



جامعة مصر للمعلوماتية
EGYPT UNIVERSITY
OF INFORMATICS

Egypt University of Informatics
Computer and Information Systems
Data Analysis Course

The Impact of Question Wording on Survey

Submitted by: Omar Mohamed Elsaid Wafa 23-101281

19/3/2025

Introduction

The way a question is worded in a survey can significantly influence how respondents interpret and answer it. This study explores the impact of question wording on survey responses, specifically analyzing whether more direct or more complex phrasing affects participants' answers. By understanding this phenomenon, we can enhance survey reliability, reduce response biases, and improve data quality in various research fields.

Research Question

Does the wording of survey questions influence the way respondents perceive and answer them?

Hypothesis

We hypothesize that respondents will provide different answers to similarly structured questions based on the wording's complexity, emotional intensity, and framing.

Population of Interest:

Students of Computing and Information Sciences at Egypt University of Informatics

(approximately 450 Person)

Sampling Method:

The survey used a convenience sampling method by sharing the form link in CIS groups for all four levels at EUI. This approach was chosen for its accessibility and quick data collection.

Bias Identification:

In designing this survey, we have taken steps to identify and minimize potential sources of bias. define your own bias and how you made sure it didn't leak into your questions.

Survey Questions:

[Do you think the wording of a question can influence how people respond?]

[Which of the following factors do you think has the most influence on survey responses?]

[Have you ever felt that a survey question was designed to push a specific answer?]

[How satisfied are you with your life in general? Vs How happy and fulfilling is your life right now?]

[To what extent do you doubt the news you read? Vs To what extent do you doubt mainstream media, which has been criticized for misinformation?]

[In your opinion, how many hours does the average person spend on social media daily? Vs Considering how addictive social media has become, how many hours do you think the average person wastes on social media daily?]

[Which statement do you agree with more? (Climate change is a global issue that requires attention .- The climate crisis is a disaster, and governments must act immediately!)]

[How urgent do you think climate change topic is?]

[Which statement do you agree with more? (How reliable is scientific research? - How much do you trust scientific studies, given that many are influenced by corporate funding?)]

[How reliable do you think scientific research is?]

Online survey link: <https://forms.gle/4z2cD2FgbiskMX9q9>

Number of samples collected: 62

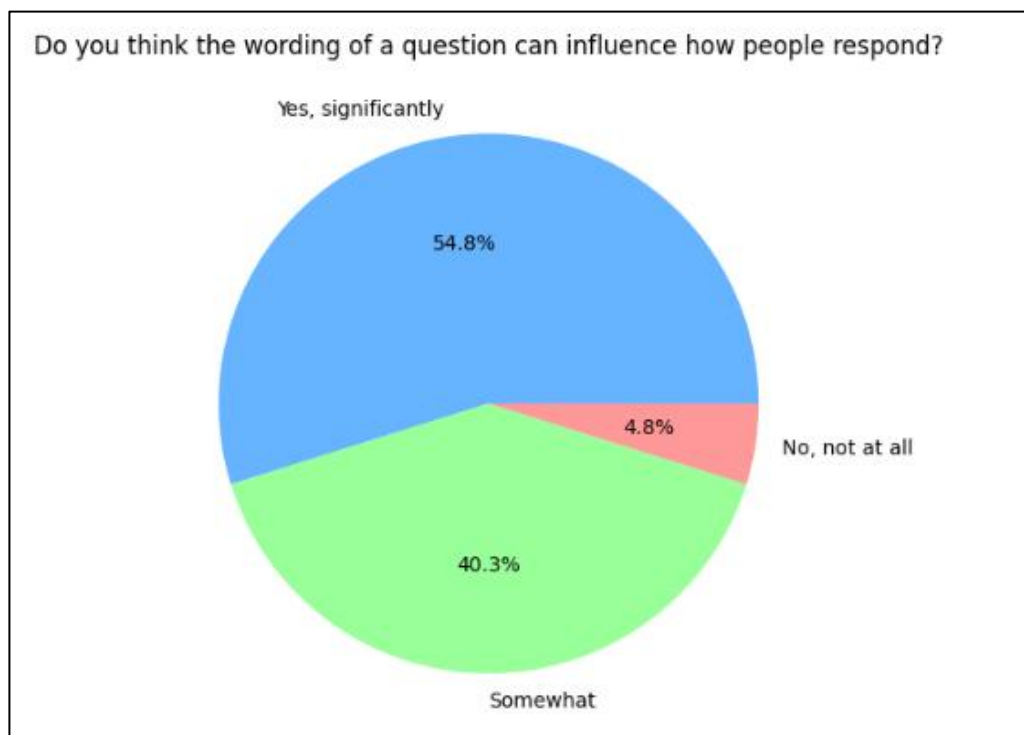
Analysis:

We assume that question wording can influence survey responses, affecting reliability and validity. This study compares responses to differently worded questions to assess their impact. Using statistical methods like frequency analysis, mean, median, and visualizations, we analyze variations in answers to determine how wording shapes survey results.

