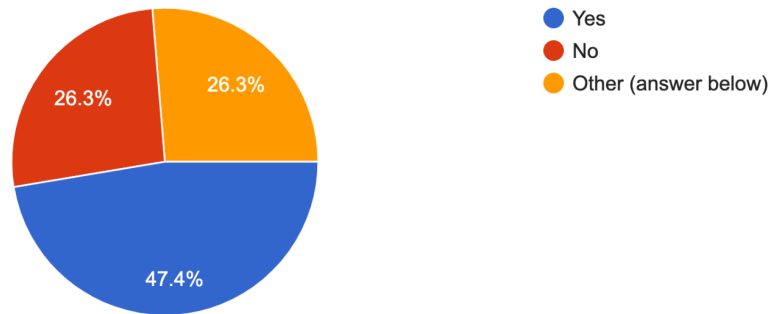


- Difficult to establish trust with collaborators
- Difficult to communicate your research questions to visualization researcher
- Required more time and resources than the outcomes warranted
- Didn't learn anything new
- Mismatch between visualization research goals and your goals
- Other (answer below)
 - "Time consuming. Also, hard to create a visualization that actually worked for journalists."
 - "Extending for further collaboration"
 - "There was a constant tension between the visualization approach suggested (that tried to make simplifications) and the requirements of climate scientists regarding what information had to be shown and how to be robust."
 - "No real challenges, since we were on the same page right from the start."
 - "To get to know the data and methods from the different disciplines"

Part 2: Visualization Tool

Q2A. Did you use the visualization tool as part of your work?

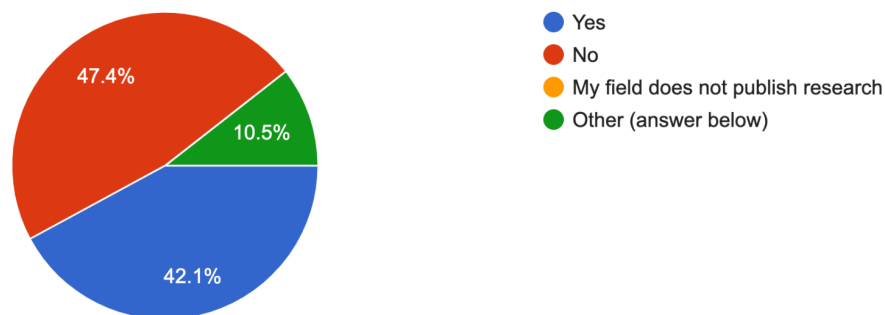
19 responses



- “No to the tool presented in the manuscript, as that was a prototype. Yes to the tool that was inspired by the prototype and developed post-publication.”
- “Yes, but only on a sample dataset not used for data collection in our field”
- “Only as a demonstrator, since it required more work to become a productive tool.”
- “infrequently”
- “somehow but in a limited fashion (I can only use public data right now)”

Q2B. Did you use the visualization tool as part of research that you published in your field?

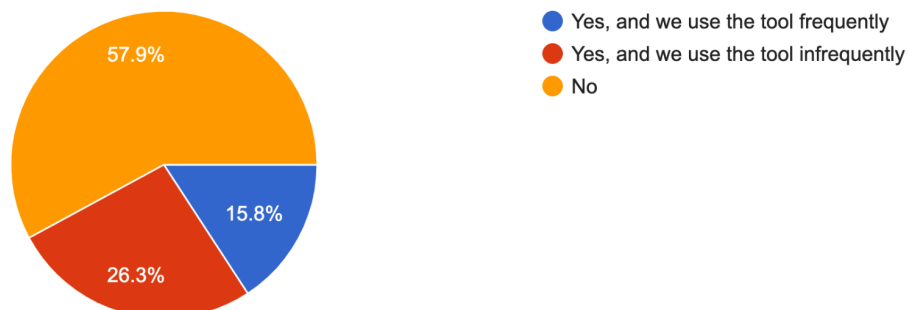
19 responses



- “Evaluation”
- “We applied some of the general ideas to other research and publications, but not the tool itself.”

