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

January 22, 2004

1. Some issues and questions concerning the two articles are as follows. The answers here are not comprehensive and you may have identified other issues. I first discuss a few issues raised by the Statistics Canada article and then the *Globe and Mail* article.

   (a) A major problem with the two articles is that some of the numbers are confusing and inconsistent – you may not have spotted this problem but about half-way down the Statistics Canada article there is a statement "A majority of grandparents, about 242,800, or 51%, live in multi-general households." This contradicts the experience of most of us, I would think – it is not our experience that half or more all grandparents live with children or grandchildren. There appears to be a mistake in the article, in that this number is inconsistent with what is reported in the second paragraph. In that paragraph, 56,700 is said to be 1% – that means there are about 5,670,000 grandparents in total, a total verified about two-thirds of the way down the Statistics Canada article, where it states there were 5.7 million grandparents. So 242,800 is not half of this five million plus, but only about 12%, as is indicated in another paragraph about half-way down.

   (b) The Statistics Canada mistake has been picked up in the *Globe and Mail* article and made into a secondary headline, where the title states that a majority of all grandparents live in multigenerational homes. But again the numbers reported in this article do not make sense and are confusing. The thrust of the whole first column of the article is that more and more grandparents are taking care of grandchildren, holding families together. While some undoubtedly do this, it seems to be only about one per cent of all grandparents. This also does not appear to be a growing trend since the fifth paragraph of the Statistics Canada article indicates that it is about

the same proportion of children being cared for by grandparents as in 1991.

(c) One issue that is not clarified very well in either article is the extent to which the grandparents involved were single grandparents. The fourth paragraph of the Statistics Canada article states that two-thirds were women, but much of the rest of the article just discusses grandparents as a whole. If the emphasis of these articles is how much grandparents care for grandchildren, it would be useful to know if it is primarily women as grandparents who take on this task or whether both grandmothers and grandfathers participate.

(d) In the Statistics Canada article, just over half way down there is reference to the "sandwich" generation, but this seems speculative, since the article states "could include" without providing any evidence about this. At times, the Statistics Canada article cite datas and, at other times, is speculative.

(e) One question about data sources is whether these data come from the Census or a survey. It appears that the Statistics Canada article uses two sources – the 2001 Census appears to be the source for the first part of the article and near the bottom there is reference to GSS, the General Social Survey. How well connected or consistent these two sources are is not exactly clear.

(f) As noted earlier, the *Globe and Mail* article highlights the grandparents who care for children, and makes this the focus of the article. In doing that, there appear to be a number of speculative comments about this issue, when the issue may be a non-issue, in that there are only one per cent of grandparents who are primary caregivers for grandchildren. About one-half way down the first column is the statement that this may be the result of family problems. It may be, but this is a speculative comment and there seems to be no evidence cited to support this claim. The University of Toronto authority that is cited plays into this, talking about families falling apart. While this is undoubtedly the case for some families, there may be other reasons. In the next paragraph though, Samuels does mention more positive factors for grandparents being involved with children.

(g) The last complete paragaph in the first column states that the data come from the 2001 Census – some data come from it but some come from the GSS (the General Social Survey of Statistics Canada). The article also states that the census surveyed grandparents who were 45 years of age and older. That may be correct, but if the data come from the Census of Canada, this is a survey of everyone, not just grandparents, as is implied by the article.

(h) In the paragraph that spans the first and second columns, the author takes as fact that it is women who are caring for both children and elderly parents. This is probably true in many cases, but no evidence for this was cited in the Statistics Canada source.

(i) In the second column, there is reference to immigrant families. But the Statistics Canada article states that Saskatchewan and Nunavut were the areas with the largest percentage of "skip-generation" and these are both areas with few immigrants. Saskatchewan and Nunavut both have larger percentages of aboriginal population than do most other regions, so I might speculate that it is aboriginal families that have this characteristic. But neither Statistics Canada nor the *Globe and Mail* address this.

