HEGS-Reproducibility

Survey Flow

Block: SCREENER (6 Questions)
Standard: Awareness of Reproducibility Practices (2 Questions)
Standard: Importance of Reproducibility (17 Questions)
Standard: Research Practices (5 Questions)
Standard: Proportion of reproducibility (1 Question)
Standard: Challenges or barriers to reproducibility (5 Questions)
Standard: Demographics (5 Questions)
Standard: Prize Draw (1 Question)

Page Break

Text / Graphic Thanks for checking out the Qualtrics Surveys Question Walkthrough! This survey will help explain the question types and features offered with your free Qualtrics Survey account.

First things first, this question is a "Descriptive Text" question. In Qualtrics, each piece of a survey is considered a question, so this is a "question" that doesn't require any input from the user. It just allows you to provide instructions, clarify why you're asking questions, or add handy links to outside sites that give more information.

You can also do further text editing by using the Rich Content Editor (the blue button above this question text when you click on it to edit), including *italics* and **bolding**. You can also change the color, size, or font of your text. Additionally, you can add images, files, or even videos - anything you need to show your participant or respondent before they answer a question.

 There's another type of "Descriptive Text" question, but it doesn't actually allow for written word. This question, the "Graphic" question, is pretty much just an image. You can see an example of this below! You can add a graphic you've uploaded from your library, or you can link one from another website using the image's URL.

Behold my beautiful placeholder below and then click the "Next" button to advance to the next page!

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The following questions will be used to determine eligibility for this survey.

Q1 Age How old are you?

○ Under 18 (1)

○ 18-34 years old (2)

○ 35-54 years old (3)

○ 55+ years old (4)

Skip To: End of Survey If Q1 Age = Under 18

Q2 Field Have you conducted research in the field of geography in the last 5 years?

○ Yes (1)

○ No (2)

○ Unsure (3)

Q3 Subfield Select your **primary** subfield of research from the following options:

○ Human geography (1)

○ Physical geography, earth and environmental sciences (2)

○ Nature and society (3)

○ Geographic methods, GIS, spatial statistics (4)

○ Other (specify) (5) _____

Q4 Methods How would you describe the type of research you primarily conduct?

○ Quantitative (1)

○ Qualitative (2)

○ Mixed Methods (3)

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Q5 Familiarity In the context of conducting your research, how familiar are you with the term "reproducibility"?

○ To a great extent (1)

○ Somewhat (2)

○ Very little (3)

○ Not at all (4)

Skip To: End of Block If Q5 Familiarity = Not at all

Q6 Another type is the "Multi Line" text entry, like this question. This one is a bit bigger than the single line, although both are manually resizable from the editor - just click the two little lines in the bottom left corner and drag to resize to ensure users see the exact shape you want. "Essay Text Box" is the largest version!

What feedback do you have for our tour so far?

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Clarification of Terms: For the purposes of this survey, we adopt the following definition:

Reproducibility - the ability of research results to be recreated by an independent researcher using the same materials, procedures, and conditions of analysis that were used in the original study.

Q7a In the context of conducting and publishing research in your subfield, how familiar are you with <u>open source software</u>?

○ To a great extent (1)

○ Somewhat (2)

○ Very little (3)

○ Not at all (4)

Skip To: Q7b If Q7a = Not at all

Q7a_1 How often do you use <u>open source software</u> in your own research?

○ Always (1)

○ Most of the time (2)

○ Some of the time (3)

○ Rarely (4)

○ Never (5)

Skip To: Q7b If Q7a_1 = Never

Q7a_2 For what parts of the research process, do you use <u>open source software</u> in your own research?

☐ Obtaining or collecting data (1)

☐ Data cleaning or pre-processing (2)

☐ Data analysis (3)

☐ Data visualization or mapping (4)

Q7a_3 How often do you document or share information related to the computational processing environment used in your own research?

○ Always (1)

○ Most of the time (2)

○ Some of the time (3)

○ Rarely (4)

○ Never (5)

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Q7b In the context of conducting and publishing research in your subfield, how familiar are you with lab, field, or computational notebooks?

○ To a great extent (1)

○ Somewhat (2)

○ Very little (3)

○ Not at all (4)

Skip To: Q7c If Q7b = Not at all

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Q7b_1 How often do you use lab, field, or computational notebooks in your own research?

