# Perceived Readability of Visualizations - Validation

You are invited to participate in our study titled "A Validated Scale for Perceived Readability in Visualization".

Our goal is to develop a validated scale that researchers can use to let study participants rate the perceived readability of a visualization.

For example, regarding the two graphs below, researchers could ask participants to rate the readability of each of these graphs. The results would allow the researchers to determine which one feels more readable, and to what extent.
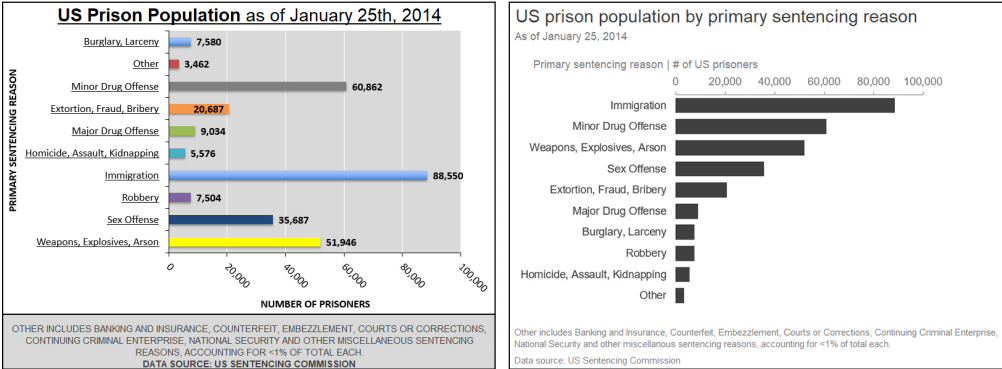
Please respond to this survey only if you:

- are a fluent speaker of English,
- are of legal age (18 years in most countries), and
- don't have low vision or impaired vision, including any form of color deficiency.

This study is conducted by

- Anne-Flore Cabouat (https://www.aviz.fr/Research/Afcabouat) (Inria & Université Paris-Saclay, France)
- Tingying He (https://tingying-he.github.io/) (Inria & Université Paris-Saclay, France)
- Petra Isenberg (http://petra.isenberg.cc/wiki/pmwiki.php) (Inria & Université Paris-Saclay, France)
- Tobias Isenberg (http://tobias.isenberg.cc/) (Inria & Université Paris-Saclay, France)

Click "Next" if you are interested in further details about the study.

There are 41 questions in this survey.

Privacy policy and consent form

Please find below legal information about our privacy policy and your participation to this study.

After agreeing to the terms below, you will first answer a few demographic questions, followed by thirty-three (33) questions about one (1) visual representation of data. This will require around nine (9) minutes to complete.

1. Privacy policy

In accordance with Article 13 of the Regulation on the protection of individuals with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation or GDPR), please find below some information concerning this data collection:

1. The controller's representative is the CEO of Inria.
2. The Data Protection Officer (DPO) appointed by Inria can be contacted via dpo@inria.fr (mailto:dpo@inria.fr?subject=Readability%20scale%20study%20-%20Aviz%20team) or via her postal address: The Data Protection Officer, Inria, 2004 route des lucioles, BP 93, 06902 Sophia-Antipolis cedex.
3. The purpose of the processing is to develop a validated scale for Perceived Readability in visualization.
4. The legal basis of the processing is the execution of a public interest mission
5. The recipients of your data are members of AVIZ team (Inria)
6. Your data will be stored for a maximum period of one year.
7. You may access your personal data or request that it be deleted. You also have a right of opposition, a right of rectification and a right to limit the processing of your data (see https://www.cnil.fr (https://www.cnil.fr) for more information on your rights).
   For any question about the processing of your data in this system, you can contact the DPO:
   - Contact our DPO electronically: dpo@inria.fr
   - Contact our DPO by post: The Data Protection Officer Inria, 2004 route des Lucioles, BP 93, 06902 Sophia-Antipolis Cedex
8. If, you consider that the processing does not comply with data protection rules, you can file a complaint with the CNIL.
9. This data collection is done on a voluntary basis. Under no circumstances are you required by regulation, contract or other means to provide your data.

2. Consent form

PART I/ INFORMATION

Acknowledgements:

Your input is essential to our project and the research team would like to thank you for that.
Before giving your informed consent, it is important that you understand why the research is being done, what it involves and what your rights and obligations are.

"Validated Scale for Perceived Readability of Visualizations"

IDENTIFICATION

Project manager(s): Tobias Isenberg (http://tobias.isenberg.cc/) (Senior Research Scientist, Aviz Team, Inria Saclay)
Other scientists involved:

- Anne-Flore Cabouat (https://af.cabouat.xyz/) (Master's student, Aviz Team, Inria Saclay, Université Paris-Saclay),
- Tingying He (https://tingying-he.github.io/) (PhD student, Aviz Team, Inria Saclay, Université Paris-Saclay),
- Petra Isenberg (http://petra.isenberg.cc/wiki/pmwiki.php) (Senior Research Scientist, Aviz Team, Inria Saclay).

Project team and Inria Research Centre: Aviz Team - Inria Saclay
Project name: Scale for Perceived Readability in Visualization

You are invited to take part in this project, whose the purpose is to develop a validated scale for measuring perception of readability in visualization. The Aviz team conducts research in the field of visualization and the results of these experiments will help us to improve visualization design and research in this field more generally.

This study will take place **online**.

The expected benefits of the project are the following: readability of a visualization has a considerable impact on a visualization's use. Researchers investigating usability, effectiveness, and acceptability of visualizations can seek to evaluate participants' perception of readability. To do so, they presently pick their own survey terms, for example "I am utterly confused", "symbols were easy to read", "I am confident in my answers", "the visualization facilitates data understanding", and so on. We currently lack a validated tool to evaluate the perceived readability of visual representations among study participants. The aim of this project is to build and validate a consistent scale to measure perceived readability.

