

Student Page

Our Backpack Data: Making Conclusions from Graphs

We can ask many questions about individuals, their backpack weights, and their guesses of the weight. We can also generate lots of data displays about graphs, but which graphs help us answer which questions? Attached are Questions to Analyze, Graphs A-H and a Response Sheet for each Question about given data.

Part I: Analysis (15-25 min):

Determine which graph(s) does a good job answering each question. After you select and examine a graph, make a conclusion about the question. Finally, justify your conclusion with specific evidence from the graph. Use the Response Sheet for recording.

Part II: Comparison/Discussion (20-30 minutes):

Each group will prepare, and be ready to give, a response for each question, any conclusions made, and the evidence for the conclusions. For each question, discuss the following:

- a. Which graphs can be used to answer the question? Which ones cannot? Explain.
- b. Which graphs do the best job of conveying a clear answer to the question? Explain.

Part III: Extension Individual activity:

- a. ***Creating your own question.*** Enter or download the data (Fathom data file: **backpack_data_2006.ftm**). Create a new question that can be answered using the data. Then create two different graphs that can be used to answer the question. For each graph, make a conclusion, and justify the conclusion with specific evidence from the graphs.
- b. ***Incorporating Class data.*** Enter or download the data (Fathom data file: **backpack_data_2006.ftm**). In addition, create a new attribute called “**group.**” In this attribute, enter “**adult**” for the cases already in the data file. Then enter “**student**” for your class data. Enter the guessed and actual weights for your class. Prepare 1 or 2 questions that compare your class data with that of adults. Use Fathom to create effective visual displays for the data. Make well-justified conclusions, citing specific evidence from the visual displays.

Variables studied include the following:

- Gender: Gender of each individual (m or f)
Guess: The guessed weight of an individual’s backpack (lbs.)
Actual: The actual weight of an individual’s backpack (lbs.)
Difference: Guess – Actual (lbs.)
Under_3_lbs.: Whether the individual’s guess was less than 3 lbs. away or more than 3 lbs. away

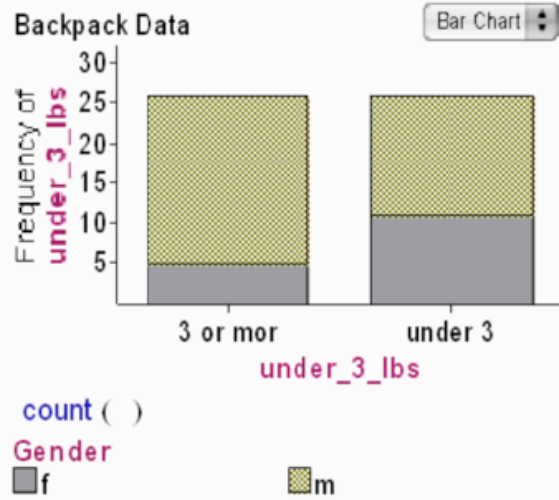
Questions to Analyze:

1. Overall, how heavy are individual's backpacks?
2. Which group, males or females, do a better job at guessing the weight of personal backpacks?
3. What fraction of people missed the correct weight of backpack weight by less than 3 pounds?
4. Are people good at guessing backpack weights?
5. When people guess the weight of a backpack incorrectly, do they tend to overestimate or underestimate?

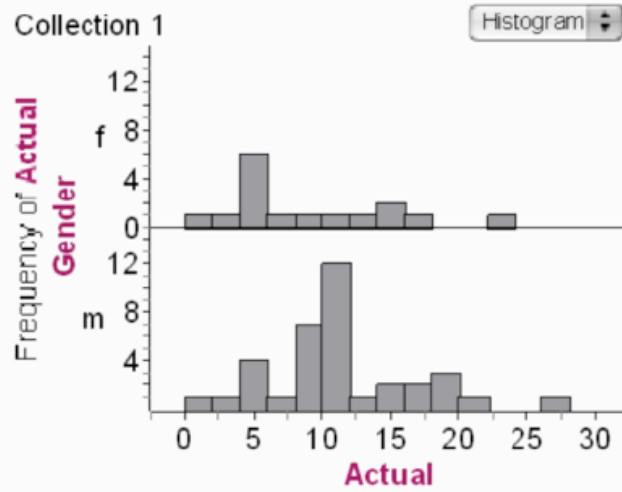
Response Template (Use one for each response)