Q1) [Do you think the wording of a question can influence how people respond?] (categorical)

	count
Do you think the wording of a question can influence how people respond?	
Yes, significantly	34
Somewhat	25
No, not at all	3

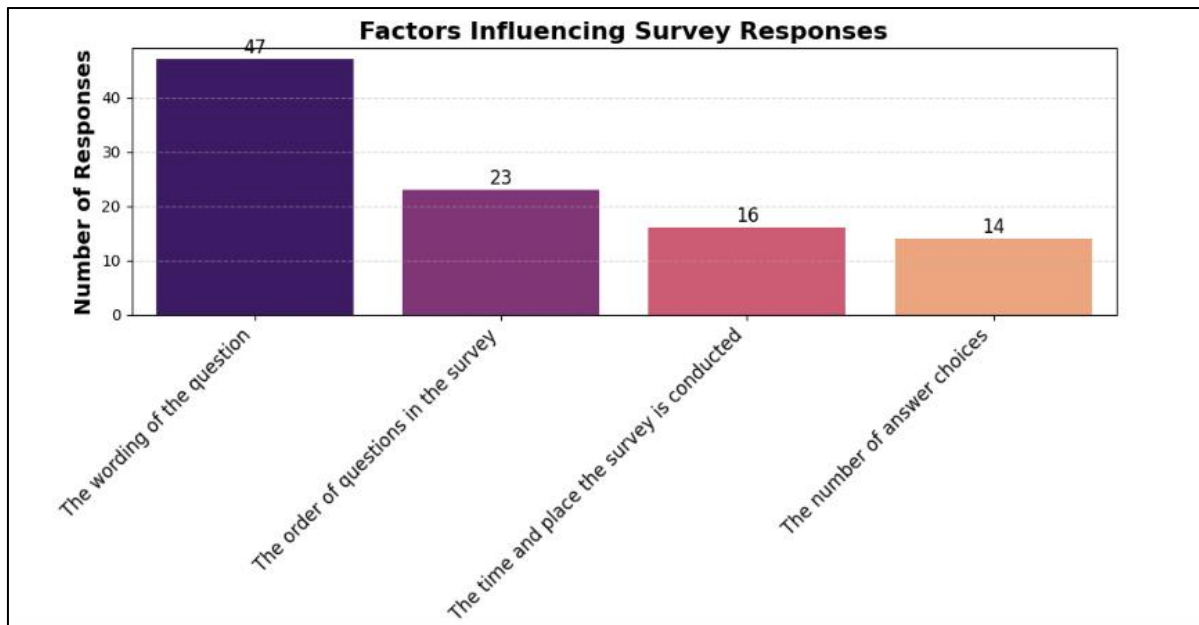
dtype: int64



This analysis presents both a frequency table and a pie chart to illustrate respondents' opinions on whether question wording influences survey answers. The frequency table shows that the majority (**34**) believe it significantly affects responses, while **25** think it has some impact, and only **3** respondents believe it has no effect. The pie chart visually represents these proportions, with **54.8%** selecting "**Yes, significantly,**" **40.3%** choosing "**Somewhat,**" and **4.8%** responding "**No, not at all.**"

The **frequency table** provides precise numerical data for comparison, while the **pie chart** effectively visualizes the categorical distribution as parts of a whole.

Q2) [Which of the following factors do you think has the most influence on survey responses?] (categorical)