This project has received a favorable opinion from Inria's Operational Committee for the Assessment of legal and ethical risks. For more information: https://www.inria.fr/en/operational-committee-assesment-legal-and-ethical-risks (https://www.inria.fr/en/operational-committee-assesment-legal-and-ethical-risks)

YOUR PARTICIPATION IN THE PROJECT

Conditions of your participation:

Requirements
Anyone who is a fluent speaker of English, is of legal age (18 years in most countries), and have normal or corrected-to-normal vision, can participate in this study.

Procedure
After clicking the experiment link, you will first answer this consent form. Then you will answer one question about you color vision, followed by thirty-nine (39) questions in total, about three (3) visual representations of data. This will require around forteen (14) minutes to complete.

Benefits
This research will contribute to research in evaluating perceived readability in visualization.

Risks and drawbacks
There are no known risks or drawbacks associated with this research study.

Voluntary participation in the project

Once you have read and understood the information contained in the "Project Presentation" section, your signature on this form indicates that you agree to participate in the project, and this without any restrictions or external pressure. If you don't have the information that you need to make a decision, you should not hesitate to ask for more information from the contact persons (see below).

Withdrawal from the project at any time

You are completely free to end your participation in the project at any time before the completion of the study (2024/03/15). All you have to do is let the contact persons know (below). You don't have to provide any reasons for your withdrawal.

Following your withdrawal from the project

Regarding the data concerning you which may have been collected before you withdraw from the project, the research team may continue to use such data for the time during which the data mentioned below is kept, unless you have objections which you should make known to the contact persons. In this case, the data concerning you will be destroyed.

Request for information during the project

If you have any additional questions about the project or about your rights as a participant in this research, please do not hesitate to get in touch with the contact persons mentioned below.

Information concerning the principal results of the research

If you would like a written summary about the principal results of this research and their use, please ask the contact persons.

Publication on a public platform for Open Science of the principal results of the research

By participating in this experiment, you are informed that the principal results of the research will be published on a public platform for Open Science.

***

This form for requesting information and for collecting informed consent is a confidential and sensitive document, and as such it must be given special treatment both in the way that it is kept and archived.

A copy of the duly signed form intended for the project manager will be kept within the administrative and financial department of the Inria Research Centre concerned for fifteen (15) years before being transferred to the archives department of the Inria Research Centre concerned.

PRIVACY AND DATA PROTECTION ACT

Inria is very attentive and vigilant regarding personal data protection (DCP) issues. It has also appointed a Data Protection Officer (DPO) for ensuring that Inria complies with the European General Data Protection Regulation (GDPR).

These data are as follows: gender, age, education level, color vision deficiency, English fluency and prolific ID.

These data will be processed in the following manner: We will download the study data from Lime Survey, onto our Inria -thus, encrypted- computers. The dataset will automatically include Prolific identifiers for all participants. This identifier being the only feature making identification of persons possible, we will remove it from the dataset before analysis, effectively anonymizing the data. After uploading this anonymized dataset on OSF, we will delete the data from our Limesurvey account.

In accordance with Article 13 of the Regulation (EU) 2016/679 of the European Parliament and of the council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and the free movement of such data, please find below some information about this data collection:

- The representative of the data controller is the Director of the Inria Saclay Center, Jean-Yves Berthou
- It is understood that the personal data collected during the project are confidential and that only the members of the research team, listed below, will have access to these data:
  - Dr. Tobias Isenberg, scientific manager of the Project

- - Dr. Petra Isenberg, senior research scientist from the research team AVIZ
    - Mrs. Tingying He, PhD student researcher from the research team AVIZ
    - Mrs. Anne-Flore Cabouat, Master student researcher from the research team AVIZ
- Each processing of personal data within Inria must be reported to the Inria DPO;
- Your data will be kept for a maximum of 1 year;
- Transfer of your data: your data, once anonymized, may be deposited on an open data platform or used as a dataset to be reproduced or allow the results to be reproduced or in future scientific research or for the purposes of publishing the work resulting from this research.
- In accordance with the French "Data Protection Act" of 6 January 1978, as amended, you are entitled to access and correct information about you until 2024/01/05;
- You can access any data concerning you or request that it be erased until 2024/01/05;
- You also have a right of opposition, a right of rectification, and a right to limit the processing of your data (see cnil.fr for more information about your rights) until 2024/01/05;
- If you wish to exercise these rights or should you have any questions about the processing of your data in this system, you can contact the Inria DPO:
  - You can contact the DPO by email: dpo@inria.fr or by post by writing to:
    The Data Protection Officer
    Inria,
    2004 route des Lucioles,
    BP 93,
    06902 Sophia-Antipolis Cedex
- If you consider, after having contacted us, that your privacy and personal data rights have been infringed or that the study does not comply with data protection rules, you may send a complaint to the CNIL;
- This data collection is done on a voluntary basis. Under no circumstances are you required either by regulations, or contractually or by other means to provide your data;
- This processing does not entail any profiling or automated decision-making about you, based on your data and the processing of such data.

This form for requesting information and for collecting informed consent is a confidential and sensitive document, and as such it must be given special treatment both in the way that it is kept and archived.

A copy of the duly signed form intended for the project manager will be kept within the administrative and financial department of the Inria Research Centre concerned for fifteen (15) years before being transferred to the archives department of the Inria Research Centre concerned.

PART II/ COLLECTION OF INFORMED CONSENT

I acknowledge that I have read and understood this form for requesting information concerning the project "Validated Scale for Perceived Readability in Visualization" of which the purpose is to build and validate a consistent scale to measure perceived readability in visualization and that I voluntarily agree to participate in this research project in this context.

