

Scientific English

Chapter 02

Initiation to Scientific Article Writing

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Type of articles in research

Original
research
article

Review
article

Book review

Clinical
study report

Data report

What are the main sections of a scientific article?

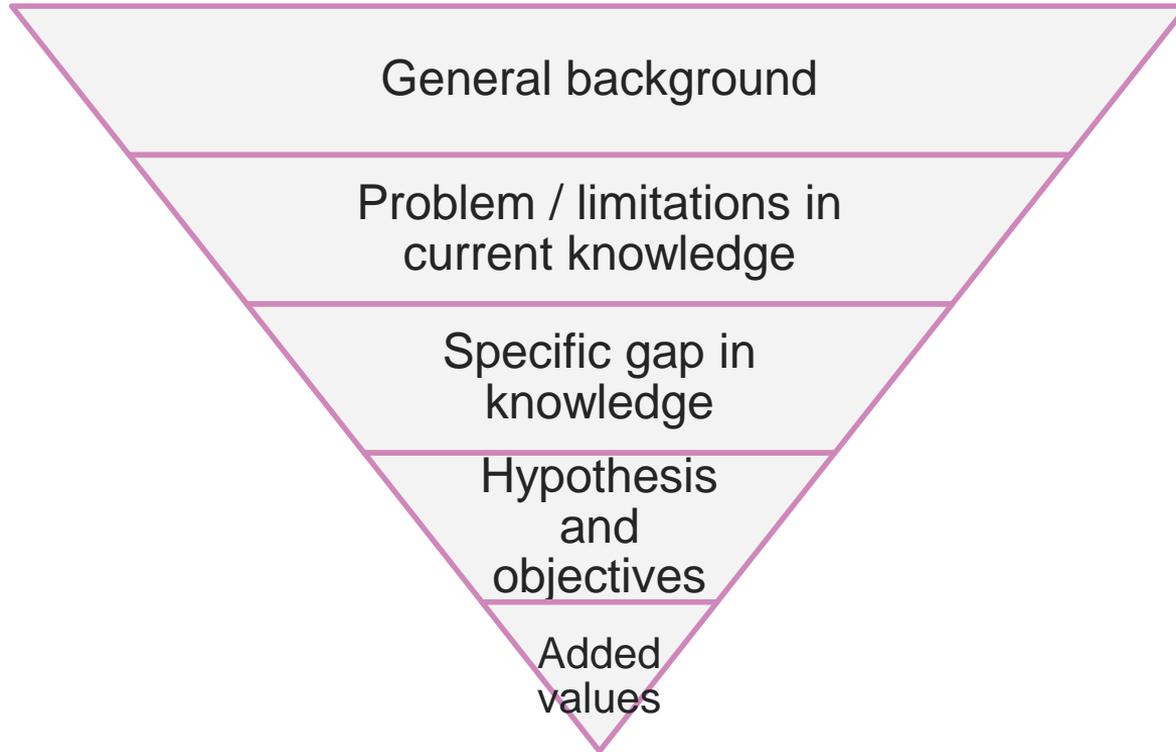
The vast majority of scientific journals follow the so-called “**IMRAD**” format.



you should always check the instructions for authors of the journal where you plan to submit your paper to ensure that this is indeed the recommended format.



The introduction section

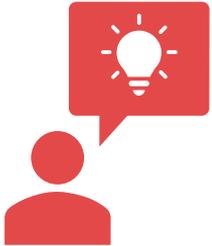
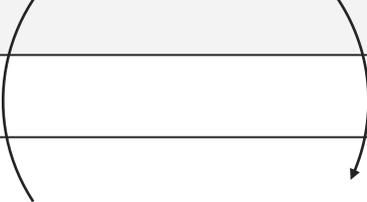




Feature	Example
Background describing what is known on the subject	Percutaneous coronary intervention is the cornerstone of therapy for acute coronary syndromes, but may be associated with procedure-related complications
What is not known?	It remains unknown whether. . .
What elements are still subject to controversy?	To date, it has not been proven. . .
What is the exact gap in the knowledge that your study hopes to fill?	No study to date has investigated the effect of. . .
Cite any existing data, especially conflicting data that indicate uncertainty	There are few data to quantify. . . The effect of. . . on. . . remains unclear
Objective (working hypothesis)	We hypothesized that the administration of. . . would reduce/increase. . . in the context of.
Cite the exact parameter you plan to measure	We aimed to identify/assess/evaluate/investigate. . .

the tense to use when writing your introduction section.