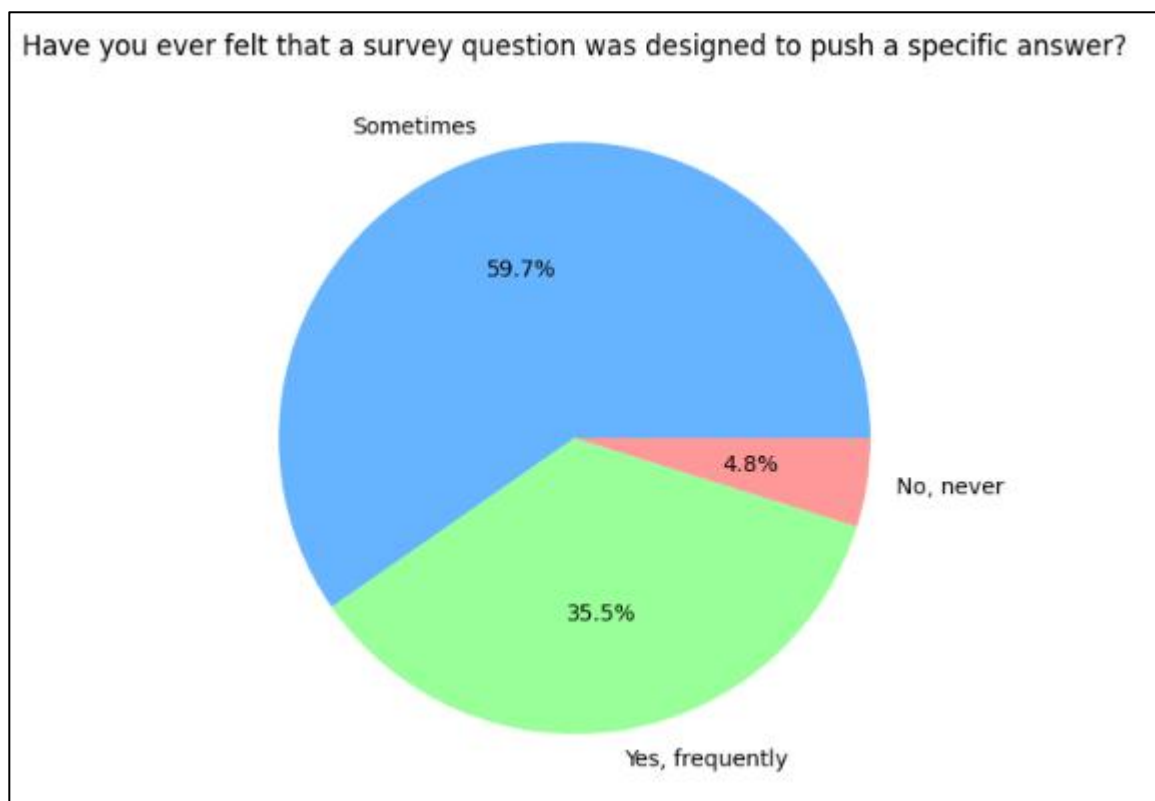
This analysis explores the factors influencing survey responses. The frequency data shows that **"The wording of the question"** was the most cited factor, with **47** responses. **"The order of questions in the survey"** was mentioned by 23 respondents, while **"The time and place the survey is conducted"** and **"The number of answer choices"** received 16 and 14 responses, respectively.

A **bar chart** was chosen because it effectively displays categorical data, making it easy to compare the number of responses for each factor and highlight the most influential elements.

Q3) [Have you ever felt that a survey question was designed to push a specific answer?] (categorical)

Have you ever felt that a survey question was designed to push a specific answer?		count
Sometimes		37
Yes, frequently		22
No, never		3

dtype: int64



This analysis examines whether respondents have ever felt that a survey question was designed to push a specific answer. According to the frequency table, **37** participants (**59.7%**) responded with "**Sometimes**," while **22** respondents (**35.5%**) answered "**Yes, frequently**." Only **3** participants (**4.8%**) stated that they had never felt this way.