I acknowledge that I have been informed that I can terminate my participation in the project at any time without having to give any reason, by simply contacting the contacts mentioned above.

I acknowledge having been informed about the purpose and conditions of the project, as well as the pros, risks and cons of the project.

I acknowledge having received clear and precise answers to my questions.

Finally, I recognize that I have the option of asking additional questions about the project or about my rights, at any time during the project, via the contact persons.

Contact details

Please feel free to contact one of the four researchers below if you wish to know more about the study, or if you have any questions:

Anne-Flore Cabouat

Master's student

AVIZ (https://www.aviz.fr/Main/HomePage) Research Team

Inria Saclay Île-de-France, Université Paris-Saclay

anne-flore.cabouat@inria.fr (mailto:anne-flore.cabouat@inria.fr? cc=tingying.he@inria.fr, petra.isenberg@inria.fr, tobias.isenberg@inria.fr&subject=Perceived%20Readability%20Scale%20Developmen

Tingying He

PhD Student

AVIZ (www.aviz.fr/Main/HomePage) Research Team

Inria Saclay Île-de-France, Université Paris-Saclay

tingying.he@inria.fr (mailto:tingying.he@inria.fr?cc=anne-flore.cabouat@inria.fr, petra.isenberg@inria.fr, tobias.isenberg@inria.fr?

Petra Isenberg

Senior Research Scientist

AVIZ (https://www.aviz.fr/Main/HomePage) Research Team

Inria Saclay Île-de-France, Université Paris-Saclay

petra.isenberg@inria.fr (mailto:petra.isenberg@inria.fr? cc=anne-flore.cabouat@inria.fr, tingying.he@inria.fr, tobias.isenberg@inria.fr

Tobias Isenberg

Senior Research Scientist

AVIZ (https://www.aviz.fr/Main/HomePage) Research Team

Inria Saclay Île-de-France, Université Paris-Saclay

tobias.isenberg@inria.fr (mailto:tobias.isenberg@inria.fr? cc=anne-flore.cabouat@inria.fr, tingying.he@inria.fr, petra.isenberg@inria.fr&subject=Perceived

Please confirm that you wish to participate in this study.

By clicking the "Yes" button below, you certify that you have read and understood the above information, that you meet the various selection criteria, that your questions have been answered satisfactorily, and that you have been advised that you are free to withdraw from this research at any time, without consequence.

*

Please choose **only one** of the following:

◯ Yes

◯ No

You can't proceed further without giving consent. Don't hesitate to reach out if you have any questions, comments, or concerns. Thank you!

Only answer this question if the following conditions are met:
Answer was 'No' at question '1 [CF001]' ($(document).on('ready pjax:scriptcomplete',function(){ // we don't want the navbar to be fixed anymore -but impossible to remove body's padding so we make the navbar absolute $('.navbar').css({ "position" : "absolute", "top" : "0px" }) //we lower vertical margins and paddings $('.top-container').css({ 'margin': '0', 'padding' :'5px 0', }) $('#main-col, .group-outer-container, .group-container').css({ 'margin': '0', }) $('.group-title').css({ 'margin':'0.5em 0 0.5em 0', 'font-size':'20px' }) }) Please find below legal information about our privacy policy and your participation to this study. After agreeing to the terms below, you will first answer a few demographic questions, followed by thirty-three (33) questions about one (1) visual representation of data. This will require around nine (9) minutes to complete. 1. Privacy policy In accordance with Article 13 of the Regulation on the protection of individuals with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation or GDPR), please find below some information concerning this data collection: The controller's representative is the CEO of Inria. The Data Protection Officer (DPO) appointed by Inria can be contacted via dpo@inria.fr or via her postal address: The Data Protection Officer, Inria, 2004 route des lucioles, BP 93, 06902 Sophia-Antipolis cedex. The purpose of the processing is to develop a validated scale for Perceived Readability in visualization.   The legal basis of the processing is the execution of a public interest mission The recipients of your data are members of AVIZ team (Inria) Your data will be stored for a maximum period of one year. You may access your personal data or request that it be deleted. You also have a right of opposition, a right of rectification and a right to limit the processing of your data (see https://www.cnil.fr for more information on your rights). For any question about the processing of your data in this system, you can contact the DPO: - Contact our DPO electronically: dpo@inria.fr - Contact our DPO by post: The Data Protection Officer Inria, 2004 route des Lucioles, BP 93, 06902 Sophia-Antipolis Cedex If, you consider that the processing does not comply with data protection rules, you can file a complaint with the CNIL. This data collection is done on a voluntary basis. Under no circumstances are you required by regulation, contract or other means to provide your data. 2. Consent form PART I/ INFORMATION Acknowledgements: Your input is essential to our project and the research team would like to thank you for that.Before giving your informed consent, it is important that you understand why the research is being done, what it involves and what your rights and obligations are. "Validated Scale for Perceived Readability of Visualizations" IDENTIFICATION Project manager(s): Tobias Isenberg (Senior Research Scientist, Aviz Team, Inria Saclay)Other scientists involved: Anne-Flore Cabouat (Master's student, Aviz Team, Inria Saclay, Université Paris-Saclay), Tingying He (PhD student, Aviz Team, Inria Saclay, Université Paris-Saclay), Petra Isenberg (Senior Research Scientist, Aviz Team, Inria Saclay). Project team and Inria Research Centre: Aviz Team - Inria SaclayProject name: Scale for Perceived Readability in Visualization You are invited to take part in this project, whose the purpose is to develop a validated scale for measuring perception of readability in visualization. The Aviz team conducts research in the field of visualization and the results of these experiments will help us to improve visualization design and research in this field more generally. This study will take place online. The expected benefits of the project are the following: readability of a visualization has a considerable impact on a visualization's use. Researchers investigating usability, effectiveness, and acceptability of visualizations can seek to evaluate participants' perception of readability. To do so, they presently pick their own survey terms, for example "I am utterly confused", "symbols were easy to read", "I am confident in my answers", "the visualization facilitates data understanding", and so on. We currently lack a validated tool to evaluate the perceived readability of visual representations among study participants. The aim of this project is to build and validate a consistent scale to measure perceived readability. This project has received a favorable opinion from Inria's Operational Committee for the Assessment of legal and ethical risks. For more information: https://www.inria.fr/en/operational-committee-assesment-legal-and-ethical-risks YOUR PARTICIPATION IN THE PROJECT Conditions of your participation: RequirementsAnyone who is a fluent speaker of English, is of legal age (18 years in most countries), and have normal or corrected-to-normal vision, can participate in this study. ProcedureAfter clicking the experiment link, you will first answer this consent form. Then you will answer one question about you color vision, followed by thirty-nine (39) questions in total, about three (3) visual representations of data. This will require around forteen (14) minutes to complete. BenefitsThis research will contribute to research in evaluating perceived readability in visualization. Risks and drawbacksThere are no known risks or drawbacks associated with this research study. Voluntary participation in the project Once you have read and understood the information contained in the "Project Presentation" section, your signature on this form indicates that you agree to participate in the project, and this without any restrictions or external pressure.If you don't have the information that you need to make a decision, you should not hesitate to ask for more information from the contact persons (see below). 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Information concerning the principal results of the research If you would like a written summary about the principal results of this research and their use, please ask the contact persons. Publication on a public platform for Open Science of the principal results of the research By participating in this experiment, you are informed that the principal results of the research will be published on a public platform for Open Science. *** This form for requesting information and for collecting informed consent is a confidential and sensitive document, and as such it must be given special treatment both in the way that it is kept and archived. A copy of the duly signed form intended for the project manager will be kept within the administrative and financial department of the Inria Research Centre concerned for fifteen (15) years before being transferred to the archives department of the Inria Research Centre concerned. PRIVACY AND DATA PROTECTION ACT Inria is very attentive and vigilant regarding personal data protection (DCP) issues. It has also appointed a Data Protection Officer (DPO) for ensuring that Inria complies with the European General Data Protection Regulation (GDPR). These data are as follows: gender, age, education level, color vision deficiency, English fluency and prolific ID. These data will be processed in the following manner: We will download the study data from Lime Survey, onto our Inria -thus, encrypted-computers. The dataset will automatically include Prolific identifiers for all participants. This identifier being the only feature making identification of persons possible, we will remove it from the dataset before analysis, effectively anonymizing the data. After uploading this

