

Social Studies 201
Fall 2004
Answers to Problem Set No. 1

September 22, 2004

1. Some issues and questions about the article are as follows. These are not comprehensive and you may have identified other issues.
 - (a) One issue is whether a report on tuition fees provides an adequate estimate of costs for university students. One issue is how the variable “cost” might be defined – this is presumably the focus of the article. While tuition is a major part of costs, in addition there are costs of books, other student fees, transportation costs, and living expenses. While each student might be required to meet the cost of living expenses even if not attending university, for some students, living costs may be increased because they attend university. As a result of these considerations, there may be other elements of cost that hit students in the wallet as much as or even more than tuition.
 - (b) The meaning of “the average student” is not clear from the article. This is a commonly used expression and, roughly speaking, this represents some sort of typical student. But there are different types of average and whether this represents the situation for most students is not clear.
 - (c) Accessibility is always a concern, as Students Union President De Ciman notes. But there is little information in the article about accessibility – that would require an investigation of means of support for students and who is prevented from attending as a result of increased tuition costs. It is important to raise this issue, but the issue of whether accessibility has been seriously harmed by tuition increases is not so clear.
 - (d) What money is needed by the University is also not clear. Among the issues to be addressed here is what are the budgetary priorities of the University and whether the University has made proper decisions concerning allocation of funds provided by government.

Perhaps more funds could be devoted to scholarships or bursaries, or toward reducing tuition. From the government side as well, a question is whether the university makes proper budgetary decisions. Since details of the University budget are not available to the public (details are considered confidential and the property of the University), it is difficult to know the answer to these questions.

- (e) Mr. Biss says that the provincial allocation to the universities has increased. How much has it increased and how does that compare with increases in other provinces? Some of this information can be obtained from governmental or other sources.
 - (f) One question students might have for Ms. Pollock is why tuition has to cover the costs that are not being met by the government funding.
 - (g) Mr. Biss argues that the provinces that previously regulated tuition now have larger increases. But there are many factors involved in this, including different political parties and policies and different trends in each province. Whether the previous tuition freeze is the major item responsible for increasing tuition, in the provinces that had a tuition freeze, would require more analysis than provided here.
 - (h) Near the end of the article, Mr. Biss states that post-secondary education is a good investment. This is probably the case, but post-secondary education should not just be a personal investment – it is also a public good that benefits all. It can also be argued that all citizens should have the opportunity to attend post-secondary education. Higher tuition may make that difficult for many.
2. **Question.** Use the questionnaire of the *Survey of Student Attitudes and Experiences Fall 1998* for this question. For each of questions 17, 45, 33, 43, and 49 in the questionnaire, (i) clearly identify or name the variable in the question. (ii) For each variable state the highest level of measurement the variable has (nominal, ordinal, interval, ratio), explaining your reasoning, and (iii) for each variable, explain whether it is discrete or continuous.

Answers

- **Question 17.** There are two variables **respect for governments** and **respect for politicians**, each measured in the same manner. These variables are measured at the **ordinal** level of measurement, since respondents are asked to provide answers on a 1-5 scale, with 1 indicating no respect and 5 indicating great respect. That is, there is a ranking of responses from a minimal to a maximal level of respect. But there is no well-defined unit of measure for respect, so differences between values are not very meaningful and degree of respect does not have an interval level of measurement. In theory, this variable could be continuous since this is a gradation from little to great respect. However, in the question only five categories of possible response are provided so the answers provided are only in a **discrete** set of categories.
- **Question 45.** The variables here are **good grade in classes in major and other classes** and **minimally acceptable grade in major and other classes**. Grades are generally considered to be measured at the **interval** and **ratio** scale, with a single grade point being the unit (interval scale) and a grade of zero meaning no grade at all (ratio scale). While grades are ordinarily reported to the nearest grade point, in theory they are **continuous**, since any grade between zero and one hundred per cent could be assigned.
- **Question 33.** This variable is **attitude concerning immigration level**. For this question, this variable is measured at the **ordinal** level from an attitude that immigration should decrease to an attitude that immigration should increase – an ordered or ranked set of responses about this issue. Potentially this could be measured as a continuous variable although in this question there are only a countable number of possible responses (three), so it would ordinarily be considered **discrete**.
- **Question 43.** Here the variable could be termed **ethnic identity** or **attachment**. This variable is measured at no more than the **nominal** scale since these are different categories but have no clear criteria for ranking or ordering the responses. This is a **discrete** variable, because there are a countable number of possible

responses. Under “Other” there might be many responses, but they would still be countable since each respondent would give only a finite number of responses.