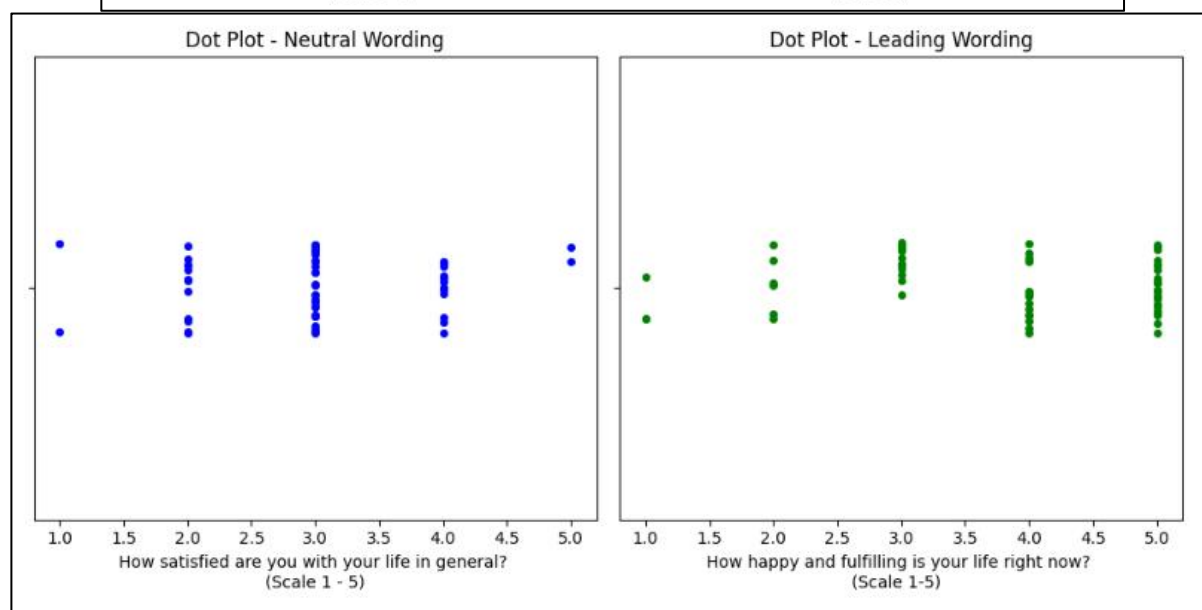
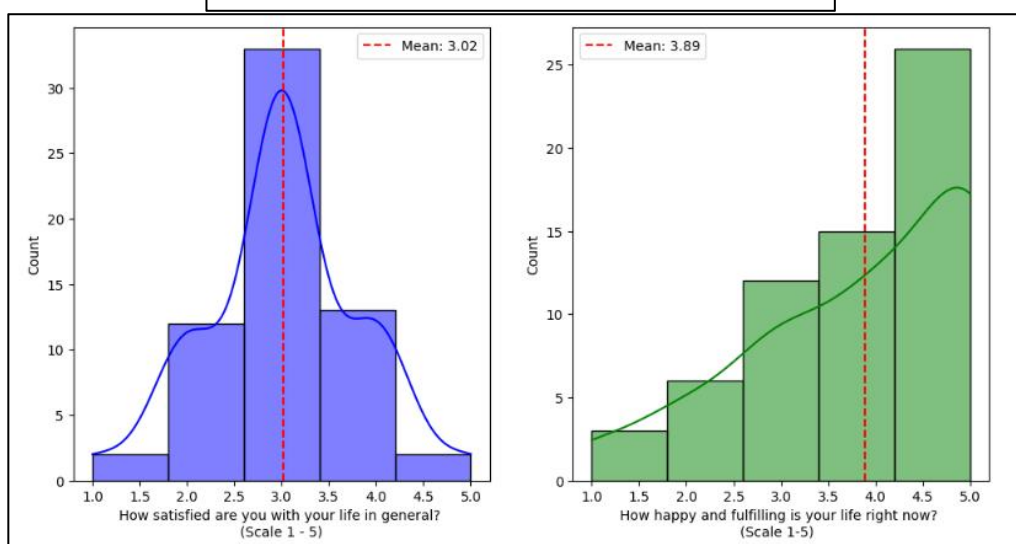
The **frequency table** provides precise numerical data for comparison, while the **pie chart** effectively visualizes the categorical distribution as parts of a whole.

Q4 - Q5) [How satisfied are you with your life in general?] and [How happy and fulfilling is your life right now?]

To examine the impact of question wording on survey responses, we included two variations of a question about life satisfaction. The first question, **"How satisfied are you with your life in general?"**, is neutrally worded, allowing respondents to assess their lives without any emotional influence. In contrast, the second question, **"How happy and fulfilling is your life right now?"**, uses more positive and emotionally charged terms, which could potentially lead respondents to view their lives more favorably. By comparing the responses to these two questions, we aim to determine whether the wording affects how people perceive and report their life satisfaction.

```
First Table - Normal Question 1:
How satisfied are you with your life in general? \n(Scale 1 - 5)
1      2
2     12
3     33
4     13
5      2
Name: count, dtype: int64
Mean: 3.02, Median: 3.0, Mode: 3

Second Table - Wordy Question 1:
How happy and fulfilling is your life right now? \n(Scale 1-5)
1      3
2      6
3     12
4     15
5     26
Name: count, dtype: int64
Mean: 3.89, Median: 4.0, Mode: 5
```