anonymized dataset on OSF, we will delete the data from our Limesurvey account. In accordance with Article 13 of the Regulation (EU) 2016/679 of the European Parliament and of the council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and the free movement of such data, please find below some information about this data collection: The representative of the data controller is the Director of the Inria Saclay Center, Jean-Yves Berthou It is understood that the personal data collected during the project are confidential and that only the members of the research team, listed below, will have access to these data: Dr. Tobias Isenberg, scientific manager of the Project Dr. Petra Isenberg, senior research scientist from the research team AVIZ Mrs. Tingying He, PhD student researcher from the research team AVIZ Mrs. Anne-Flore Cabouat, Master student researcher from the research team AVIZ Each processing of personal data within Inria must be reported to the Inria DPO; Your data will be kept for a maximum of 1 year; Transfer of your data: your data, once anonymized, may be deposited on an open data platform or used as a dataset to be reproduced or allow the results to be reproduced or in future scientific research or for the purposes of publishing the work resulting from this research. In accordance with the French "Data Protection Act" of 6 January 1978, as amended, you are entitled to access and correct information about you until 2024/01/05; You can access any data concerning you or request that it be erased until 2024/01/05; You also have a right of opposition, a right of rectification, and a right to limit the processing of your data (see cnil.fr for more information about your rights) until 2024/01/05; If you wish to exercise these rights or should you have any questions about the processing of your data in this system, you can contact the Inria DPO: You can contact the DPO by email: dpo@inria.fr or by post by writing to:The Data Protection OfficerInria, 2004 route des Lucioles,BP 93,06902 Sophia-Antipolis Cedex If you consider, after having contacted us, that your privacy and personal data rights have been infringed or that the study does not comply with data protection rules, you may send a complaint to the CNIL; This data collection is done on a voluntary basis. Under no circumstances are you required either by regulations, or contractually or by other means to provide your data; This processing does not entail any profiling or automated decision-making about you, based on your data and the processing of such data. This form for requesting information and for collecting informed consent is a confidential and sensitive document, and as such it must be given special treatment both in the way that it is kept and archived. A copy of the duly signed form intended for the project manager will be kept within the administrative and financial department of the Inria Research Centre concerned for fifteen (15) years before being transferred to the archives department of the Inria Research Centre concerned. PART II/ COLLECTION OF INFORMED CONSENT I acknowledge that I have read and understood this form for requesting information concerning the project "Validated Scale for Perceived Readability in Visualization" of which the purpose is to build and validate a consistent scale to measure perceived readability in visualization and that I voluntarily agree to participate in this research project in this context. I acknowledge that I have been informed that I can terminate my participation in the project at any time without having to give any reason, by simply contacting the contacts mentioned above. I acknowledge having been informed about the purpose and conditions of the project, as well as the pros, risks and cons of the project. I acknowledge having received clear and precise answers to my questions. Finally, I recognize that I have the option of asking additional questions about the project or about my rights, at any time during the project, via the contact persons. Contact details Please feel free to contact one of the four researchers below if you wish to know more about the study, or if you have any questions: Anne-Flore Cabouat Master's student AVIZ Research Team Inria Saclay Île-de-France,Université Paris-Saclay anne-flore.cabouat@inria.fr Tingying He PhD Student AVIZ Research Team Inria Saclay Île-de-France,Université Paris-Saclay tingying.he@inria.fr   Petra Isenberg Senior Research Scientist AVIZ Research Team Inria Saclay Île-de-France, Université Paris-Saclay petra.isenberg@inria.fr Tobias Isenberg Senior Research Scientist AVIZ Research Team Inria Saclay Île-de-France, Université Paris-Saclay tobias.isenberg@inria.fr Please confirm that you wish to participate in this study. By clicking the "Yes" button below, you certify that you have read and understood the above information, that you meet the various selection criteria, that your questions have been answered satisfactorily, and that you have been advised that you are free to withdraw from this research at any time, without consequence.)

