Social Studies 201
Fall 2006
Answers to Problem Set No. 1

September 28, 2006

1. Advantages and disadvantages of development in southwest Regina. One way of proceeding could be to list the possible advantages and disadvantages of development and, from these, consider the types of data that might be relevant and possibilities and problems of obtaining these data. I first list possible advantages and disadvantages in point form and then discuss issues related to data.

   Advantages:

   (a) Providing space and neighbourhoods for Regina as the city expands.

   (b) More housing for existing or new population.

   (c) New types of housing and new types of development that could provide a good quality of life for residents of the southwest.

   (d) More opportunities for commercial development.

   (e) Gains for those who currently own land in this and adjacent areas.

   (f) Making more development opportunities available for Regina.

   Disadvantages

   (a) High cost of building roads, services, schools. etc.

   (b) Sufficient room for development exists in other areas of the city, including revitalizing certain areas, so there is no need for development in the southwest.

   (c) Noise and possiblility of accidents associated with airport.

   (d) No room for further airport expansion.

   (e) Congestion and traffic problems in adjacent areas.

   (f) Gains of development concentrated among a few who own land in the area.

(g) Negative effects on downtown and other existing commercial areas.

From this list, here are some of the issues regarding data that provide information about the advantages and disadvantages.

(a) One important variable to consider is anticipated population growth. From the Census and other sources, it is possible to obtain information on past population growth. These data are relatively accurate but the projection of future population growth has much guesswork and possible errors of prediction associated with it. The Census also provides information about the age, household, family, and income composition of the population. Information about this is important in determining the types of housing that residents will want in the future. Again, the past data on this is relatively accurate but data on the future demand for housing, and the type of demand, is likely to be somewhat speculative.

(b) Information on noise levels associated with proximity to the airport would be important to obtain, if housing is planned for close to the airport. It should be possible for engineers to measure this relatively accurately and provide information about this. On the other side, it would be important to determine how sensitive people are to noise and how willing they would be to live with the noise of incoming and outgoing flights. The population of those living in residential areas already close to the airport could be surveyed to determine their views on present levels of noise. One uncertainty here is the future level of air traffic at the airport – if Regina expands, then there may be much more air traffic and more noise.

(c) The possibility of accidents by airplanes that overrun the runway or have to attempt emergency landing near the airport should be considered. There should be information on this available from other airports around the world.

(d) If there are some strong disadvantages to development in the southwest, then the possibility of accomodating population growth in other areas of the city should be explored. This would require data on the housing stock and the state and structure of the housing stock in the city. Some of this information should be available

from the Census and from city services such as tax assessment. If there are possibilities of filling in undeveloped areas elsewhere in the city or building more dense housing elsewhere, these may prove to be more cost effective and might produce better neighbourhoods elsewhere.

(e) Ownership of land in this and other areas of the city may be available from land titles and tax assessment offices. This could provide information on the alleged conflict of interest and who might benefit most from this development

(f) The level and type of commercial development in Regina – is there sufficient development elsewhere, are there gaps in the types of commercial development in the southwest part of the city, what types of commercial developments are likely to be attracted to the southwest? In addition, it would be useful to know how much the malls and downtown areas are likely to be affected. Surveys of businesses might be useful in obtaining information about this, but again it is difficult to obtain accurate predictions about the future.

There are many other issues and types of data that would prove useful in investigating this issue. Some forms of data (tax and assessment, land titles, business ownership patterns, housing stcck, population) are available for the past and present but are difficult to predict. Exactly who would be affected by the development is also difficult to determine, so it is difficult to identify the population that should be surveyed. However, prior to development, it would be best to obtain some data about the above issues and other issues that residents of the city might identify.

2. **Question**. Use the questionnaire of the *Survey of Student Attitudes and Experiences Fall 1998* for this question. For each of questions 8, 9, 17, 19, 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.

   Answer.

   - **Question 8**. The variable is **Degree** and this variable can be measured at no more than the **nominal** scale. Each degree is different from any other and there is no way of ranking one degree as less than or greater than another. Since there are a finite number of such degrees, they can be counted, so the variable is **discrete**. There could be many such degrees established in the future but each will have a set of requirements, making each degree distinct and different from another degree.
   - **Question 9**. The variable is **year of degree**. This variable has an **interval** scale since it is measured in time, where the unit is a year. It might be considered interval only, and not ratio, since the choice of the zero point, the time Christ is considered to have been born, is an arbitrary choice for year zero. The variable might be considered **discrete** if you think of each year as a separate and distinct entity. However, time is a **continuous** variable, with this rounded off to the year in question.
   - **Question 17**. The variable is **respect for government** or **respect for politicians**. Each of these variables has an **ordinal** level of measurement, since respondents are asked to state their degree of respect, from no respect to great respect. However, there is no well-defined unit of measure for respect so that differences between values of respect are not meaningful and these variables do not have an interval level of measurement. In theory, this variable could be **continuous** since this is a gradation from no respect to great respect. However, the questionnaire provides only five possible response categories so this variable has a **discrete** set of responses.

- **Question 19**. The variable is **view about safety on campus being a problem** and this variable has an **ordinal** level of measurement, since respondents are asked to state the extent to which this is a problem. As in the case of question 17, there is no well-defined unit of measure for this so that differences between values are not meaningful. As a result, this variable does not have an interval level of measurement. In theory, this variable could be **continuous** since this is a gradation from no problem at all to beg a great problem. Again however, the questionnaire provides only three possible response categories so this variable is measured using a **discrete** set of responses.
- **Question 49**. There are two variables here but each is a measure of **level of debt**. Debt is a measurement in dollars, with a well-defined and invariable unit, that of the dollar, so the scale is **interval**. Since zero debt means no debt at all, this variable also has a **ratio** scale. Debt can be measured on a **continuous** scale, since amount of money can be measured along a line interval and the amount of debt could be any value from zero debt to some very large level of debt.

3. Parts (i)-(iii). The unordered and ordered stem-and-leaf displays are in Tables 1 and 2, with the frequency distribution in Table 3. When preparing the unordered stem-and-leaf display from the data in Tables 1 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 will be the same as in Table 2.

   Part (iv). For the distribution of hours spent at various activities, there are relatively few students who report sixty hours or more (only 11 of 68) or less than twenty hours (only 1). As a result, most students report spending between twenty and fifty-nine hours at various activities, with 40-49 hours as the interval that is reported more commonly than any other ten hour interval. While there some few students who report more than one hundred hours at activities, there is only one in each of the ten hour intervals, 100-109, 110-119, and 120-129.

Table 1: Unordered stem-and-leaf display for hours spent at activities

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

Table 2: Ordered stem-and-leaf display for hours spent at activities

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

Table 3: Frequency distribution table of hours spent at activities, sixty-eight undergraduates employed

Age (X)	f
10-19	1
20-29	14
30-39	14
40-49	17
50-59	11
60-69	3
70-79	3
80-89	1
90-99	1
100-109	1
110-119	1
120-129	1
Total	68