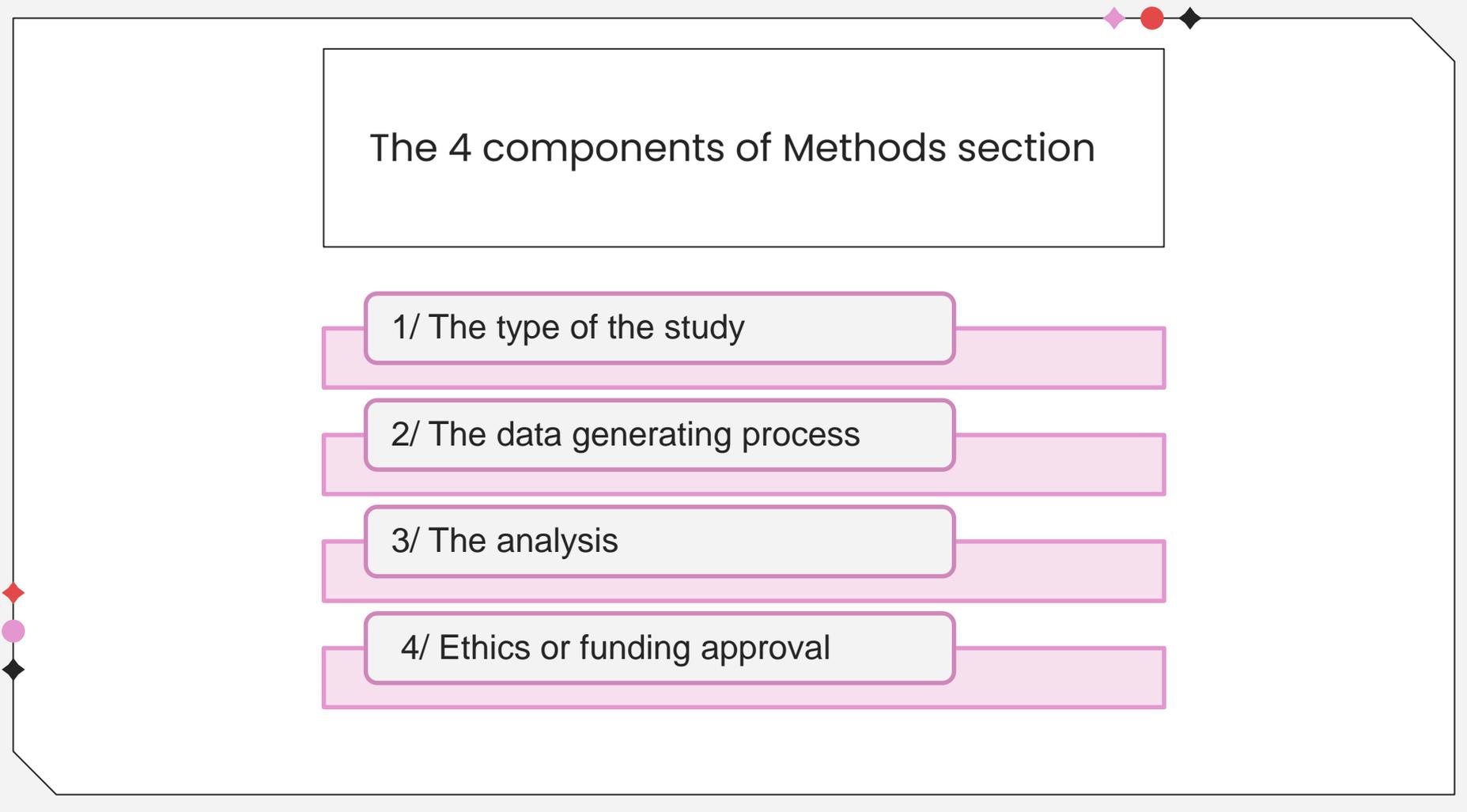
Aim	Tense	Example
To describe the current state of knowledge	Present	Cancer is a common disease
To describe observations previously published by others	Past	Smith et al. showed that drug A reduced the rate of death, whereas drug B did not.....
To describe a process that began at some unspecified time in the past, and is not yet complete	Present perfect	Several researchers have investigated the effect of drug A on this disease
To describe something that has not happened yet	Present perfect	It has not yet been determined whether. . .
To formulate your objective	Past tense	We aimed to measure. . .