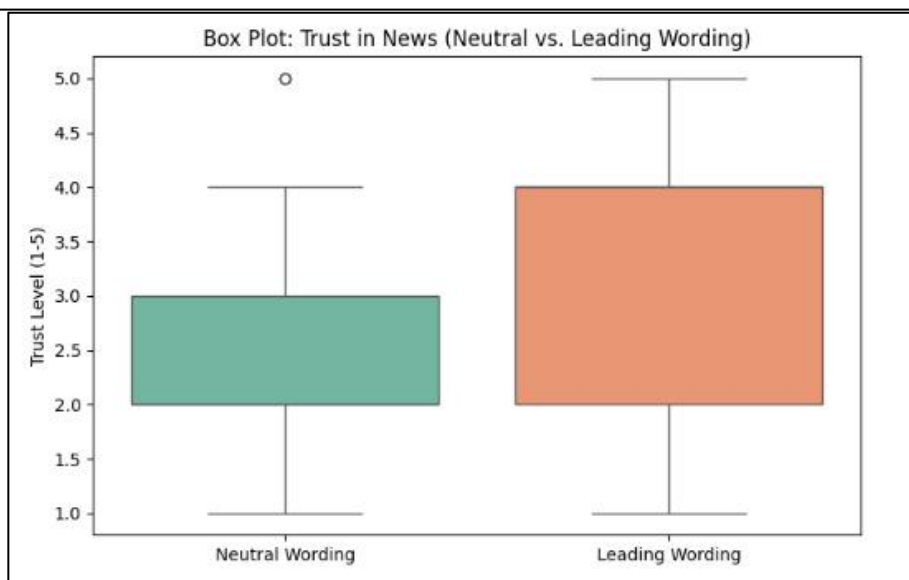
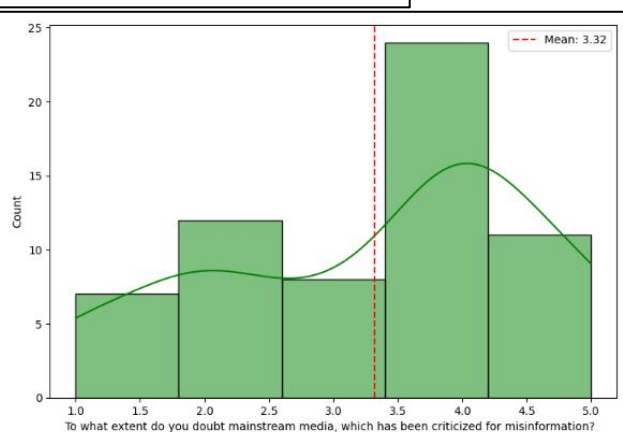
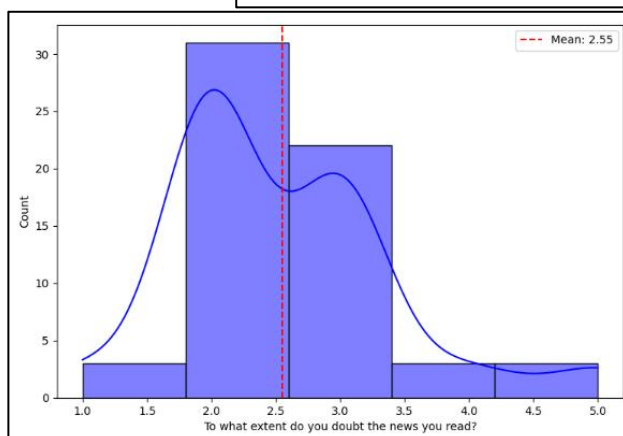
The **table** and **histogram** illustrate responses to a **neutrally worded** question about life satisfaction, showing a **mean of 3.02**, a **median of 3.0**, and a **mode of 3**. The second set, with a more **leading** question, resulted in a **higher mean of 3.89**, a **median of 4.0**, and a **mode of 5**. The **dot plots** further emphasize the shift, with responses clustering around higher satisfaction levels when the question was more positively framed.

Q6 - Q7) [To what extent do you doubt the news you read?] and [To what extent do you doubt mainstream media, which has been criticized for misinformation?]

To examine the impact of question wording on survey responses, we included two variations of a question about media skepticism. The first question, **"To what extent do you doubt the news you read?"**, is neutrally worded, allowing respondents to express their level of skepticism without any bias. In contrast, the second question, **"To what extent do you doubt mainstream media, which has been criticized for misinformation?"**, includes a leading phrase that frames mainstream media in a negative light, potentially influencing respondents to express stronger doubts. By comparing responses to these two questions, we aim to determine whether the wording shapes people's perceptions and reported skepticism toward the media.

```
First Table - Normal Question 2:
To what extent do you doubt the news you read?
1      3
2     31
3     22
4      3
5      3
Name: count, dtype: int64
Mean: 2.55, Median: 2.0, Mode: 2

Second Table - Wordy Question 2:
To what extent do you doubt mainstream media, which has been criticized for misinformation?
1      7
2     12
3      8
4     24
5     11
Name: count, dtype: int64
Mean: 3.32, Median: 4.0, Mode: 4
```



