Lab Report Writing

Results and Discussion: Data Commentary

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Purposes of Data Commentary

- Highlight the results.
- Assess standard theory, common beliefs, or general practice in the light of the given data.
- Compare and evaluate different data sets.
- Assess the reliability of the data in terms of the methodology that produced it.
- Discuss the implications of the data.

Moves in Data Commentary

I. Location Element and Summary

II. Highlighting Statements

III. Comments (more common in social science/humanities)
   A. explanations and/or implications
   B. comments on unexpected results or unsatisfactory data
   C. comments on possible further research or possible future predictions

Sample Data Commentary

Table 5 shows the most common modes of infection for U.S. businesses. As can be seen, in the majority of cases, the source of viral infection can be detected, with disks being brought to the workplace from home being by far the most significant. However, it is alarming to note that the source of nearly 30% of viral infections cannot be determined. While it may be possible to eliminate home-to-workplace infection by requiring computer users to run antiviral software on diskettes brought from home, business are still vulnerable to major data loss, especially from unidentifiable sources of infection.

From: Swales, J. and Feak, C. (1994). Academic Writing for Graduate Students. University of Michigan Press: Ann Arbor. p. 80.

Location Summaries

Location Summaries: Indicative and Informative Summaries

Indicative: Table 5 shows the most common modes of computer infection for U.S. businesses.

Informative: Table 5 shows that home disks are the major source of computer viruses.

Verbs used in Location Summaries

show	reveal
provide	display
give	demonstrate
present	indicate
summarize	suggest
illustrate	

Verbs and the Indicative/Informative Distinction

BOTH: Table 5 shows the most common modes of infection
Table 5 shows that the most common source of infections is disks brought from home.

ONLY 1: Table 5 provides infection-source percentages.
Table 5 provides that the most common source of infections…..
(negative example)

As-Clauses

As shown in table 5, home disks are the most frequent source of infection.

As can be seen in figure 8, infant mortality is still high in urban areas.

As it can be seen in figure 8, infant mortality is still high in urban areas.
(negative example)

From: Swales, J. and Feak, C. (1994). Academic Writing for Graduate Students. University of Michigan Press: Ann Arbor. pp. 80-83.

Excerpt from a Results Section

(Note: Superscripts have been added as references to line numbers -- they do not correspond to any references.)

[1]The wake-velocity measurements provided more quantitative results to confirm the spanwise flowfield variations observed in the mini-tuft data. [2]The mean and rms wake-velocity voltages for the Ultra-Sport airfoil are plotted in Fig. 5 for α = 10, 13 and 16 deg. [3]Considering the data for α = 10 deg, the mean velocity showed a defect centered at approximately y/b = 0.20, which coincided with the region of the largest boundary-layer separation (cf. Fig. 4). [4]Conversely, the mean wake velocity was larger and more uniform for the region of least boundary-layer separation in the general range of -0.10< y/b < -0.30. [5]These results were complementary because increased boundary - layer separation would lead to a larger wake and hence a larger velocity defect. [6]The rms velocities were also consistent, as there was a minimum at the spanwise location corresponding to the region of the least boundary-layer separation. [7]The mean velocity data for α = 13 and α = 16 deg indicated increased spanwise variation in the flowfield. [8]The large velocity defects for these two cases suggested that the wake became larger as the angle of attack was increased, consistent with boundary-layer separation moving forward on the airfoil. [9]These large spanwise variations indicated that stall-cell structures likely existed on the surface. [10]This is revisited again in the Discussion.

From: Broeren, A.P. and Bragg, M. (2001). "Spanwise Variation in the Unsteady Stalling Flowfields of Two-Dimensional Airfoil Models." AIAA Journal. 39 (9). Pp. 1641-1651.

Analysis

1. Underline the location summary. Is it informative or indicative?

2. There are two highlighting statements in this paragraph. Find Highlight 1 and the authors' comment (explanation) on it. Where does the highlight end and the comment begin? What words do the author use to begin the highlight?

3. Find Highlight 2 and the authors' comment (explanation) on it. Where does the highlight end and the comment begin?

4. This paragraph could be said to be organized into two major sections. Draw a line separating the two major sections.

Highlighting Appropriate Information

Table 10. Percentage of Adolescents Reporting the Listed Parental Restrictions on their Lives (N = 200) @@@

	Girls	Boys
Limitations on		
Opportunities to go out at night[1]	56%	35%
Use of the family car[2]	15%	40%
Time of expected return[3]	30%	61%
Interference in		
Choice of friends[4]	19%	23%
Future education choices[5]	18%	52%
Spending of self-earned money[6]	12%	27%

Below are three students' data commentaries based on the chart above. Which student's highlights are the most informative? Choose one and be prepared to give reasons for your choice.