○ Always (1)

○ Most of the time (2)

○ Some of the time (3)

○ Rarely (4)

○ Never (5)

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Q7c In the context of conducting and publishing research in your subfield, how familiar are you with <u>sharing or archiving data</u>?

○ To a great extent (1)

○ Somewhat (2)

○ Very little (3)

○ Not at all (4)

Skip To: Q7d If Q7c = Not at all

Q7c_1 How often do you publicly <u>share or archive data</u> in your own research?

○ Always (1)

○ Most of the time (2)

○ Some of the time (3)

○ Rarely (4)

○ Never (5)

Skip To: Q7c_3 If Q7c_1 = Never

Q7c_2 How often do you use digital object identifiers (DOIs) when public <u>sharing or archiving data</u> in your own research?

○ Always (1)

○ Most of the time (2)

○ Some of the time (3)

○ Rarely (4)

○ Never (5)

Q7c_3 How often do you use spatial metadata standards when publicly sharing or archiving data in your own research?

○ Always (1)

○ Most of the time (2)

○ Some of the time (3)

○ Rarely (4)

○ Never (5)

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Q7d In the context of conducting and publishing research in your subfield, how familiar are you with publicly <u>sharing code or scripts</u>?

○ To a great extent (1)

○ Somewhat (2)

○ Very little (3)

○ Not at all (4)

Skip To: Q7e If Q7d = Not at all

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Q7d_1 How often do you <u>publicly share code or scripts</u> in your own research?

○ Always (1)

○ Most of the time (2)

○ Some of the time (3)

○ Rarely (4)

○ Never (5)

Skip To: Q7e If Q7d_1 = Never

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Q7d_2 How often do you use version control software (e.g., Git) to facilitate <u>sharing code or scripts</u> in your research?

○ Always (1)

○ Most of the time (2)

○ Some of the time (3)

○ Rarely (4)

○ Never (5)

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Q7e In the context of conducting and publishing research in your subfield, how familiar are you with <u>pre-registering research designs or protocols</u>?

○ To a great extent (1)

○ Somewhat (2)

○ Very little (3)

○ Not at all (4)

Q7e_1 How often do you <u>pre-register research designs or protocols</u> in your own research?

○ Always (1)

○ Most of the time (2)

○ Some of the time (3)

○ Rarely (4)

○ Never (5)

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Q8 To what extent do you agree with the following statements about research in your subfield?

	Strongly agree (1)	Agree (2)	Disagree (4)	Strongly disagree (5)	Don't Know (6)
Failing to reproduce a result often means the original finding is false. (1)	○	○	○	○	○
Failing to reproduce a result rarely detracts from the validity of the original study. (2)	○	○	○	○	○
If a researcher does not share the data used in their study, I trust the results less. (3)	○	○	○	○	○
It is important for students to attempt reproductions as part of their training. (4)	○	○	○	○	○
To be credible, research must be reproducible. (6)	○	○	○	○	○
Reproducibility is incompatible with the epistemologies within my subfield. (8)	○	○	○	○	○

End of Block: Importance of Reproducibility

Q9 In the last 2 years, have you...?

	Yes (1)	No (3)	Don't Know (4)
Thought about the reproducibility of your research (1)	○	○	○
Spoke with colleagues about reproducibility (2)	○	○	○
Questioned the reproducibility of published research (4)	○	○	○
Published original data with your study (11)	○	○	○
Published code and/or protocols with your study (14)	○	○	○
Considered reproducibility while peer reviewing a grant or publication (13)	○	○	○
Attempted to reproduce your own or someone else's research (12)	○	○	○

Skip To: End of Block If Q9 != Attempted to reproduce your own or someone else's research [Yes]

Q10 Thinking about the reproduction(s) you attempted in the last 2 years, what made you decide to attempt the reproduction(s)?

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Q11 Thinking about the reproduction(s) you attempted in the last 2 years, what proportion of the original research results were you able to...?

	All (1)	Some (3)	None (8)	Don't Know (4)
Identically reproduce (1)	○	○	○	○
Partially reproduce (e.g., slightly different results but same conclusions) (2)	○	○	○	○
Fail to reproduce (e.g., different results and different conclusions) (4)	○	○	○	○

Q12 Thinking about the reproduction(s) you attempted in the last 2 years, were you able to...?