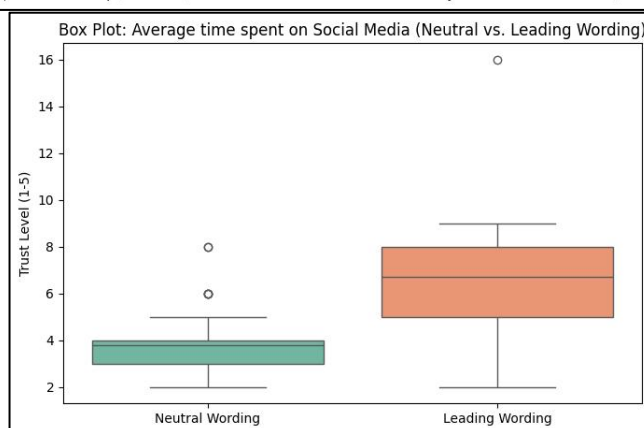
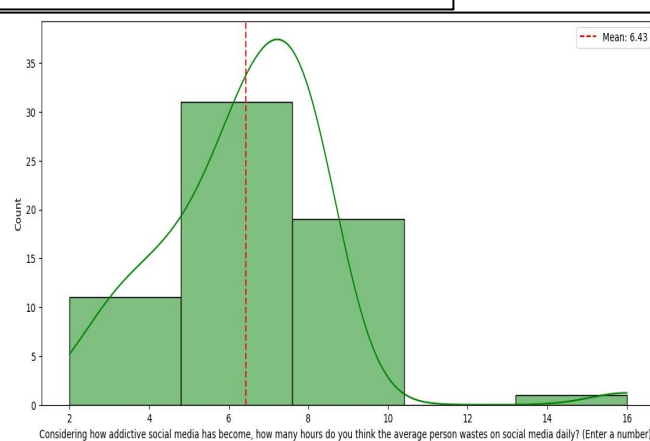
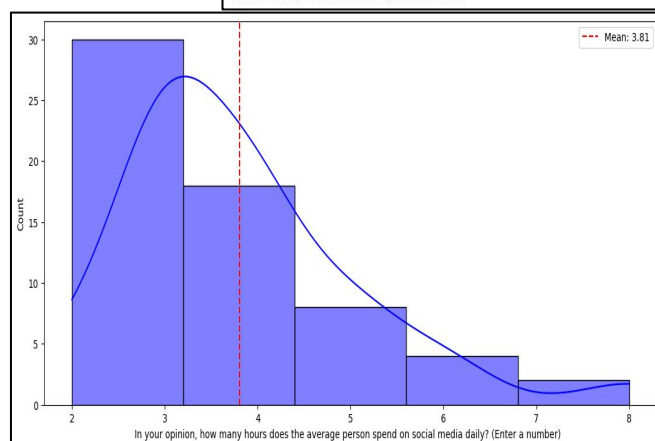
The **table** and **histogram** illustrate responses to a **neutrally worded question** about media skepticism, showing a **mean of 2.55**, a **median of 2.0**, and a mode of 2. The second set, with a more **leading question** that emphasizes misinformation, resulted in a **higher mean of 3.32**, a **median of 4.0**, and a **mode of 4**. The **box plot** further emphasizes this shift, with responses clustering around higher skepticism levels when the question was more negatively framed.

Q8 - Q9) [how many hours does the average person spend on social media daily?] and [Considering how addictive social media has become, how many hours do you think the average person wastes on social media daily?]

To examine the impact of question wording on survey responses, we included two variations of a question about social media usage. The first question, **"How many hours does the average person spend on social media daily?"**, is neutrally worded, allowing respondents to provide an estimate without any implicit judgment. In contrast, the second question, **"Considering how addictive social media has become, how many hours do you think the average person wastes on social media daily?"**, includes a leading phrase that frames social media as addictive and time-wasting, potentially influencing respondents to give higher estimates.

```
First Table - Normal Question 3:
In your opinion, how many hours does the average person spend on social media daily? (Enter a number)
2.000000    5
3.000000   25
3.007018    5
4.000000   13
5.000000    8
6.000000    4
8.000000    2
Name: count, dtype: int64
Mean: 3.81, Median: 3.81, Mode: 3.0

Second Table - Wordy Question 3:
Considering how addictive social media has become, how many hours do you think the average person wastes on social media daily? (Enter a number)
2.000000    1
3.000000    5
4.000000    5
5.000000    7
6.000000    7
6.428571    6
7.000000   11
8.000000   18
9.000000    1
16.000000    1
Name: count, dtype: int64
Mean: 6.43, Median: 6.71, Mode: 8.0
```



The **first table** and **histogram** illustrate responses to a **neutrally worded question** about social media usage, showing a **mean of 3.81**, a **median of 3.81**, and a **mode of 3**. The second set, with a **more leading question** that framed social media as addictive, resulted in a **higher mean of 6.43**, a **median of 6.71**, and a **mode of 8**. The **box plot** further emphasizes this shift, with a wider spread and higher estimates when the question was negatively framed.