(j) While I do not have ready data, it is my understanding that over the long sweep of history, it was not uncommon for grandparents to be heavily involved in raising grandchildren. With extended and other types of families, the recent practice of having children raised entirely by their parents may be of fairly recent origin. In earlier times, it was not uncommon for parents to die young, so that other family members had to step in to care for children.

(k) There are many other issues that could have been addressed in these articles, but the space was limited. My main objection to these articles is that there are several unsubstantiated statements, several places where data is confusing or contradictory, and the authors appear to overinterpret or stretch the data to make questionable conclusions.

2. **Question**. Use the questionnaire of the *Survey of Student Attitudes and Experiences Fall 1998* for this question. For each of questions 11, 26, 38, 47 (first row), and 56 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) and, in a sentence, explain your reasoning. (iii) For each variable, also explain whether the variable is discrete or continuous.

   Answer.

   - **Question 11**. The variable is **credit hours** for students who are registered in the Fall 1998 semester. This is measured at the **interval** and **ratio** level, since one credit hour is a well-defined unit (interval) and zero credit hours means no credit hours at all so the zero point is not arbitrary (ratio). In theory, this variable could be continuous since all possible credit hours could be matched up with a line interval from zero to 25, or some such number. In practice, students usually take 3, 6, 9, 12, or 15 credit hours, although there are some fractional number such as one and a half. So in practice there are only a **discrete** set of possible credit hours.
   - **Question 26**. Here the variable is **main source of knowledge about multiculturalism**. This variable is measured at no more than the **nominal** scale, since these are different categories but there are no 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 38**. The variable here is **family income** or **parents' income**. Income is ordinarily considered to be measured at least at the **interval** scale, since it is in units of dollars, and equal numerical differences between incomes represent equal magnitudes of income. Since an income of 0 really means 0, income may also be considered to be measured at the **ratio** level, so that meaningful ratios of income can be determined. Income is considered to be measured on a **continuous** scale, since measures in dollars can vary continuously along a line. The data are obtained in a discrete

set of categories, but the underlying variable is continuous.

- **Question 47**. This variable is **attitude concerning how dynamic and interesting university classes are**. For this question, this variable is measured at the **ordinal** level from rarely to always, an ranking or ordering of attitudes or opinions 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 56**. The variable could be termed **type of job** and it is measured at no more than the **nominal** level. That is, the categories of possible types of of jobs are just that – different jobs and there is no inherent ordering as greater than or less than. This variable is **discrete** since there are only a countable number of possible jobs. This may be a lot, thousands or millions, but it should always be possible to count the number of different types of jobs.

3. The data in Table 1 of Problem Set 1 represent the monthly hours spent cooking reported by a sample of Saskatchewan males and females.

   The unordered and ordered stem and leaf displays for males are in Table 1, the frequency distribution table for males is Table 2, and the histogram is in Figure 1. The data for females is in Tables 3, 4, and 5 and in Figure 2.

   When preparing the unordered stem and leaf display from the data in Table 1 of the problem set, for each of males and females 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 Tables 2 and 4.

Table 1: Unordered and ordered stem-and-leaf display for males

0	0	0	5	2	5	0	5	3	0	5	5	7	0	0	5	5		
0	2	0	0	0	8	5	0	3	8	2	0	7	0	8	5	0		
1	0	7	5	3	0	0	0	9										
2	5	7	2	0	0	5	3	9	2	2								
3																		
4	0																	
5	0																	
6	8	2																
7																		
8																		
9	5																	

0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	3	3
0	5	5	5	5	5	5	5	5	5	7	7	8	8	8				
1	0	0	0	0	3	5	7	9										
2	0	0	2	2	2	3	5	5	7	9								
3																		
4	0																	
5	0																	
6	2	8																
7																		
8																		
9	5																	

Table 2: Frequency distribution table of monthly hours males spent cooking

Hours cooking	Real Class Limits	f
0-9	-0.5-9.5	32
10-19	9.5-19.5	8
20-29	19.5-29.5	10
30-39	29.5-39.5	0
40-49	39.5-49.5	1
50-59	49.5-59.5	1
60-69	59.5-69.5	2
70-79	69.5-79.5	0
80-89	89.5-89.5	0
90-99	99.5-99.5	1
Total		55

