Default Question Block

Improved Data Visualization for Data Understanding

Dear participant

Thank you for your interest in participating in this research. This letter explains what the research entails and how the research will be conducted. Please take time to read the following information carefully. If any information is not clear kindly ask questions using the contact details of the researchers provided at the end of this letter. If you have complaints about this study or survey please contact the University Utrecht with the following email address: klachtenfunctionaris-fetcsocwet@uu.nl.

WHAT THIS STUDY IS ABOUT?

- This study is about the Understanding of data visualization to investigate how students make choices based on the visualizations.
- Participants are selected based on a convenience sample.

WHAT DOES PARTICIPATION INVOLVE?

- Participation involves looking at data visualization tools and answering questions about it.

DO YOU HAVE TO PARTICIPATE?

- No, if you **do not want** to participate you do not have to participate in this study

- Please be aware that your participation in this study is entirely voluntary. You have the full right to withdraw from the study at any given time if you decide to do so. If at any point you feel uncomfortable or you prefer not to answer specific questions, you may choose not to without having to provide any reasons for your decision. There will be no consequences for withdrawing or not answering questions, and your decision will be respected without any impact on your current or future interactions with us.

ARE THERE ANY RISKS IN PARTICIPATING?

- There will not be any risk for participation. All your data will be anonymised.

ARE THERE ANY BENEFITS IN PARTICIPATING?

- Participation benefits the study of business understanding. This is relevant for researchers and businesses to understand how data visualization tools are interpreted.

- You will get a chocolate bar for participation.

HOW WILL INFORMATION YOU PROVIDE BE RECORDED, STORED AND PROTECTED?

- This survey will be done using Qualtrics, you do not have to provide a name and your data will be completely anonymised.

- The data will be stored according to GDPR rules of the University Utrecht and only the researchers and the professor will be able to access the data.

- This data will not be used for something else than this study

WHAT WILL HAPPEN TO THE RESULTS OF THE STUDY?

- The results of this study will be used in a report for the course Advanced Research Methods of the University of Utrecht.

INFORMED CONSENT FORM

- By clicking ahead, you acknowledge that you have read the informed consent form provided, understand its contents, and agree to participate in the study under the conditions it outlines. Clicking to proceed indicates your initial consent to participate.
- Please remember that this consent is ongoing and that you have the right to withdraw from the study at any time without any consequences. Your decision to participate is completely

voluntary, and you are free to choose not to answer any questions or to stop participating altogether at any point during the study.

WHO SHOULD YOU CONTACT FOR FURTHER INFORMATION?

[Friso Stolk : f.r.p.stolk@students.uu.nl](mailto:f.r.p.stolk@students.uu.nl) Janus Roestenburg Phillipp Hinzman Rea Gupta

Do you give consent to this study?

○ No
○ Yes

Demographics

What is your gender?

○ Male
○ Female
○ Non-binary / third gender
○ Prefer not to say

What is your highest education? (current counts)

○ High school
○ Bachelors
○ Masters

What is your field of your study?

○ Natural Sciences
○ Social Sciences
○ Humanities
○ Engineering and Technology
○ Health and Medicine
○ Arts and Fine Arts
○ Business and Management
○ Education
○ Law and Criminal Justice
○ Agriculture and Environmental Science
○ Other

Complex visualization 1

The following visualizations show information about the stock price of the company Alphabet Inc. in the year 2023. Green bars indicate that the stock price increased for a specific date, and red bars indicate a decrease. The length of vertical lines indicates the range between the max and the minimum values for the stock.

By comparing the number of dwellings sold and the average purchase price of homes, evaluate whether the following statement is true or false: "Provinces with a low volume of properties sold, also have higher purchase prices."

○ True
○ False

By comparing the number of dwellings sold and the average purchase price of homes, along with the price index yearly, evaluate whether the following statement is true or false. "A decrease in the volume of houses sold has led to a decrease in property value."