Please write your answer here:

___

Preliminaries

Do you have color vision deficiency?

Please note that your submission will **still be accepted** if your answer to this question is "Yes" (color vision deficiency is **not** an excluding criteria for this study).
*

Please choose **only one** of the following:

○ Yes

○ No

Make a comment on your choice here:

[ ]

Having color vision deficiency means you can't see certain colors the way most people do — or you may not see color at all.
You can read more on the topic here (US National Eye Institute) (https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/color-blindness/types-color-vision-deficiency).

Assessing the readability of a data visualization

1. Networks representations

In this survey, you will see 3 different visualizations that show connections between people as follow:
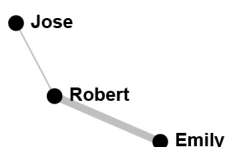
This visualization represents fictional characters, and how many secrets they exchanged in different seasons of an imaginary TV show.

In the example above, there is no direct link between Emily and Jose. As a result, we can tell that these two characters did not directly exchange any secret.

Additionally, the line between Robert and Emily is thicker than the one between Robert and Jose. This tells us that Robert exchanged more secrets with Emily than with Jose.

*
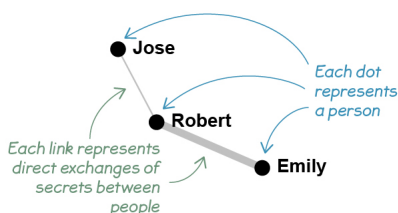
Please choose **only one** of the following:

○ I understand

Please confirm that you understood this explanation.

Assessing the readability of a data visualization

2. How to proceed with the survey

Each visualization in the survey will be displayed with a short accompanying text.
Please read both and then proceed to the questions about it.

Most of the questions (11 for each visualization) aim to assess how readable you find the data visualization.
We kindly ask you to read each sentence carefully before answering.
You might feel that some of the questions are very similar: we encourage you to think about the different nuances they express.

We include three (3) attention checks and one (1) comprehension check in this survey. In line with Prolific's policies (https://researcher-help.prolific.com/hc/en-gb/articles/360009223553-Prolific-s-Attention-and-Comprehension-Check-Policy), we will ask you to return your submission if you fail two (2) attention checks or (1) comprehension check.

After answering a question, you may press the "Enter" key to access the next screen.

Enter ⏎

{ATaskFEN.gseq}

{BTaskFEN.gseq}

{CTaskFEN.gseq}

Group A

In a social media post, you see this visual representation of the characters of the first season of a TV show called "City of Whispers".
You liked the TV show and are interested in learning more about the characters' interactions.

City of Whispers: who exchanged secrets during season 1?

Who exchanged secrets with more people:

*
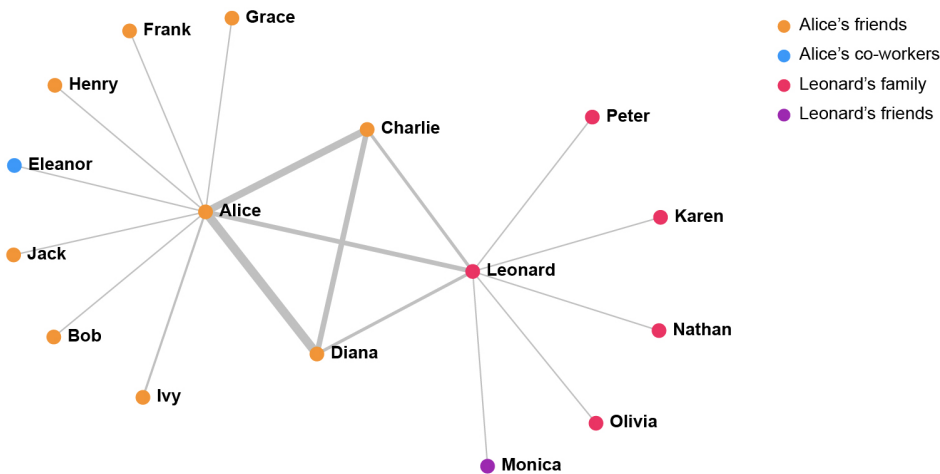
Please choose **only one** of the following:

◯ Alice 🟠

◯ Monica 🟣

◯ Charlie 🟠

◯ This visualization does not allow me to answer

Did **Eleanor**🔵 exchange secrets directly with **Monica**🟣 during season 1?

*

Please choose **only one** of the following:

◯ Yes

◯ No

◯ This visualization does not allow me to answer

What was the topic of the data visualization you just read before?

