الجامعة اللبنانية
كلية الاعلام
الفرع الاول

الامتحانات النهائية للفصل الأول

من العام الجامعي 2025- 2024

المادة: DATA VISUALIZATION	المرحلة: الاجازة
المدة: 120 دقيقة	السنة المنهجية:الثالثة- الدورة الاولى
الأستاذ: د.يوسف الاتات	الاختصاص: علم البيانات

1- Why is data visualization considered the best way to communicate data?
A) Because it completely eliminates the use of text and numbers
B) Because it combines a clear message with visible data to support it
C) Because it relies solely on tables to present information
D) Because it prevents any distortion of information

2-What is one of the dangers of using data visualization?
A) It prevents viewers from interpreting information
B) It does not allow for effective message communication
C) It can be used to manipulate or distort information
D) It is only useful in the field of science

3- Why is data visualization considered an essential skill today?
A) Because it replaces the need for data analysis
B) Because it is a mandatory requirement for all programming jobs
C) Because it helps in effectively communicating data insights in the big data era
D) Because it eliminates the need for statistical understanding

4-Which of the following is a common issue found in some data visualizations?
A) All data visualizations are always accurate and reliable
B) Poor color choices can make a graph difficult to read
C) Data visualizations are only used in newspapers
D) Bar charts cannot be used in business reports

5- According to Edward Tufte, what is one reason why data visualizations can be misleading?
A) Designers often prioritize aesthetics over statistical accuracy
B) Data visualizations are always accurate and reliable
C) Newspapers avoid using any kind of data visualization
D) Statistical data is never manipulated in visualizations

6- What is one common mistake made when simplifying complex data for visualization?
A) Removing unnecessary details while keeping the core message intact
B) Using a plotting system like GGPlot for customization
C) Over-simplifying data to the point where it loses meaning
D) Making sure every visualization is interactive

7- What are the two stages of the data visualization communication process?
A) Encoding and recording
B) Encoding and decoding
C) Designing and publishing
D) Simplifying and analyzing

8- According to Cleveland and McGill's research, what is a key factor in making data visualization effective?
A) Using as many colors as possible
B) Prioritizing aesthetics over clarity
C) Understanding how users perceive and decode information
D) Avoiding all graphical elements

9- Why is it important to consider the audience's "visual language" in data visualization?
A) It helps in making the graph visually attractive
B) It ensures the audience correctly interprets the data message
C) It allows for the use of complex chart designs
D) It reduces the need for data analysis

10. Which of the following elementary perceptual tasks is considered the easiest to perform?
A) Decoding color saturation
B) Decoding position in a common scale
C) Decoding curvature
D) Decoding volume

11. Why is it harder to compare positions in non-aligned scales than in a common scale?
A) The reference points are not the same, making visual comparison more difficult
B) The colors of the elements are different
C) It requires mathematical calculations
D) Non-aligned scales are not used in modern graphs

12. What is a common issue when using thick bars in a bar chart?
A) It makes the graph more visually appealing
B) It can trick the brain into perceiving area instead of length
C) It makes it easier to compare values
D) It allows for better color contrast

13. Why is decoding area difficult for humans?
A) The relationship between radius and area is nonlinear
B) Our brains are optimized for color perception instead
C) It requires complex equations to understand
D) Area-based graphs are rarely used in real-world data visualization

14. Which of the following tasks is the most difficult for humans to accurately decode?
A) Decoding position in a common scale
B) Decoding length
C) Decoding volume
D) Decoding shading

15. Why do 3D bar charts cause misinterpretation of data?
A) They use too many colors
B) They make bars appear larger due to perspective
C) They are only used for aesthetic purposes
D) They increase numerical accuracy

16. What was the purpose of Cleveland and McGill's ranking of perceptual tasks?
A) To eliminate the use of charts in data visualization
B) To determine which tasks allow for the most accurate interpretation of data
C) To make graphs look more artistic
D) To replace traditional bar charts with pie charts

17. According to the ranking, which perceptual task is the least accurate for interpreting data?
A) Position in a common scale
B) Volume and curvature
C) Decoding length
D) Decoding direction

18. Why do tables sometimes work better than visualizations?
A) They provide precise numerical values without interpretation errors
B) They allow for artistic freedom in data presentation
C) They are easier to decorate with colors
D) They make comparisons between values more difficult

19. Why is a bar chart often a better alternative to a pie chart?
A) It uses more colors
B) It relies on position and length, which are easier to interpret than angles
C) It makes data visualization look more complex
D) It requires fewer labels

20. What is a lollipop plot?
A) A graph that uses dots and lines instead of bars to simplify interpretation
B) A type of pie chart with multiple slices
C) A stacked area chart
D) A type of graph that relies on color saturation

21. What is the main issue with shaded maps in data visualization?
A) They require large datasets
B) Bigger areas tend to attract more attention, distorting perception
C) They are not aesthetically pleasing
D) They use too many different colors

22.What is the first rule of graphical excellence?
A) Use as many colors as possible
B) Show the data
C) Always use 3D effects
D) Make the graph visually appealing