○ True
○ False

Evaluate your agreement with the following statement. Based on the housing index over the past five years, the Dutch housing market has shown growth

○ True
○ False

I was confident answering these questions

○ Not confident at all
○ Not confident
○ Neither confident or unsure
○ Somewhat confident
○ Confident
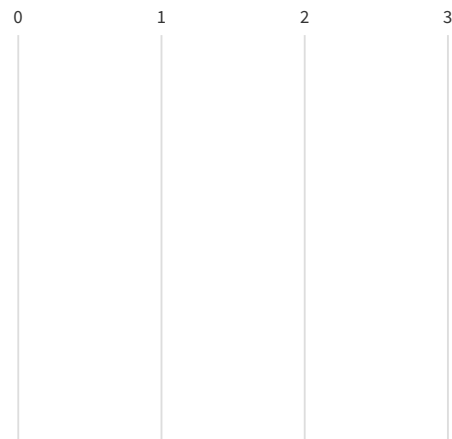
I was satisfied using this visualization

○ Very dissatisfied
○ Dissatisfied
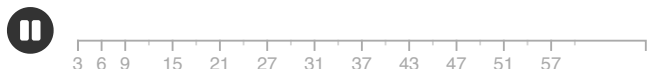○ Neither dissatisfied or satisfied
○ Satisfied

◯ Very satisfied

Complex visualization 2

In the upcoming visualization, you will be presented with an overview of the 2022-2023 Premier League season, focusing specifically on the team standings at the midway point. Following this visual representation, your task will be to analyze and predict the final championship rankings, arranging the top 5 teams according to their performance by the end of the season.

0   1   2   3

3

Total: 28

3 6 9   15   21   27   31   37   43   47   51   57

🌟 **A Flourish bar chart race**

Set the Premier league season 2022-2023 on the correct order.

Arsenal

Liverpool

Newcastle United

Manchester United

Manchester City

How many points do you think Aston Villa will have at the end of the season?

[   ]

I was confident answering these questions

○ Not confident at all
○ Not confident
○ Neither confident or unsure
○ Somewhat confident
○ Confident

I was satisfied using this visualization

○ Very dissatisfied
○ Dissatisfied
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○ Satisfied
○ Very satisfied

Complex visualization 3&4

The plots below provide information about 'Average Salary (in USD)' for people working in Data Jobs. Salary is given based on experience-level, working setting as well as the Country where the company is located.

While working 'Remotely' which Experience-level earns the highest 'Average Salary(USD)'

○ Executive
○ Senior
○ Mid-Level
○ High-level

Rank the following countries on the basis of the 'Average Salary in USD'. (Highest to Lowest).

New Zealand

USA

Australia

Canada

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complex visualization 5

The following visualizations show information about the stock price of the company Alphabet Inc. in the year 2023. Green bars indicate that the stock price increased for a specific date, and red bars indicate a decrease. The length of vertical lines indicates the range between the max and the minimum values for the stock.

In which financial quarter of the year 2023 did Alphabet Inc. stock show the best performance based on the increase in price between the start of the quarter and the end of the quarter?

○ Q1
○ Q2
○ Q3
○ Q4

Comparing the months of February and October, which month had the highest market volatility?

○ February
○ October

Which one of the following options would have yielded a higher return on investment? Purchasing stock at the start of January and selling it at the start of February or purchasing stock at the start of November and selling it at the end of December.

○ January-February
○ November-December

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Complex visualization 6

The data set contains the records of the yellow taxi cabs in New York City. Every ride is saved and provides information about pick-up

& drop-off location, time, amount of passengers and fare amount, etc. This graph visualises the amount of taxi rides per day of the month November 2022.

When looking at the visualisations, which day is the has the highest amount of taxi rides?

◯ 3rd of November
◯ 10th of November
◯ 12th of November

When looking at the visualisation, which day do you think is a public holiday?