The Methods section

The objective of the methods section is to describe exactly what you did, and how. There must be a method described for every result you intend to include in your results section.





The 4 components of Methods section

1/ The type of the study

2/ The data generating process

3/ The analysis

4/ Ethics or funding approval



1/ the type of the study

- What method did you use ?

Was it an experiment ? Was it quantitative / qualitative analysis ?

- Justify the choice of method
- Use some citations to others

2/ data generating process

- How did you get your data?
- Explain the methods used to collect that data

3/ the analysis

- What tools did you use to interrogate the data?
- What type of analysis was?
- Justify the analytical approach
- Add citations of who had similar data

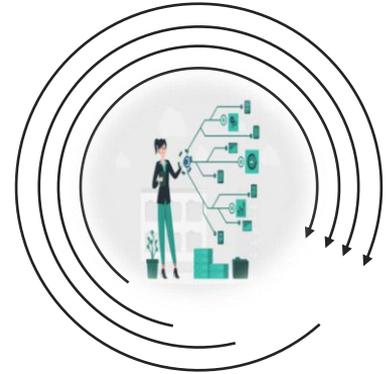


4/ ethics / Fundings approval

Tense used in this section is : **past simple** and sometimes **present simple** when describing a research design in general terms



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Result section

The results (or findings) section is one of the most important parts of a research paper, in which you report the findings of your study in connection to your research question(s).



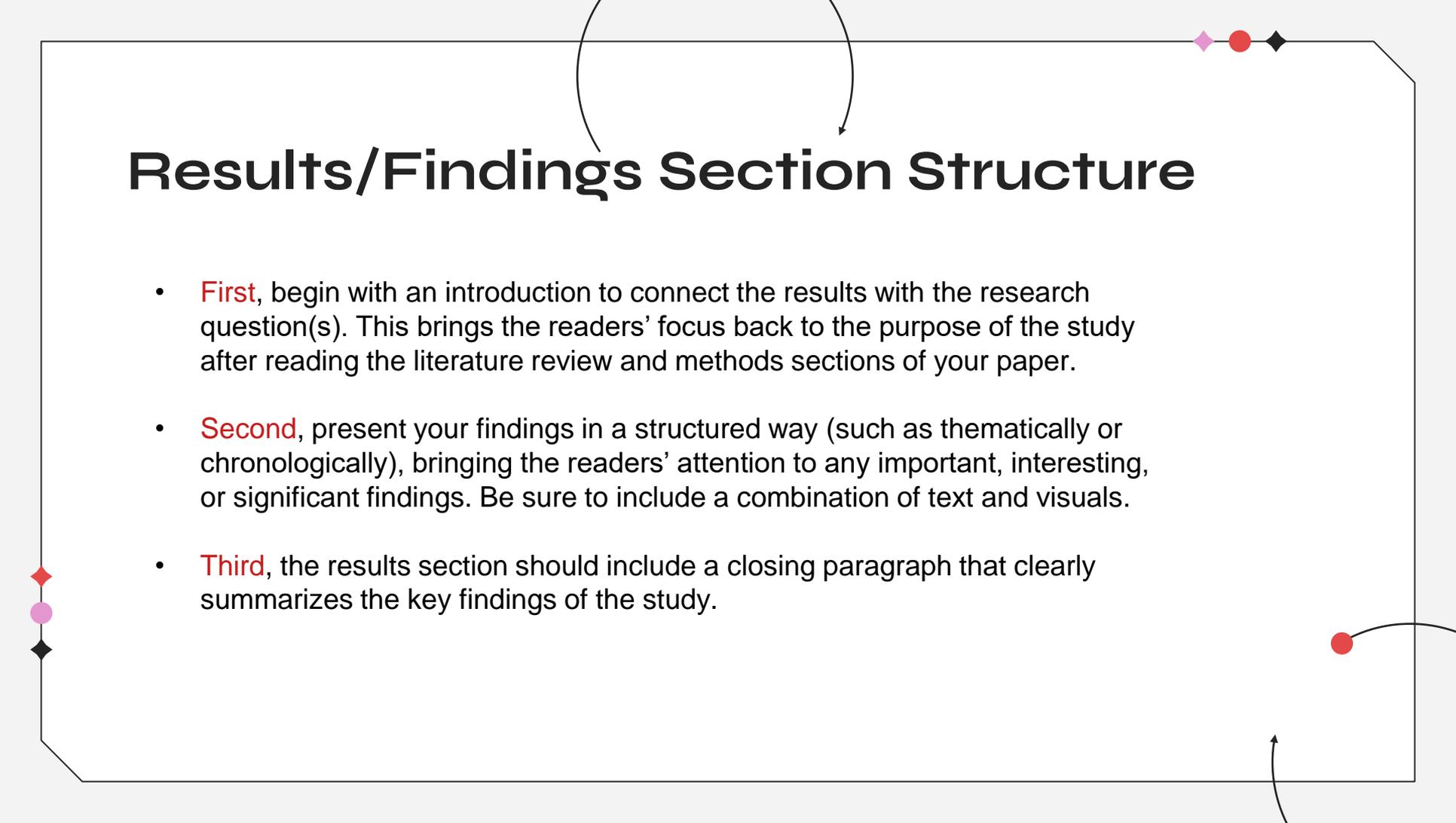
How Does a Results Section Differ from a Discussion Section?