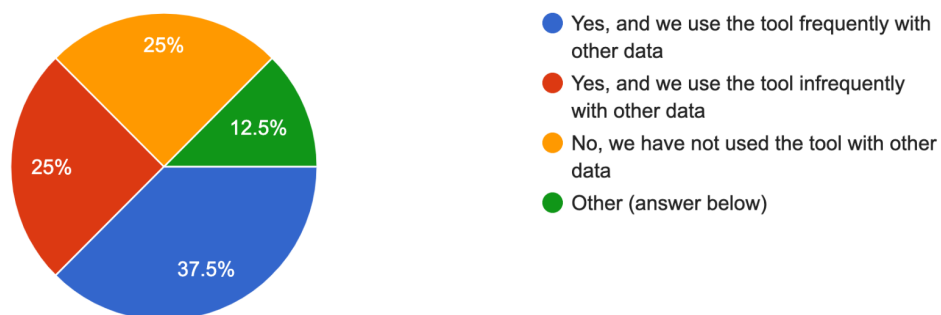
Q2C. Have you continued using the visualization tool?

19 responses



Q2D. Have you used the visualization tool outside of the initial scope of the collaboration?

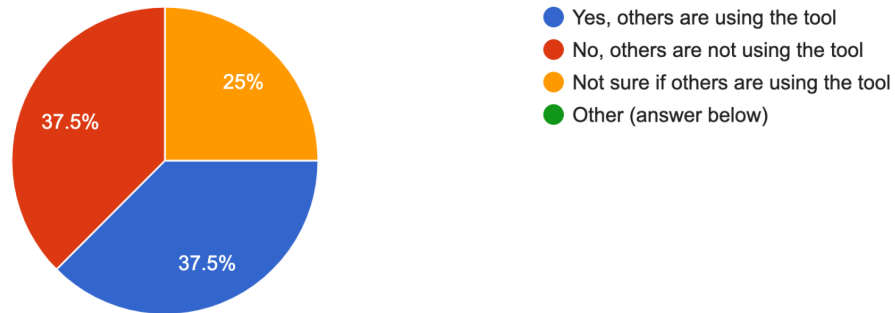
8 responses



- “Not me but we are expanding to other broader applications (chemical reaction optimization)”

Q2E. Are others in your field and not on your team using the tool?

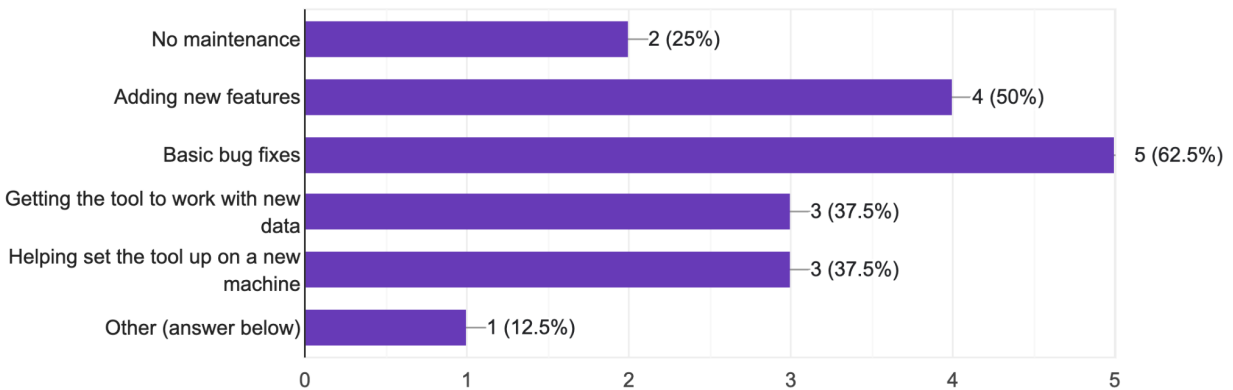
8 responses



- “More "contributing to develop" than using, I guess”

Q2F. Since the end of the collaboration, what types of maintenance or technical support have you received from the visualization researchers? Check all that apply.

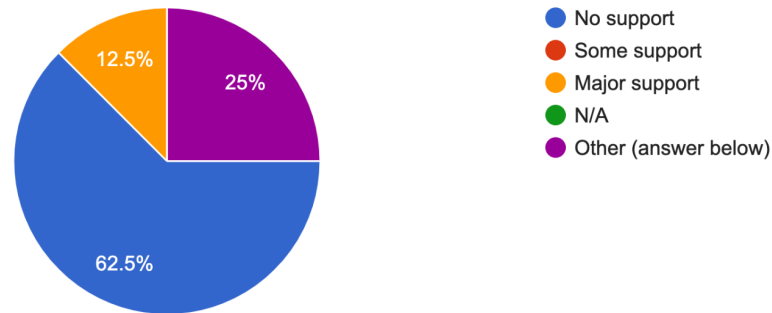
8 responses



- “The collaboration has not ended.”