23. Why should the vertical axis of a bar chart start at zero?
A) To make the chart look more colorful
B) To avoid distorting the data representation
C) To make it more readable
D) To encourage creativity in design

24. What is the "golden rule" of graphical excellence?
A) Use maximum space for minimum information
B) Minimize resources while maximizing insights
C) Avoid using numbers in graphs
D) Use complex animations for better engagement

25. What is graphical distortion?
A) When graphs use too many colors
B) When visual representation misleads the viewer
C) When graphs contain no numbers
D) When graphs are too simple

26. What causes graphical distortion?
A) The use of bar charts
B) Over-decoration and exaggeration of data
C) Not using enough labels
D) Displaying too much information

27. How can graphical distortion be avoided?
A) By adding as many decorations as possible
B) By making graphs colorful and lively
C) By ensuring consistency between numerical and visual representation
D) By avoiding the use of data labels

28. What is the "Lie Factor" in graphs?
A) A measure of the exaggeration of visual effects
B) A factor used to increase graph size
C) A method to make graphs more appealing
D) A way to add extra details to a chart

29. If a graph has a Lie Factor greater than 1, what does it indicate?
A) The graph is under-representing the data
B) The graph is exaggerating the effect of the data
C) The graph is perfectly accurate
D) The graph is missing labels

30. What is the ideal Lie Factor for an accurate graph?
A) 0
B) 1
C) 5
D) 10

31. If a graph visually increases an effect by 200%, but the actual data change is only 50%, what can be inferred?
A) The Lie Factor is greater than 1, indicating exaggeration
B) The Lie Factor is exactly 1, meaning accuracy is maintained
C) The Lie Factor is less than 1, meaning under-representation
D) The graph is completely accurate

32. Which of the following helps in calculating the Lie Factor?
A) Measuring visual change and comparing it with actual data change
B) Using as many colors as possible
C) Making graphs aesthetically pleasing
D) Ignoring numerical values

33. What does a Lie Factor of 0.5 indicate?
A) The graph is accurate
B) The effect shown in the graph is smaller than the real data effect
C) The graph exaggerates the data effect
D) The graph does not contain any data

34. Why are annotations useful in graphs?
A) They distract the viewer from the data
B) They help provide additional context and highlight important events
C) They make the graph more colorful
D) They are used for decoration only

35. What is a potential downside of excessive annotations?
A) They improve readability
B) They reduce graphical integrity
C) They can clutter the graph and mislead interpretation
D) They make the graph too simple

36. Which of the following is an example of effective annotation?
A) Adding random decorative elements
B) Using excessive colors
C) Highlighting key data points with relevant explanations
D) Making the text unreadable

37. What does the fourth principle of graphical integrity state?
A) Graphs should always be 3D
B) The number of visual dimensions should not exceed the data dimensions
C) More colors make graphs easier to read
D) More labels lead to better graphs

38. What is a common mistake in visualizing 2D data?
A) Using bar charts
B) Adding unnecessary 3D effects
C) Labeling the axes correctly
D) Using simple graphs

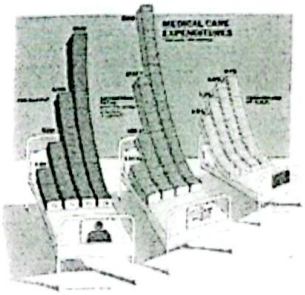
39. How should data dimensions match graphical dimensions?
A) The graphical representation should have fewer dimensions than the data
B) The graphical dimensions should match the data dimensions
C) More dimensions make data easier to understand
D) The more, the better

40. What is the "data-ink ratio"?
A) The proportion of ink used for data representation compared to total ink
B) The number of pixels in a graph
C) The ratio of colors used in a chart
D) The proportion of text in a graph

41. How should graphs be scaled for readability?
A) In landscape mode with an appropriate aspect ratio
B) In portrait mode with bright colors
C) In 3D with excessive labels
D) With no consideration for proportions

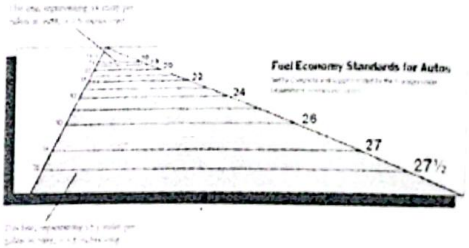
42. What is "banking to 45 degrees"?
A) A method to align graphs to the left
B) Adjusting the aspect ratio so line segments average 45-degree slopes
C) A technique for adding extra dimensions
D) A way to add colors to graphs

43. Given the following bar chart with an exaggerated 3D effect (Figure 1), what is the most likely issue?
A) The bars appear distorted due to perspective
B) The colors improve readability
C) The 3D effect enhances accuracy
D) The bars represent accurate proportions



(Figure 1: A bar chart with a 3D effect.)