*

Only answer this question if the following conditions are met:
(seqGA.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129746) == 2)

Please choose **only one** of the following:

◯ The interactions of characters exchanging secrets in a TV show

◯ A road network and between a city and surrounding villages

◯ Stars constellations as seen from the Southern hemisphere

◯ The organizational chart and employees at a small publishing company

You can go back to check again if you are not sure. You will have two opportunities to get this question correct.

Please read again this data visualization and proceed to the question using the "Next" button.

Only answer this question if the following conditions are met:
(seqGA.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129746) == 2) && (ATaskTopic.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129490) != "OK")

What was the topic of the data visualization you just read before?
*

Only answer this question if the following conditions are met:
(seqGA.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129746) == 2) && (ATaskTopic.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129490) != "OK")

Please choose **only one** of the following:

○ The interactions of characters exchanging secrets in a TV show
○ A road network and between a city and surrounding villages
○ Stars constellations as seen from the Southern hemisphere
○ The organizational chart and employees at a small publishing company

You can go back to check the content if you are not sure. This is your second attempt to get this question correct.

If you do not provide a correct answer, this survey will stop and we will ask you to return your submission.

Regarding the visualization above, to what degree do you agree or disagree with the following statements:
*

Only answer this question if the following conditions are met:
((ATaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129490) == "OK") || (ATaskTopicTryAgain.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129492) == "OK") || (seqGA.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129746) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
It is obvious for me how to read this visualization	○	○	○	○	○	○	○
I can easily understand how the data is represented in this visualization	○	○	○	○	○	○	○
I can easily understand this visualization	○	○	○	○	○	○	○
For attention check purposes, please select slightly disagree with this item	○	○	○	○	○	○	○

Regarding the visualization above, to what degree do you agree or disagree with the following statement:

*

Only answer this question if the following conditions are met:
((ATaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129490) == "OK") || (ATaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129492) == "OK") || (seqGA.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129746) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I don't find this visualization crowded	○	○	○	○	○	○	○
I don't find this visualization messy	○	○	○	○	○	○	○
I don't find parts of the visualization distracting	○	○	○	○	○	○	○

Regarding the visualization above, to what degree do you agree or disagree with the following statement:

*

Only answer this question if the following conditions are met:
((ATaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129490) == "OK") || (ATaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129492) == "OK") || (seqGA.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129746) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I find data features (for example, a minimum, or an outlier, or a trend) visible in this visualization	○	○	○	○	○	○	○
I can clearly see data features (for example, a minimum, or an outlier, or a trend) in this visualization	○	○	○	○	○	○	○

Regarding the visualization above, to what degree do you agree or disagree with the following statement:

*

Only answer this question if the following conditions are met:
((ATaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129490) == "OK") || (ATaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129492) == "OK") || (seqGA.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129746) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I can easily find specific elements in this visualization	○	○	○	○	○	○	○
I can easily identify relevant information in this visualization	○	○	○	○	○	○	○
I can easily retrieve information from this visualization	○	○	○	○	○	○	○

If you wish, you can provide us with some comments about the rating questions you just answered and the visualization itself.

This question is not mandatory: click "Next" or press "Enter" on your keyboard to skip it

.

Only answer this question if the following conditions are met:
((ATaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129490) == "OK") || (ATaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10200/qid/129492) == "OK") || (seqGA.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129746) != 2))

Please write your answer here:

As a reminder, here is the list of rating questions you just answered:

- It is **obvious** for me how to read this visualization
- I can easily understand **how the data is represented** in this visualization
- I can **easily understand** this visualization
- I **don't** find this visualization **crowded**
- I **don't** find this visualization **messy**
- I **don't** find parts of this visualization **distracting**
- I can easily **find specific elements** in this visualization
- I can easily **identify relevant information** in this visualization
- I can easily **retrieve information** from this visualization
- I find data features (for example, a minimum, or an outlier, or a trend) **visible** in this visualization
- I can **clearly see** data features (for example, a minimum, or an outlier, or a trend) in this visualization

Group B

In a social media post, you see this visual representation of the characters of the first season of a TV show called "City of Whispers".
You liked the TV show and are interested in learning more about the characters' interactions.

City of Whispers: who exchanged secrets during season 2?

Who exchanged secrets with more people:

*
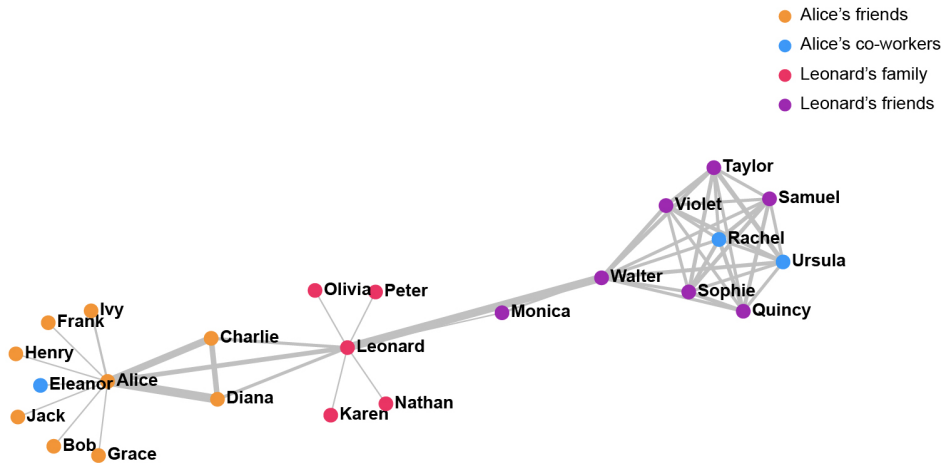
Please choose **only one** of the following:

◯ Ursula ●

◯ Monica ●

◯ Diana ●

◯ This visualization does not allow me to answer

Did **Walter**● exchange secrets directly with **Ursula**● during season 2?