◯ 8th of November
◯ 29th of November
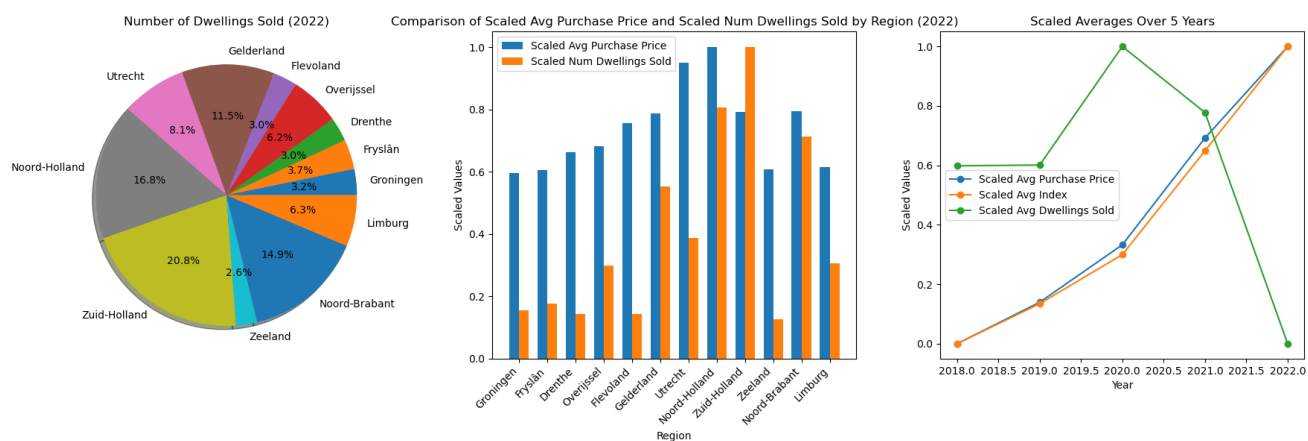◯ 24th of November

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I was satisfied using this visualization

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Simple visualization 1

The following visualization provides information on the Dutch housing market for the years 2018 to 2022. The metrics displayed are average selling price, number of dwellings sold, and price index. The price index is calculated by the Centraal Bureau voor Statistiek (Statistics Netherlands) and measures change in the price of housing compared to a previous measurement period, with positive values indicating an increase in prices, and negative a decrease.

By comparing the number of dwellings sold and the average purchase price of homes, evaluate whether the following statement is true or false: "Provinces with a low volume of properties sold, also have higher purchase prices."

○ True
○ False

By comparing the number of dwellings sold and the average purchase price of homes, along with the price index yearly, evaluate whether the following statement is true or false. "A decrease in the volume of houses sold has led to a decrease in property value."

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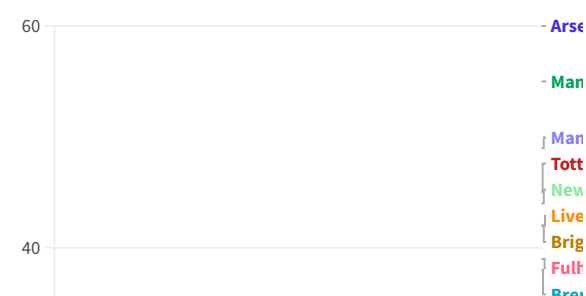
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40   Fulh
                                                    Bre

☀ A Flourish chart

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Simple visualization 3 &4

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Experience Level	Work Setting	Average Salary (USD)
Entry-level	Hybrid	67,230.75
Entry-level	In-person	103,220.15
Entry-level	Remote	77,574.60
Executive	Hybrid	148,265.50
Executive	In-person	180,720.78
Executive	Remote	203,000.38
Mid-level	Hybrid	87,776.70
Mid-level	In-person	126,085.13
Mid-level	Remote	105,439.65
Senior	Hybrid	112,889.84
Senior	In-person	165,689.86
Senior	Remote	157,708.09

Average Salary in USD by Company Locations

While working 'Remotely' which Experience-level earns the highest 'Average Salary(USD)'

○ Executive
○ Senior
○ Mid-level
○ Entry-level

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Powered by Qualtrics