44. Observe the chart showing the fuel Economy Standards for Autos and calculate the lie factor. The lie factor is?
A) 14.8
B) 0.5
C) 30
D) 150



(Figure 2: A chart with Economy Standards for Autos.)

$$\text{Lie Factor} = \frac{\frac{34 - 18}{18}}{\frac{27.5 - 18}{18}} = 14.8$$

45. What is selection bias in statistics?
A) A method for selecting the best sample
B) When the sampled individuals systematically differ from the population of interest
C) The process of randomizing a dataset for accuracy
D) A type of statistical formula

46. Why is considering the full context of data crucial in statistical analysis?
A) To ensure the graph is visually appealing
B) To avoid misleading conclusions based on incomplete data
C) To include as many data points as possible
D) To make the data easier to read

47. What is the main issue with not normalizing data?
A) Data looks too organized
B) It makes graphs less attractive
C) Comparisons between different datasets become inaccurate
D) It increases the complexity of the calculations

48. What is Simpson's Paradox?
A) A type of mathematical equation
B) A phenomenon where a trend appears in separate groups but reverses when the groups are combined
C) A graphical error in pie charts
D) A situation where data is missing from a dataset

49. When is it unnecessary to use a graph for presenting data?
A) When there are multiple variables
B) When exact values are important
C) When there is very little data
D) When trends are being analyzed

50. Which of the following is best suited for displaying distributions?
A) Pie chart
B) Histogram
C) Line plot
D) Bar chart

51. Why is a violin plot sometimes preferred over a box plot?
A) It includes summary statistics and the full distribution shape
B) It is easier to read
C) It only requires a few data points
D) It takes up less space

52. What is the main issue with using stacked area plots?
A) They use too many colors
B) They make it difficult to compare variables because values are stacked on top of each other
C) They require more data than normal graphs
D) They take too long to create

53. What is an advantage of using a lollipop plot instead of a bar plot?
A) It removes unnecessary area and focuses on position comparison
B) It allows for more colors
C) It provides more exact values
D) It is easier to animate

54. Why are pie charts generally discouraged in data visualization?
A) They are difficult to color
B) They do not effectively show differences between values
C) They are hard to print
D) They require advanced software

55. What is a choropleth map used for?
A) Displaying geographical locations with different colors representing values
B) Displaying rankings
C) Showing individual data points on a timeline
D) Representing network connections

56. **Observe the study results (Figure 3) showing the percentage of patients who experienced side effects before and after some dropped out of a clinical trial. What bias does this introduce?**

A) Selection Bias
B) Attrition Bias
C) Normalization Error
D) Misclassification Bias

Figure 3: A chart comparing "Initial Participants" vs. "Final Participants" and the number of side effects reported.

57. **Look at the graph in Figure 4 showing traffic deaths before and after a speed limit law was introduced. Why is the conclusion misleading?**

A) The data does not show previous years for comparison
B) The graph is missing labels
C) The law had no impact
D) The colors are not effective

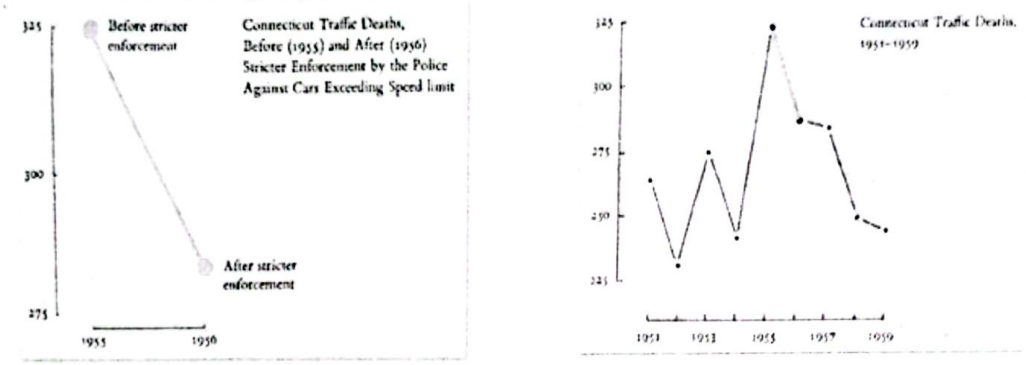


Figure 4: A line graph showing a misleading trend with only two years, and another with additional years to show the true trend.

58. **The table in Figure 5 shows the overall acceptance rates of men and women at a university, as well as acceptance rates for individual departments. What does this demonstrate?**

A) Random Sampling
B) Data Normalization
C) Simpson's Paradox
D) Regression Analysis

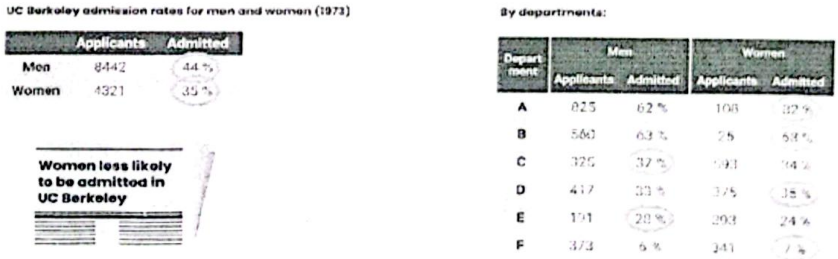


Figure 5: A table with total acceptance rates for men and women, followed by departmental breakdowns showing the paradox.