*

Please choose **only one** of the following:

◯ Yes

◯ No

◯ This visualization does not allow me to answer

What was the topic of the data visualization you just read before?

*

Only answer this question if the following conditions are met:
(seqGB.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129795) == 2)

Please choose **only one** of the following:

◯ The interactions of characters exchanging secrets in a TV show

◯ A road network and between a city and surrounding villages

◯ Stars constellations as seen from the Southern hemisphere

◯ The organizational chart and employees at a small publishing company

You can go back to check again if you are not sure. You will have two opportunities to get this question correct.

Please read again this data visualization and proceed to the question using the "Next" button.

Only answer this question if the following conditions are met:
(seqGB.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129795) == 2) && (BTaskTopic.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129857) != "OK")

What was the topic of the data visualization you just read before?

*

Only answer this question if the following conditions are met:
(seqGB.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129795) == 2) && (BTaskTopic.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129857) != "OK")

Please choose **only one** of the following:

○ The interactions of characters exchanging secrets in a TV show

○ A road network and between a city and surrounding villages

○ Stars constellations as seen from the Southern hemisphere

○ The organizational chart and employees at a small publishing company

You can go back to check the content if you are not sure. This is your second attempt to get this question correct.

If you do not provide a correct answer, this survey will stop and we will ask you to return your submission.

Regarding the visualization above, to what degree do you agree or disagree with the following statements:

*

Only answer this question if the following conditions are met:
((BTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129857) == "OK") ||
(BTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129800) == "OK") || (seqGB.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129795) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
It is obvious for me how to read this visualization	○	○	○	○	○	○	○
I can easily understand how the data is represented in this visualization	○	○	○	○	○	○	○
I can easily understand this visualization	○	○	○	○	○	○	○

Regarding the visualization above, to what degree do you agree or disagree with the following statement:

*

Only answer this question if the following conditions are met:
((BTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129857) == "OK") ||
(BTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129800) == "OK") || (seqGB.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129795) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I don't find this visualization crowded	○	○	○	○	○	○	○
I don't find this visualization messy	○	○	○	○	○	○	○
I don't find parts of the visualization distracting	○	○	○	○	○	○	○

Regarding the visualization above, to what degree do you agree or disagree with the following statement:

*

Only answer this question if the following conditions are met:
((BTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129857) == "OK") ||
(BTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129800) == "OK") || (seqGB.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129795) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I can easily find specific elements in this visualization	○	○	○	○	○	○	○
I can easily identify relevant information in this visualization	○	○	○	○	○	○	○
I can easily retrieve information from this visualization	○	○	○	○	○	○	○
For attention check purposes, please select neutral with this item	○	○	○	○	○	○	○

Regarding the visualization above, to what degree do you agree or disagree with the following statement:

*

Only answer this question if the following conditions are met:
((BTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129857) == "OK") ||
(BTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129800) == "OK") || (seqGB.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129795) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I find data features (for example, a minimum, or an outlier, or a trend) visible in this visualization	○	○	○	○	○	○	○
I can clearly see data features (for example, a minimum, or an outlier, or a trend) in this visualization	○	○	○	○	○	○	○

If you wish, you can provide us with some comments about the rating questions you just answered and the visualization itself.

This question is not mandatory: just click "Next" or press "Enter" on your keyboard to skip it.

Only answer this question if the following conditions are met:
((BTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129857) == "OK") ||
(BTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10218/qid/129800) == "OK") || (seqGB.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129795) != 2))

Please write your answer here:

As a reminder, here is the list of rating questions you just answered:

- It is **obvious** for me how to read this visualization
- I can easily understand **how the data is represented** in this visualization
- I can **easily understand** this visualization
- I **don't** find this visualization **crowded**
- I **don't** find this visualization **messy**
- I **don't** find parts of this visualization **distracting**
- I can easily **find specific elements** in this visualization
- I can easily **identify relevant information** in this visualization
- I can easily **retrieve information** from this visualization
- I find data features (for example, a minimum, or an outlier, or a trend) **visible** in this visualization
- I can **clearly see** data features (for example, a minimum, or an outlier, or a trend) in this visualization

Group C

In a social media post, you see this visual representation of the characters of the first season of a TV show called "City of Whispers".
You liked the TV show and are interested in learning more about the characters' interactions.

City of Whispers: who exchanged secrets during season 3?

Who exchanged secrets with more people:

*
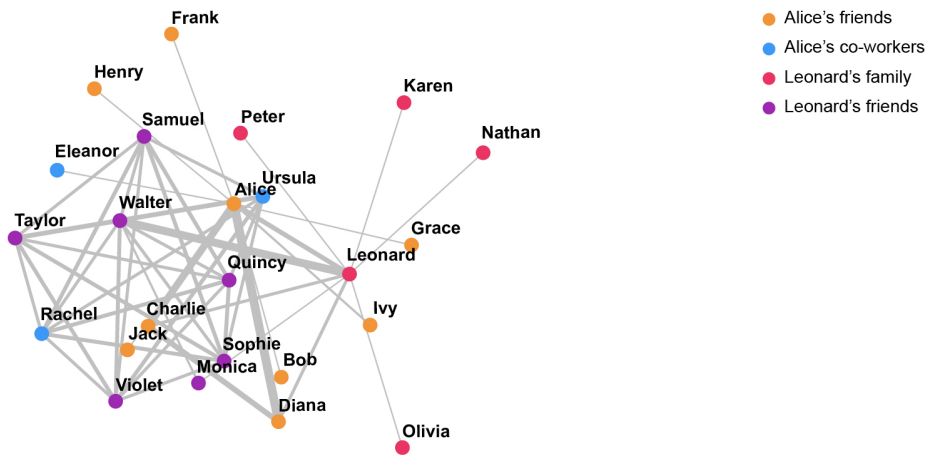
Please choose **only one** of the following:

○ Leonard ●

○ Samuel ●

○ Alice ●

○ This visualization does not allow me to answer

Did Alice ● exchange secrets directly with Taylor ● during season 3?