The results section of a research paper tells the reader what you found, while the discussion section tells the reader what your findings mean.

What are the Differences Between Qualitative and Quantitative Data?

Qualitative research uses non-numerical, descriptive data. When presenting qualitative results, authors will typically focus on descriptive and interpretive approaches.

Quantitative research uses measurable (or quantifiable) numerical data. When presenting quantitative results, authors will typically focus on numbers-based approaches that involve statistics, calculations, and data measurements.



Results/Findings Section Structure

- **First**, begin with an introduction to connect the results with the research question(s). This brings the readers' focus back to the purpose of the study after reading the literature review and methods sections of your paper.
- **Second**, present your findings in a structured way (such as thematically or chronologically), bringing the readers' attention to any important, interesting, or significant findings. Be sure to include a combination of text and visuals.
- **Third**, the results section should include a closing paragraph that clearly summarizes the key findings of the study.

Important

Use of the past tense when referring to your results.

CHART TYPE

Type of chart

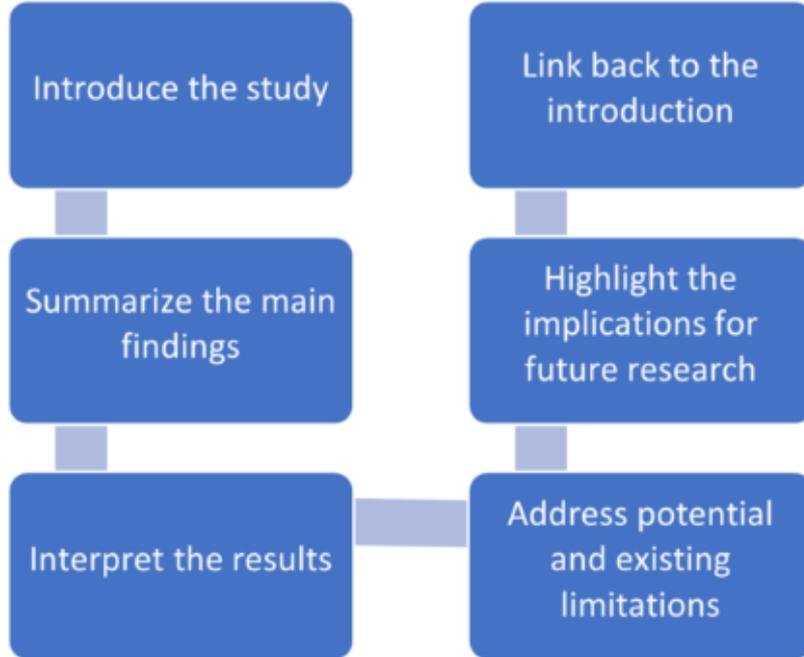


Essential chart terms

- **Axis:** The reference lines on a chart that define the scale of the data. Typically, there's a horizontal (x-axis) and a vertical (y-axis).
- **Data series:** A set of related data points that are plotted on the chart. Each series is usually represented by a distinct color or symbol.
- **Data point:** An individual value or set of values representing a specific element of the data, plotted on the chart.
- **Legend:** A key that explains the colors or symbols used to represent different data series on the chart.
- **Title:** A descriptive label that provides information about the content or purpose of the chart.
- **Labels:** Descriptive text used to identify and provide context for specific elements on the chart, such as axis labels, data labels, etc.
- **X-Axis:** The horizontal axis on a chart that represents the independent variable or categories of data.
- **Y-Axis:** The vertical axis on a chart that represents the dependent variable or values of the data.
- **Bar chart:** A chart that uses rectangular bars of varying lengths to represent and compare data values.
- **Line chart:** A chart that displays data points using a series of connected line segments, useful for showing trends over time.

- **Pie chart:** A circular chart divided into slices, each representing a proportion of the whole data set.
- **Scatter plot:** A chart that displays individual data points on a two-dimensional graph to show the relationship between two variables.
- **Area chart:** Similar to a line chart but with the area below the line filled with color to represent the cumulative effect of the data.
- **Stacked bar/Column chart:** A bar or column chart in which the various data series are stacked on top of each other.
- **Histogram:** A chart that displays the distribution of a dataset, showing the frequency of different values or ranges.
- **Doughnut chart:** Similar to a pie chart but with a hole in the center, often used to display multiple sets of data.
- **Bubble chart:** A scatter plot in which a third dimension of the data is shown through the size of markers.
- **Axis scale:** The range and increments on an axis, determining how data values are displayed.
- **Gridlines:** Lines on the chart that help in reading values and aligning data points.

Discussion section



The discussion section in scientific paper might be the last few paragraphs, but its role goes far beyond wrapping up. It's the part of an article where scientists talk about what they found and what it means, where raw data turns into meaningful insights. Therefore, discussion is a vital component of the article.