Student A

Table 10 shows the percentage of adolescents reporting parental restrictions on their lives. As can be seen, about one-fourth of female adolescents reported parental restrictions on average across the six categories. Restrictions were most common on going out at night (51%) and fewest on expenditure of self-earned money (12%). In contrast, 40% of the males reported restrictions on average across the six categories. Restrictions were most frequent for curfews (61%) and fewest for choice of friends.

Student B

Table 10 shows the percentage of adolescents reporting parental restrictions on their lives. As can be seen, boys tended to be more restricted than girls. Over the six categories, boys reported an average of 40% restrictions, but girls only 25%. In fact, boys were more restricted in five of the six categories, the only exception being going out at night. In this category, 56% of girls reported restrictions, but only 35% of the boys did so.

[1] E.g., may only be allowed out two nights a week.
[2] E.g., may be allowed only to use the car on special occasions.
[3] Curfew is imposed; e.g., has to be back by 11 p.m.
[4] E.g., girls are dissuaded from going out with older men.
[5] E.g., persuaded to study for a professional degree in college.
[6] E.g., required to bank 50% of earnings.

Student C

Table 10 shows the percentage of adolescents reporting parental restrictions on their lives. As can be seen, overall, boys tended to be more restricted by their parents than girls. However, the real difference lies in the rank order of the restrictions. The top three categories for boys were curfew, post-secondary education choice, and the use of the family car; for girls, going out at night, curfew, and choice of friends. Although choice of friends occupied third place for girls, it was reported least by male adolescents.

Adapted from: Swales, J. and Feak, C. (1994). Academic Writing for Graduate Students. University of Michigan Press: Ann Arbor.

Using Topic Sentences to Help Your Reader

1. Consider each of the following paragraphs comparing the costs and income of two different processes. Which communicates its main idea more clearly? Why?

Utility costs for the argon process are 75% greater than for the proposed hydrogen process. Initial capital cost is $5.4 million, roughly three times the hydrogen process cost. However, annual income from the sale of argon, increased ammonia production, and reduced natural gas requirements elsewhere in the plant is 160% higher than that generated by the hydrogen process. Present-worth analysis shows that the argon process is the better investment. The present worth of the argon process is $10.25 million. The present worth of the hydrogen process is $4.14 million.

The argon process is clearly a better investment than the hydrogen process. Although it has higher utility costs (by 75%) and a higher initial capital cost (by 300%), it generates annual income – from the sale of argon, from increased ammonia production, and from reduced natural gas requirements elsewhere in the plan – that is 160% greater than that generated by the hydrogen process. Present-worth analysis shows that the argon process is valued at $10.25 million. The hydrogen process, by contrast, is valued at only $4.14 million.

2. Choose the best topic sentence for the paragraph below.

1. In eukaryotes, the genes coding for protein production do not exist as one continuous stretch of DNA.
2. Many molecular biologists believe that the discovery of movable genetic elements will help solve several long-standing mysteries.
3. There are approximately 50,000 genes in the human body.

It seems to go a long way, for instance, toward explaining how the human body is able to synthesize a million and more different molecular antibody species, each tailor-made to grapple with a specific antigen. Movable elements may have answer the age-old question of differentiation: how a fertilized egg divides and ultimately becomes, in the course of embryonic development, many different kinds of tissue cells. Jumping genes may also provide a mechanism for satisfying scientists who have been arguing that point mutations alone were far from enough to account for the story of evolution.

3. Locate and underline the topic sentence in the “Excerpt from a results section” on page 5 in this handout.

Editing Worksheet

Data and Results

Area	Question	Y/N	Comments
Content	1. Does the writer use a location element/summary (with figure number(s)) to introduce a figure? 2. Are *appropriate* results highlighted? (i.e., those specified in the lab handout) 3. Are *appropriate* explanations of results provided, without going into detail about larger conclusions?		
Organization	1. Are enough informative headings used? 2. Does the section have clear paragraphs covering one topic?		
Language	1. Does the writer use a variety of verbs in the location summaries (e.g., shows, indicates, provides, etc.) 2. Does the writer use concise but specific language? 3. Does the writer avoid grammatical and mechanical errors?		