*

Please choose **only one** of the following:

○ Yes

○ No

○ This visualization does not allow me to answer

What was the topic of the data visualization you just read before?

*

Only answer this question if the following conditions are met:
(seqGC.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129826) == 2)

Please choose **only one** of the following:

○ The interactions of characters exchanging secrets in a TV show

○ A road network and between a city and surrounding villages

○ Stars constellations as seen from the Southern hemisphere

○ The organizational chart and employees at a small publishing company

You can go back to check again if you are not sure. You will have two opportunities to get this question correct.

Please read again this data visualization and proceed to the question using the "Next" button.

Only answer this question if the following conditions are met:
(seqGC.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129826) == 2) && (CTaskTopic.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129829) != "OK")

What was the topic of the data visualization you just read before?
*

Only answer this question if the following conditions are met:
(seqGC.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129826) == 2) && (CTaskTopic.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129829) != "OK")

Please choose **only one** of the following:

○ The interactions of characters exchanging secrets in a TV show

○ A road network and between a city and surrounding villages

○ Stars constellations as seen from the Southern hemisphere

○ The organizational chart and employees at a small publishing company

You can go back to check the content if you are not sure. This is your second attempt to get this question correct.

If you do not provide a correct answer, this survey will stop and we will ask you to return your submission.

Regarding the visualization above, to what degree do you agree or disagree with the following statements:
*

Only answer this question if the following conditions are met:
((CTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129829) == "OK") ||
(CTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129831) == "OK") || (seqGC.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129826) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
It is obvious for me how to read this visualization	○	○	○	○	○	○	○
I can easily understand how the data is represented in this visualization	○	○	○	○	○	○	○
I can easily understand this visualization	○	○	○	○	○	○	○

Regarding the visualization above, to what degree do you agree or disagree with the following statement:

*

Only answer this question if the following conditions are met:
((CTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129829) == "OK") || (CTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129831) == "OK") || (seqGC.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129826) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I don't find this visualization crowded	○	○	○	○	○	○	○
I don't find this visualization messy	○	○	○	○	○	○	○
I don't find parts of the visualization distracting	○	○	○	○	○	○	○
For attention check purposes, please select slightly agree with this item	○	○	○	○	○	○	○

Regarding the visualization above, to what degree do you agree or disagree with the following statement:

*

Only answer this question if the following conditions are met:
((CTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129829) == "OK") || (CTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129831) == "OK") || (seqGC.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129826) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I find data features (for example, a minimum, or an outlier, or a trend) visible in this visualization	○	○	○	○	○	○	○
I can clearly see data features (for example, a minimum, or an outlier, or a trend) in this visualization	○	○	○	○	○	○	○

Regarding the visualization above, to what degree do you agree or disagree with the following statement:

*

Only answer this question if the following conditions are met:
((CTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129829) == "OK") ||
(CTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129831) == "OK") || (seqGC.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129826) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I can easily find specific elements in this visualization	○	○	○	○	○	○	○
I can easily identify relevant information in this visualization	○	○	○	○	○	○	○
I can easily retrieve information from this visualization	○	○	○	○	○	○	○

If you wish, you can provide us with some comments about the rating questions you just answered and the visualization itself.

This question is not mandatory: just click "Next" or press "Enter" on your keyboard to skip it.

Only answer this question if the following conditions are met:
((CTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129829) == "OK") ||
(CTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129831) == "OK") || (seqGC.NAOK
(/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129826) != 2))

Please write your answer here:

As a reminder, here is the list of rating questions you just answered:

- It is **obvious** for me how to read this visualization
- I can easily understand **how the data is represented** in this visualization
- I can **easily understand** this visualization
- I **don't** find this visualization **crowded**
- I **don't** find this visualization **messy**
- I **don't** find parts of this visualization **distracting**
- I can easily **find specific elements** in this visualization
- I can easily **identify relevant information** in this visualization
- I can easily **retrieve information** from this visualization
- I find data features (for example, a minimum, or an outlier, or a trend) **visible** in this visualization
- I can **clearly see** data features (for example, a minimum, or an outlier, or a trend) in this visualization

Unfortunately, we cannot accept your submission

You failed twice in answering a question about the main topic of the data visualization you were asked to read.

We will ask that you return your submission by closing the survey and clicking 'Stop Without Completing' on Prolific. You can participate again later.

{1}

Please let us know if you encountered an issue while completing this survey. We will take it into account when reviewing your submission.

Please write your answer here:

Survey calibration

For calibration purposes, please answer these two questions about yourself.
The questions are not related to the visualizations you have seen before in the study.

These are the two last questions in this survey.

To what degree do you agree or disagree with the following statement:

*

Only answer this question if the following conditions are met:
((CTaskTopic.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129829) == "OK") || (CTaskTopicTryAgain.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10219/qid/129831) == "OK") || (seqGC.NAOK (/index.php/admin/questions/sa/view/surveyid/547474/gid/10178/qid/129826) != 2))

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I see myself as extraverted, enthusiastic.	○	○	○	○	○	○	○
I see myself as reserved, quiet.	○	○	○	○	○	○	○

Thank you!

Thank you for your interest and your participation in our survey.

If you have any questions or general comments, do not hesitate to contact us.

We wish you a nice day!

You may close this tab now.

Submit your survey.
Thank you for completing this survey.