01

- **Introduction**—mention gaps in previous research

02

- **Summarizing key findings**—let your data speak

03

- **Interpreting results**—compare with other papers

04

- **Addressing limitations**—their potential impact on the results

05

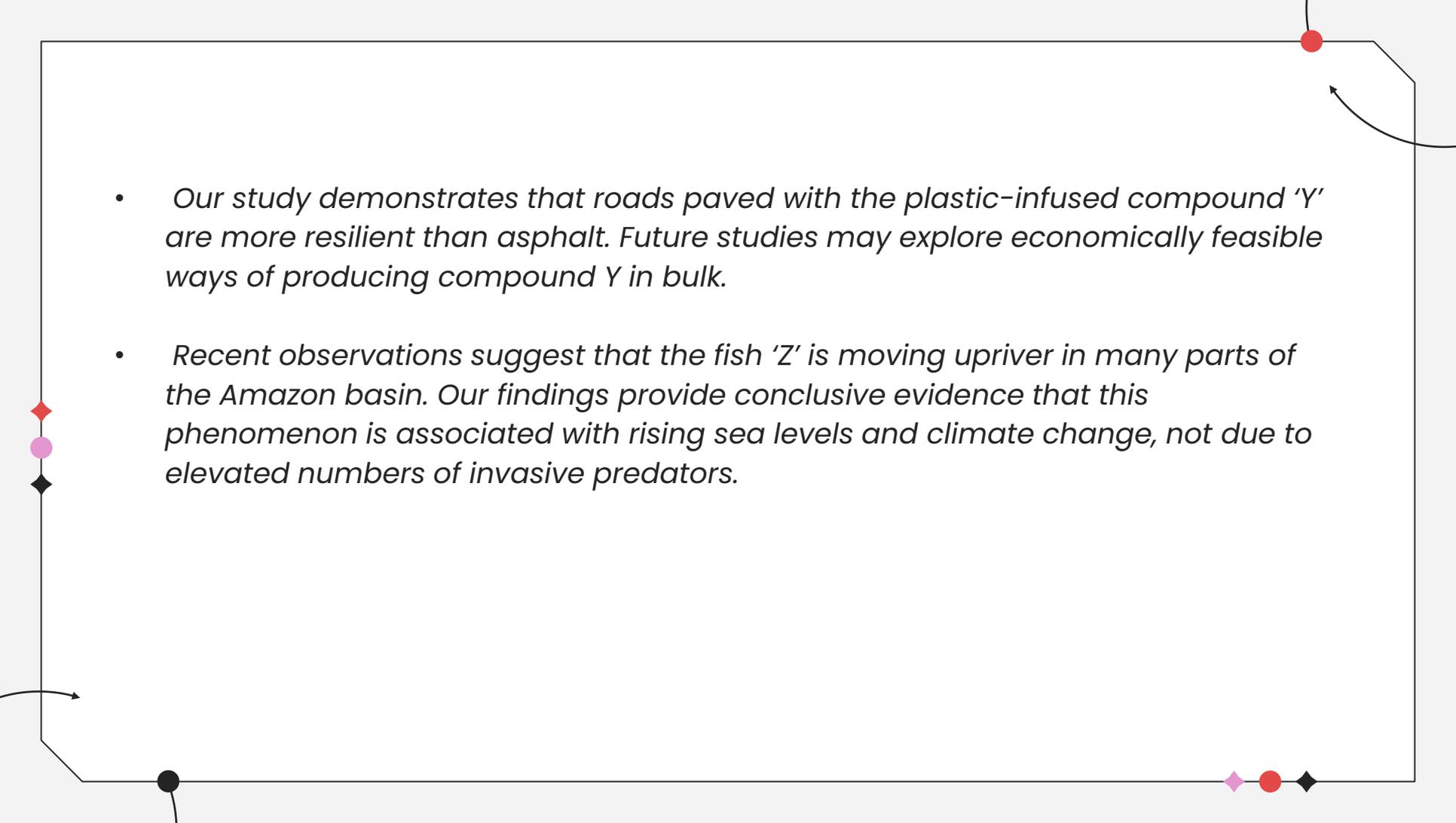
- **Implications for future research**—how to explore further

06

- **Conclusion**—summarize content

Exercise: tell which part is each paragraph

- *This study investigated the cognitive effects of a meat-only diet on adults. While earlier studies have explored the impact of a carnivorous diet on physical attributes and agility, they have not explicitly addressed its influence on cognitively intense tasks involving memory and reasoning.*
- *We found that risk-taking behavior among teenagers correlates with their tendency to invest in cryptocurrencies. Risk takers in this study, as measured by the Cambridge Gambling Task, tended to have an inordinately higher proportion of their savings invested as crypto coins.*
- *Although Miller et al. (2020) found evidence of such political bias in a multicultural population, our findings suggest that the bias is weak or virtually non-existent among politically active citizens.*
- *This study explored a comprehensive list of adverse effects associated with the novel drug 'X'. However, long-term studies may be needed to confirm its safety, especially regarding major cardiac events.*

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- *Our study demonstrates that roads paved with the plastic-infused compound 'Y' are more resilient than asphalt. Future studies may explore economically feasible ways of producing compound Y in bulk.*
 - *Recent observations suggest that the fish 'Z' is moving upriver in many parts of the Amazon basin. Our findings provide conclusive evidence that this phenomenon is associated with rising sea levels and climate change, not due to elevated numbers of invasive predators.*