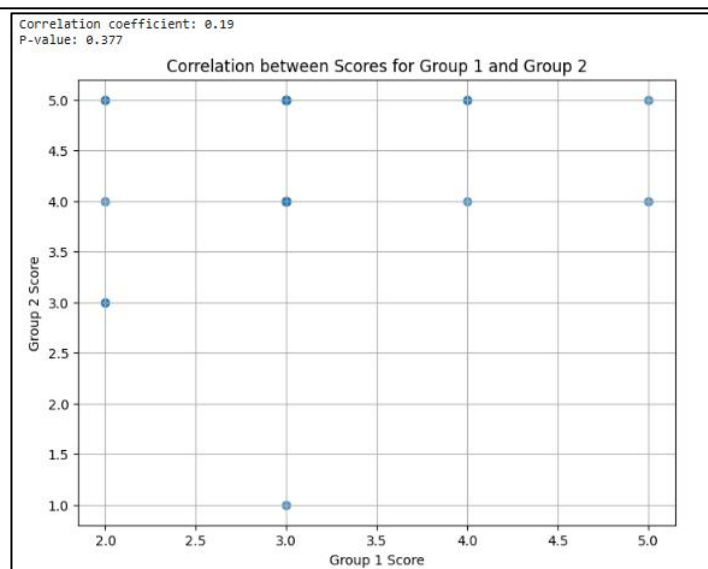
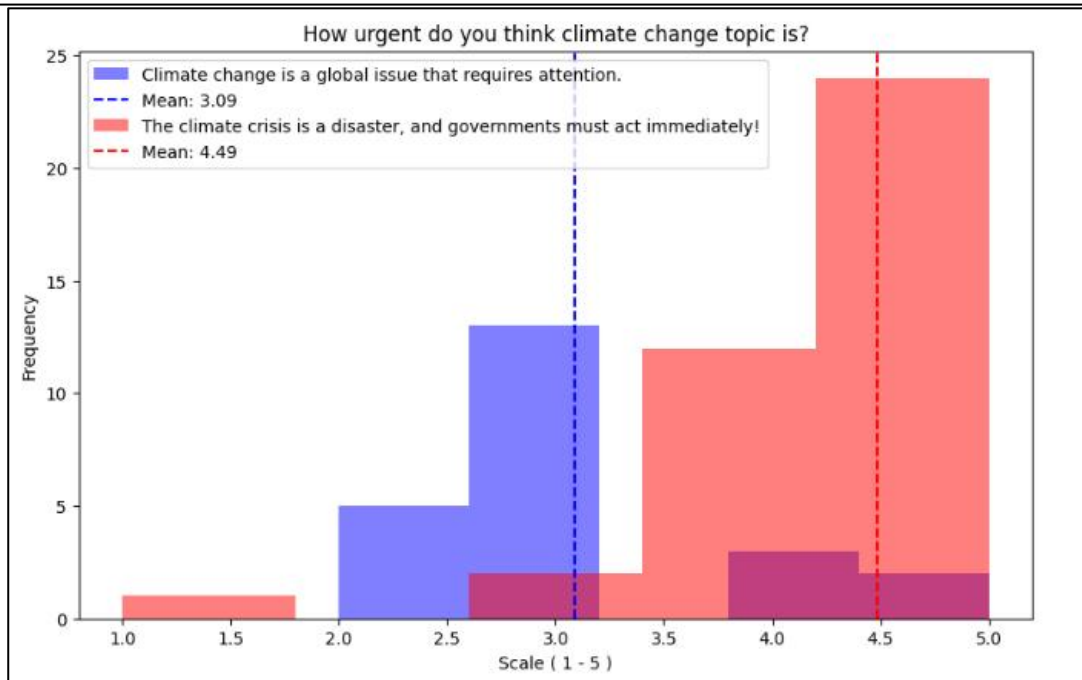
Q10) Which statement do you agree with more?

- Climate change is a global issue that requires attention.
- The climate crisis is a disaster, and governments must act immediately!

Q11) How urgent do you think climate change topic is?

To examine the impact of question framing on perceptions of climate change, we divided the sample into **two groups** based on their responses. One group selected the **neutral statement**, "Climate change is a global issue that requires attention," while the other chose the more **urgent and emotionally charged statement**, "The climate crisis is a disaster, and governments must act immediately!" By comparing the mean values for each group, we aim to explore whether the wording of the question influences respondents' perspectives and reported attitudes toward climate change.

Group 1 (Climate change is a global issue that requires attention.) - Mean: 3.0869565217391304
Group 2 (The climate crisis is a disaster, and governments must act immediately!) - Mean: 4.487179487179487
Group 1 (Climate change is a global issue that requires attention.) - Median: 3.0
Group 2 (The climate crisis is a disaster, and governments must act immediately!) - Median: 5.0
Group 1 (Climate change is a global issue that requires attention.) - Mode: [3]
Group 2 (The climate crisis is a disaster, and governments must act immediately!) - Mode: [5]



The **histogram** and **summary statistics** highlight how question framing influences perceptions of climate change urgency. Respondents who endorsed the **neutral statement** had **lower central tendency values (mean = 3.09)**, indicating a **more moderate stance**, while those agreeing with the **urgent statement** showed **higher values (mean = 4.49)**, reflecting a **stronger sense of urgency**.