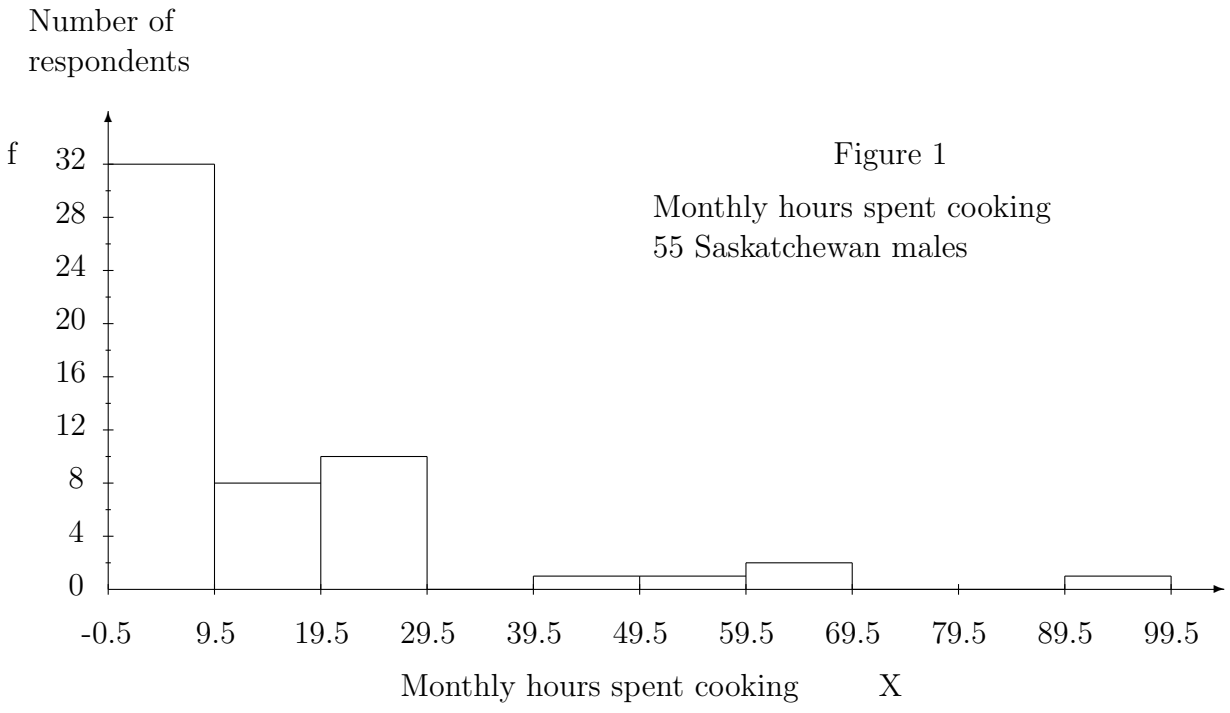

Figure 1

Monthly hours spent cooking
55 Saskatchewan males

Table 3: Unordered stem-and-leaf display for females

0	2	0	5	2	8	0	5	0	7	0	0	5	8	0
1	5	2	7	5	5	5	5	5	5					
2	2	3	5	0	8	8	2	5	5	0	5	3	0	7	2
3	0	7	8	0	0	2	8	0						
4	3	0	5											
5	7	5	5	3	0	1								
6	7	0	5	5										
7	0													
8	2													
9	2	0	8	5										

Table 4: Ordered stem-and-leaf display for females

0	0	0	0	0	0	0	2	2	5	5	5	7	8	8
1	2	5	5	5	5	5	5	5	7					
2	0	0	0	2	2	2	3	3	5	5	5	5	7	8	8
3	0	0	0	0	2	7	9	8						
4	0	3	5											
5	0	1	3	5	5	7								
6	0	5	5	7										
7	0													
8	2													
9	0	2	5	8										