Q2G. Since the end of the collaboration, have you received technical support from someone other than the visualization research team?

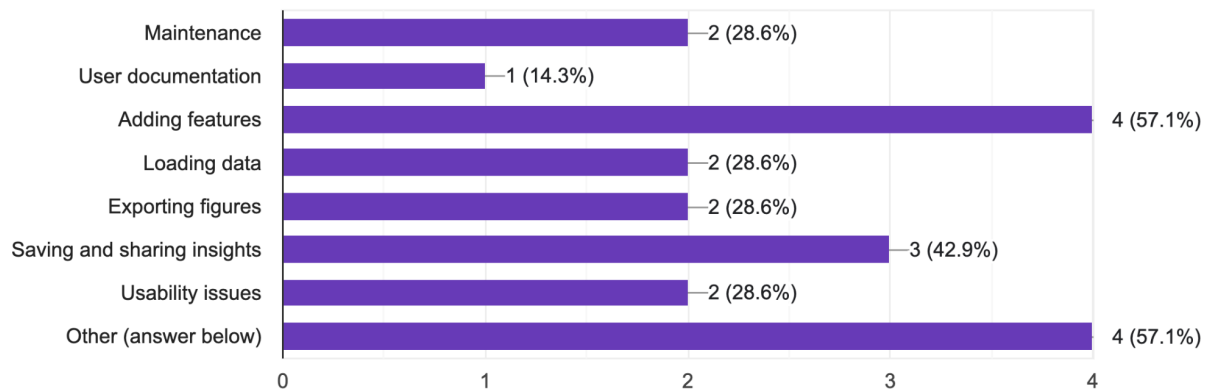
8 responses



- “The collaboration is still ongoing.”
- “The collaboration has not ended.”

Q2H. What are the challenges you have faced in using and maintaining the tool since the end of the collaboration? Choose all that apply

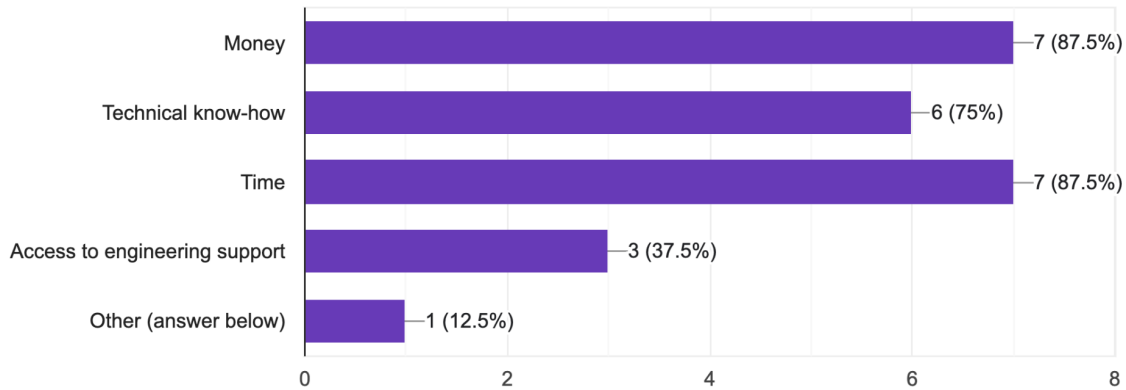
7 responses



- “Containerization (e.g., Docker)”
- “The collaboration has not ended.”
- “IT security requirements of our company”

Q2I. What resources are necessary for the tool to be up-kept? Choose all that apply.