The **scatter plot** shows a **positive correlation** between Group 1 and Group 2 scores, with a correlation coefficient of 0.19. However, the p-value of 0.377, suggesting only a weak association. While individuals with higher scores in one group tend to have slightly higher scores in the other.

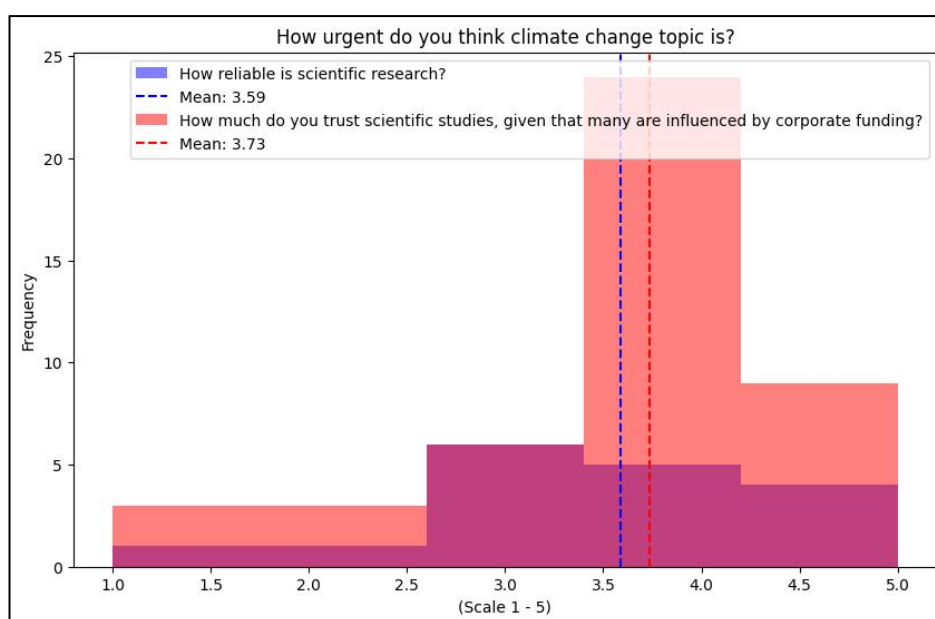
Q12) Which statement do you agree with more?

- How reliable is scientific research?
- How much do you trust scientific studies, given that many are influenced by corporate funding?

Q13) How reliable do you think scientific research is?

To examine the impact of question framing on perceptions of scientific research, we divided participants into two groups based on which statement they agreed with more. One group selected the neutral statement, “**How reliable is scientific research?**”, while the other chose the more leading statement, “**How much do you trust scientific studies, given that many are influenced by corporate funding?**” By comparing the mean values for each group, we aim to explore whether mentioning corporate influence affects respondents’ trust in scientific studies. We then followed up with “**How reliable do you think scientific research is?**” to measure participants’ overall confidence in the reliability of scientific research.

```
Group 1 (How reliable is scientific research?) - Mean: 3.588235294117647
Group 2 (How much do you trust scientific studies, given that many are influenced by corporate funding?) - Mean: 3.7333333333333334
Group 1 (How reliable is scientific research?) - Median: 4.0
Group 2 (How much do you trust scientific studies, given that many are influenced by corporate funding?) - Median: 4.0
Group 1 (How reliable is scientific research?) - Mode: [3]
Group 2 (How much do you trust scientific studies, given that many are influenced by corporate funding?) - Mode: [4]
```



The **histogram** and **summary statistics** highlight how question framing influences perceptions of climate change urgency. Respondents who endorsed the **neutral** statement had **lower central tendency values (mean = 3.59)**, indicating a **more moderate stance**, while those agreeing with the **urgent** statement showed **higher values (mean = 3.73)**, reflecting a **stronger sense of urgency**.

Conclusion

As we saw in the previous questions, all values were larger in the leading-wording question, demonstrating how framing influences respondents' perceptions. The emotionally charged or skeptical wording consistently led to higher reported levels of concern and urgency, particularly in topics like climate change and trust in scientific research.

For instance, when climate change was framed as a crisis requiring immediate action, respondents expressed a stronger sense of urgency compared to those who responded to the neutral statement. Similarly, skepticism introduced in questions about scientific research influenced trust levels, highlighting how wording can shape public opinion.

Additionally, the correlation analysis showed a weak positive relationship ($r = 0.19$, $p = 0.377$) between responses from the two groups, indicating that while some alignment exists, framing effects vary among individuals. These findings emphasize the importance of question design in surveys to minimize bias and accurately capture public attitudes.

Moving forward, further research can explore how different demographic factors influence sensitivity to question framing and how these effects translate into real-world decision-making in policy, education, and public discourse.

Any potential issues