Table 5: Frequency distribution table of monthly hours females spent cooking

Hours cooking	Real Class Limits	f
0-9	-0.5-9.5	14
10-19	9.5-19.5	9
20-29	19.5-29.5	15
30-39	29.5-39.5	8
40-49	39.5-49.5	3
50-59	49.5-59.5	6
60-69	59.5-69.5	4
70-79	69.5-79.5	1
80-89	89.5-89.5	1
90-99	99.5-99.5	4
Total		65

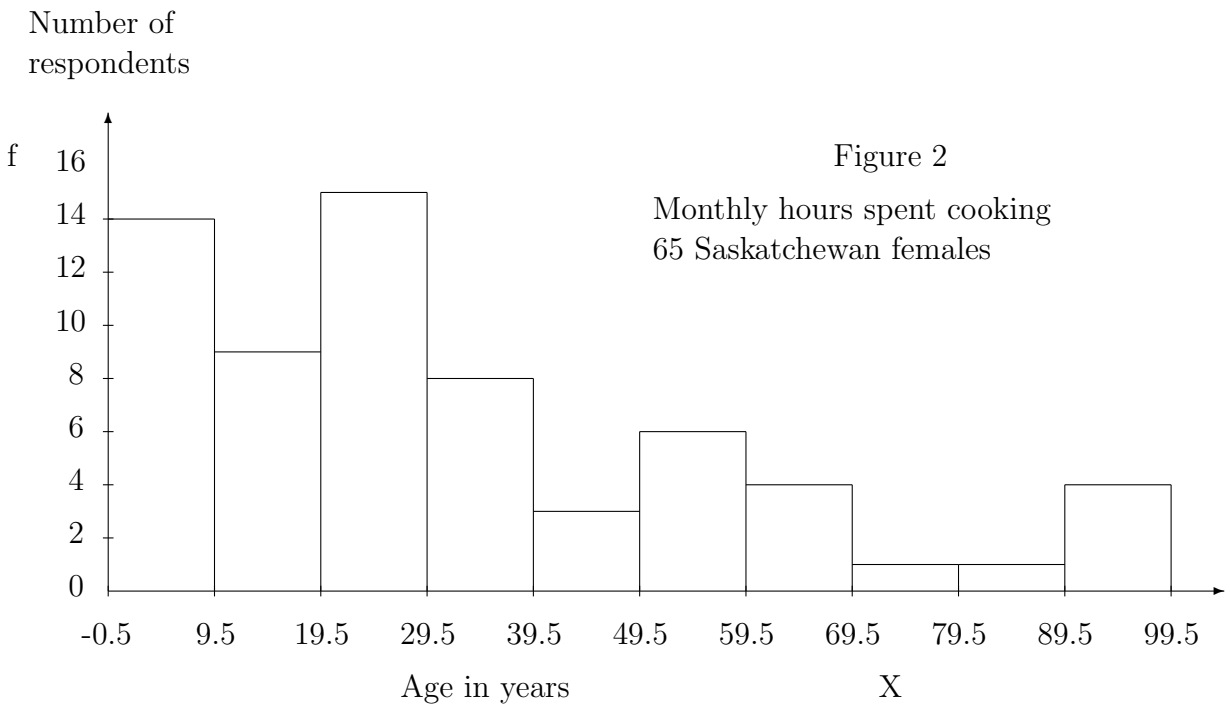

Figure 2

Monthly hours spent cooking
65 Saskatchewan females

Description of frequency distributions. The general shape of the distributions for males and females is similar – the greatest number of respondents is at the lowest number of hours and there are relatively fewer respondents as the number of hours increases. Given the generally similar shapes, the distribution of hours males spend cooking is much more concentrated at fewer hours than is the distribution for females. Almost all males report less than 30 hours spent cooking while just over one-half of females report this. For males, over one-half report 0-9 hours while less than one-quarter of females report this few hours. And while relatively few males nor females report 40 or more hours spent cooking, there is a considerably greater proportion of females than males who report this many hours spent cooking.

In summary, while the two distributions have the same general shape, the male distribution is heavily concentrated at the lower end, with most males reporting only a few hours spent cooking. In contrast, the female distribution is more spread out, with relatively more females reporting larger number of hours spent cooking.