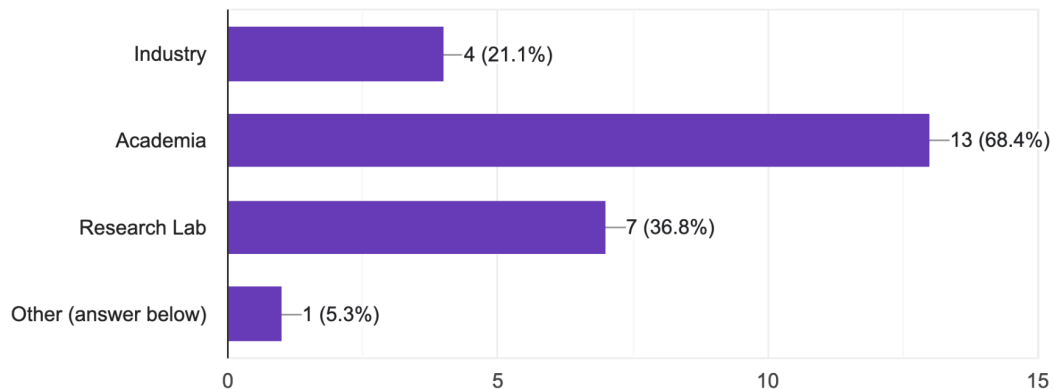
8 responses



Part 3: Background

Q3A. At the time of the collaboration, how would you describe your job? Choose all that apply.

19 responses



- “I’m teacher”
- “My role was as communication/engagement expert embedded in a climate science research lab to facilitate the collaboration across different experts and stakeholders”

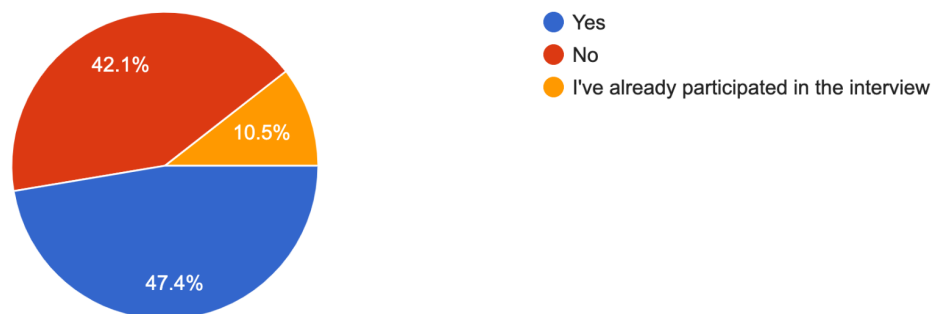
Q3B. At the time of the collaboration, how would you describe your field? (ex. Biology, Reusable Energy, Arts..)

Responses:

- Journalism
- Aerospace
- Microbiology
- Computational Biology
- Neuroscience
- Data science
- Structural Biology
- image processing
- Communication
- Computer Science
- systems development
- Climate Services
- computer science
- Industrial research in Data Mining
- Systems Analyst
- Natural Language Processing
- Theoretical Chemistry
- Machine learning
- Archaeology

Would you be willing to talk to us in a 30-min compensated follow-up interview?

19 responses

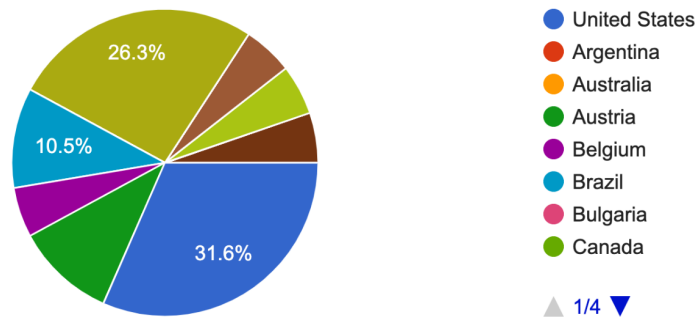


Wrapping Up

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The next few questions are regarding follow-up and compensation.

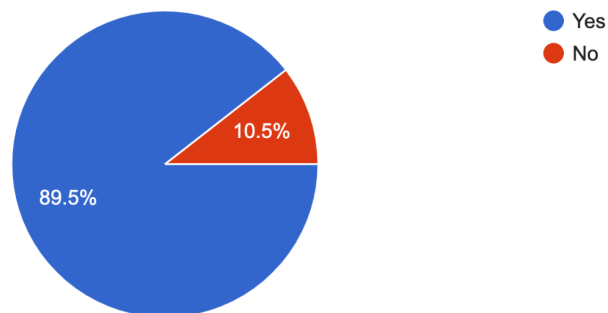
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19 responses



Would you prefer to donate your \$10 compensation for this survey? We will be donating to Black Girls Code.

19 responses



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