Question	
Choice of Graph	
Conclusion	
Evidence for Conclusion	

Graph A



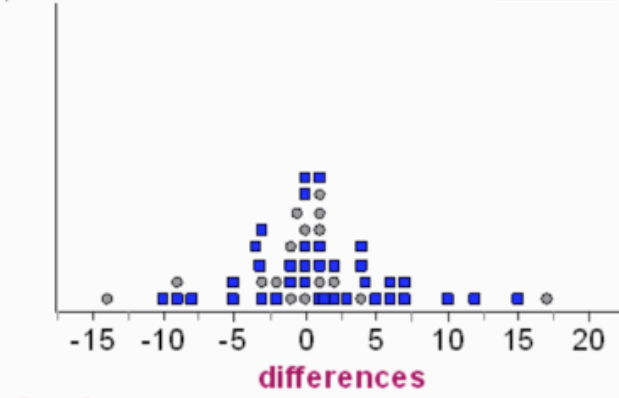
Graph B



Graph C

Backpack Data

Dot Plot



Gender

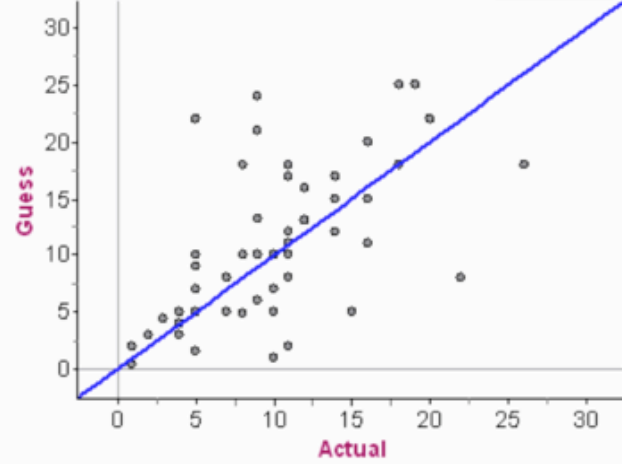
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Graph D

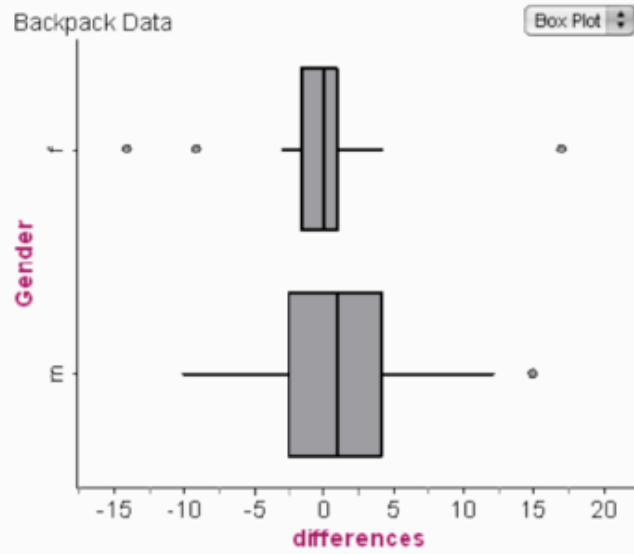
Backpack Data

Scatter Plot

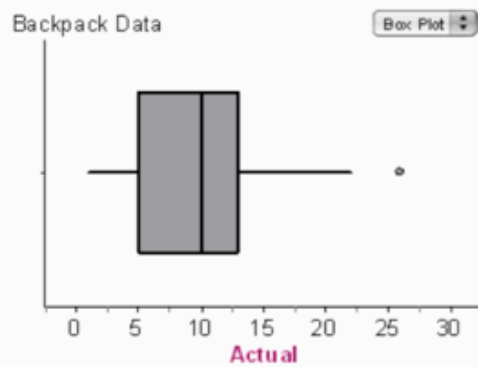
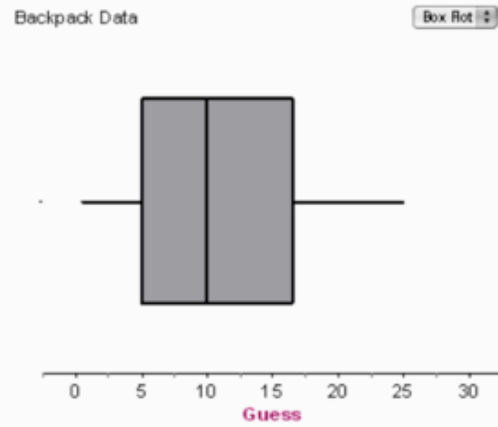


— Guess = actual

Graph E



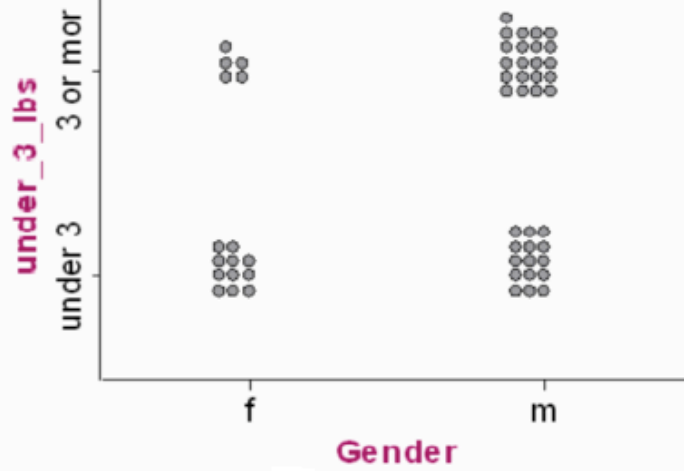
Graph F



Graph G

Backpack Data

Breakdown Plot



Graph H

Backpack Data

Percentile Plot