	Yes, all (9)	Yes, some (12)	No (10)	Did not attempt (11)
Access the original study's data (2)	○	○	○	○
Access the original study's code or analytic procedures (12)	○	○	○	○
Recreate the computational environment (hardware, software, etc.) (15)	○	○	○	○
Submit your findings for publication (14)	○	○	○	○

Skip To: End of Block If Q12 != Yes, all

Q12a If you were not able to submit all of the findings of your reproduction(s) for publication, why not?

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End of Block: Research Practices

Start of Block: Proportion of reproducibility

Q13 In your opinion, what percentage of the published results are reproducible within...?

	Enter percentage (0 to 100) (1)
Geography (1)	
Your primary subfield (e.g., human geography, physical geography, nature & society, GIS/methods/spatial stats) (2)	

Q14 In your opinion, how frequently do each of these factors contribute to a lack of reproducibility in research in your subfield?

	Frequently (1)	Occasionally (2)	Rarely (3)	Never (4)
Fraud (e.g., fabricated or falsified results) (1)	○	○	○	○
Pressure to publish for career advancement (2)	○	○	○	○
Insufficient oversight or mentoring (3)	○	○	○	○
Lack of publishing raw data (7)	○	○	○	○
Lack of publishing research protocols or computer code (10)	○	○	○	○
Lack of publishing full results (11)	○	○	○	○
Differences in the software processing environment (14)	○	○	○	○
Use of proprietary data or software (15)	○	○	○	○
Complexity and variability of geographic systems (16)	○	○	○	○
Random effects (8)	○	○	○	○
Insufficient documentation about study data (metadata) (18)	○	○	○	○

| Researcher positionality (20) | ○ | ○ | ○ | ○ |

Q15 Please list any other factors that you believe contribute to a lack of reproducibility in research in your subfield.

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Q16 Who should be responsible for the reproducibility of published research in your subfield? (Select all that apply)

- [ ] Principal investigator of the study (1)

- [ ] Peer-reviewer(s) (2)

- [ ] Journal editor(s) (3)

- [ ] Funding agency (4)

- [ ] Other (specify) (5) _____

Page Break _____

Q17 How important is reproducibility within your subfield for...?

	Very important (1)	Somewhat important (2)	Somewhat not important (3)	Not important (4)
Validating research findings (4)	○	○	○	○
Reducing the risk of errors in the research process (5)	○	○	○	○
Increasing trust in study results (6)	○	○	○	○
Preventing duplication of efforts in future research projects (7)	○	○	○	○
Establishing credibility of research in geography (8)	○	○	○	○
Establishing credibility of research in your primary subfield (e.g., human geography, physical geography, nature & society, GIS/methods/spatial stats) (9)	○	○	○	○
Communicating research to academics (10)	○	○	○	○
Communicating research to practitioners (11)	○	○	○	○
Training geography students (12)	○	○	○	○
Meta-analyses (14)	○	○	○	○

Q17a Please list any benefits or important function of reproducibility in your subfield not mentioned above.

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Q18 How many people are part of your research group or lab? Include all relevant senior investigators, postdoctoral fellows, technicians, and graduate or undergraduate students.

○ 1 person (1)

○ 2 - 5 people (2)

○ 6 - 10 people (3)

○ 11 - 15 people (4)

○ 16+ people (5)

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Q19 Which job title best applies to you?

○ Full professor/lecturer (1)

○ Associate professor/lecturer (2)

○ Assistant professor/lecturer (3)

○ Laboratory director/head (4)

○ Research scientist (5)

○ Post-doctoral fellow (6)

○ Graduate student (PhD, masters) (7)

○ Technician/research assistant (8)

○ Other (specify) (9) _____

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Q20 How do you describe yourself?

○ Female (1)

○ Male (2)

○ Non-binary / third gender (3)

○ Prefer to self-describe (5) _____

○ Prefer not to say (6)

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Q21 Choose one or more races that you consider yourself to be:

☐ American Indian or Alaska Native (1)

☐ Asian (2)

☐ Black or African American (3)

☐ Hispanic (6)

☐ Native Hawaiian or Pacific Islander (4)

☐ White (5)

☐ Other (7) _____

☐ Prefer not to say (8)

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X→

Q22 In which country do you currently reside?

▼ United States of America (187) ... Zimbabwe (1357)

Q23 If you wish to be entered into the prize draw for a $90 gift card, please check the box below. By choosing to participate in the prize draw you acknowledge that you have read and understand the terms and conditions of the draw as outlined in the materials provided to you in the original contact email.

○ I would like to be entered into the prize draw (1)