- **Question 49.** The variables are debt in dollars, at the start of the semester and at the end of the semester. Since debt is measured in dollars this is ordinarily considered to be measured at least at the **interval** level, with the unit of dollars, and equal numerical differences between debt, representing equal magnitudes. Since a debt of zero really means no debt at all, debt is measured at the **ratio** level, and meaningful ratios of debt can be determined. Debt is measured on a **continuous** scale, since measures in dollars can vary continuously along a line from zero to the maximum amount of debt.
3. The data in Tables 1a and 1b of Problem Set 1 represent the annual number of hours spent volunteering reported by samples of Saskatchewan 15-24 year old and 55-64 year old volunteers.

The unordered and ordered stem-and-leaf displays are in Tables 1 through 4, and the resulting frequency distributions in Tables 5 and 6. When preparing the unordered stem-and-leaf display from the data in Tables 1a and 1b of Problem Set 1, I proceeded down the first column, then down the second column, and so on. If you proceeded by rows, then the unordered stem-and-leaf display will be different, but the ordered stem-and-leaf display should be the same as in Table 2.

For 15-24 year olds, hours volunteered range from just above zero to 120. But most of the respondents report annual volunteer hours of under fifty (40 of 58), with the great concentration of respondents in the under twenty category, where there are almost one-half of respondents (25 of 58). Above fifty annual hours, the distribution shows no particular trend, with one through four respondents in each ten hour group.

For the 55-64 year olds, the distribution begins just above zero and goes to 180 hours of annual volunteer work. There is a greater concentration of respondents in the sixty and under hours categories than there is above sixty. But there is no particular trend apparent in the under sixty category, with 2, 3, or 4 respondents in each category. Similarly,

Table 1: Unordered stem-and-leaf display for 15-24 year olds

0	5	5	1	4	5	4	2	2	4	4	1	4	7	3	1	5	6	6
1	1	6	1	5	2	0	8											
2	1	2	4	5	4													
3	8	2	2	5														
4	4	2	5	9	6	5												
5	8	3	4															
6	3	0	0	0														
7	5																	
8	0																	
9	0	5	3															
10	5	1	8															
11	2																	
12	0	0																

there is no trend in the above 60 groups, with 0, 1, 2, or 3 respondents in each ten hour category.

There is one similarity between the distributions and two differences that could be noted. For both distributions, there is a great variety of hours volunteered. The values go from 1 to well above one hundred. For the 15-24 year olds, there is much more of a concentration at the lower end of the distribution than for the 55-64 year olds. This is especially the case for the under twenty or thirty hours annually groups, what the bulk of 15-24 year olds report. For the 55-64 year olds there is greater spread of respondents across all groups. The other difference is that some 55-64 year olds report high hours spent volunteering, some up to 180 hours annually. In contrast, no 15-24 year old reports more than 120 hours annually.

[illegible]

Table 3: Unordered stem-and-leaf display for 55-64 year olds

0	3	4	5	8
1	2	2	2	
2	2	9	7	
3	2	4		
4	2	8	0	
5	8	8	0	1
6	1	8	4	
7	2	7	2	
8	1			
9	0			
10	4	4		
11				
12	5	0		
13	9			
14	0			
15				
16				
17	0			
18	0			

Table 4: Ordered stem-and-leaf display for 55-64 year olds

0	3	4	5	8
1	2	2	2	
2	2	7	9	
3	2	4		
4	0	2	8	
5	0	1	8	8
6	1	4	8	
7	2	2	7	
8	1			
9	0			
10	4	4		
11				
12	0	5		
13	9			
14	0			
15				
16				
17	0			
18	0			

Table 5: Frequency distribution table of annual hours spent volunteering, 15-24 year olds

Hours volunteering	f
0-9	18
10-19	7
20-29	5
30-39	4
40-49	6
50-59	3
60-69	4
70-79	1
80-89	1
90-99	3
100-109	3
110-119	1
120-129	2
Total	58

Table 6: Frequency distribution table of annual hours spent volunteering, 55-64 year olds

Hours volunteering	f
0-9	4
10-19	3
20-29	3
30-39	2
40-49	3
50-59	4
60-69	3
70-79	3
80-89	1
90-99	1
100-109	2
110-119	0
120-129	2
130-139	1
140-149	1
150-159	0
160-169	0
170-179	1
180-189	1
Total	35