

Social Studies 201
Winter 2001
Problem Set No. 2

Due Friday, February 2, 2001

If you complete this problem set by the class time on Wednesday, January 31, Mark Nelson will attempt to have it graded by Friday, February 2.

1. The Graduating Students Survey 2000, conducted by the Canadian Undergraduate Survey Consortium gives data concerning the anticipated annual earnings of students who attend Canadian universities. From this survey, the frequency distributions for anticipated annual earnings for students in primarily undergraduate universities and in universities with undergraduate and graduate programs are given in Table 1.

Using the data in Table 1

- (a) Construct a histogram for the anticipated earnings of students at each of the two types of universities.
 - (b) Calculate the median and interquartile range for each of the two distributions.
 - (c) In words, briefly describe the differences in the two histograms.
2. The Canadian Undergraduate Survey Consortium, in *Graduating Students Survey 2000: University of Regina*, provides the data in Table 2 and notes that “the **average** student in our sample is a single female, who is 25 years old.” In words, explain the meaning of **average**, noted in bold face in the quote and in Table 2. Note any problems you see with the statement.
3. The responses of fourteen Saskatchewan respondents from the 1996 General Social Survey, concerning their income and their attitude to life, are given in Table 3. The attitude to life question was “Would you describe yourself as being usually (1) happy and interested in life, (2) somewhat happy, (3) somewhat unhappy, or (4) unhappy with little interest?”

Table 1: Percentage Distributions of Annual Anticipated Earnings of Students in Two Types of Canadian Universities

| Anticipated Annual Earnings in thousands of dollars | Per Cent in Universities with: Undergrad Only | Undergrad and Grad |
|---|---|-----------------------|
| Less than 15 | 22 | 18 |
| 15 - 20 | 10 | 6 |
| 20 - 25 | 14 | 13 |
| 25 - 30 | 16 | 13 |
| 30 - 35 | 6 | 8 |
| 35 - 40 | 11 | 14 |
| 40 - 45 | 8 | 10 |
| 45 - 50 | 5 | 9 |
| 50 - 60 | 5 | 8 |
| 60 plus | 3 | 1 |
| Total | 100 | 100 |
| Sample Size | 664 | 717 |

- (a) For the attitude to life and income questions calculate the mode, median, mean, and standard deviation. (For income, ignore the four respondents who did not provide their income).
- (b) The fourteen respondents in Table 3 represent a sample of all Saskatchewan respondents. When all Saskatchewan respondents were considered, the results were as follows.

| Statistic | Value of Statistic |
|------------------|--------------------|
| Mode of attitude | 1 |
| Median attitude | 1 |
| Mean attitude | 1.2 |
| Median income | 17.5 |
| Mean income | 23.6 |

Compare your results in (a) with the above statistics and provide pos-

Table 2: Profile of Students in Survey

| Characteristic | Per Cent with Characteristic |
|--------------------|---------------------------------|
| Gender | |
| Male | 34% |
| Female | 66% |
| <hr/> | |
| Age | |
| 20 or less | 1% |
| 21 | 13% |
| 22 | 30% |
| 23 | 10% |
| 24 | 10% |
| 25 to 29 | 14% |
| 30 and over | 12% |
| Average age | 25 years |
| <hr/> | |
| Marital Status | |
| Married | 14% |
| Single | 79% |
| Other | 7% |

sible reasons why the statistics from the sample of size fourteen differ from the statistics for all Saskatchewan respondents.

4. The histograms in Figure 1 are taken from data presented on page 22 of the *Second Graduated Survey* of the University of Regina. The data refer to the weekly hours worked at a job by 1995 and 1999 graduates during an average semester while they attended university. The numbers in the bars of the histogram are the percentages of respondents represented by each bar. From the two histograms, answer the following.

- (a) Calculate the mean and standard deviation of weekly hours worked

Table 3: Responses to Income and Attitude to Life Questions, 14 Respondents, 1996 General Social Survey

| Respondent Number | Income in Thousands of Dollars | Attitude to Life |
|----------------------|-----------------------------------|---------------------|
| 1 | — | 1 |
| 2 | 7 | 1 |
| 3 | 6 | 2 |
| 4 | 48 | 1 |
| 5 | 8 | 3 |
| 6 | 14 | 1 |
| 7 | 5 | 1 |
| 8 | 13 | 2 |
| 9 | — | 4 |
| 10 | 18 | 1 |
| 11 | — | 1 |
| 12 | — | 1 |
| 13 | 29 | 1 |
| 14 | 8 | 2 |

at a job for 1995 and 1999.

- (b) What is the median category of hours worked for each of the two years? Explain your reasoning. (You need not interpolate, but in a sentence or two explain which interval contains the median).
 - (c) In a sentence or two compare the distributions of weekly hours worked at a job for the two years.
5. Use the percentage distributions in Table 2 for this question. These distributions come from the article “Are children going to religious services?” in *Canadian Social Trends*, Autumn 1999, pp. 13-16.
- (a) What is the mode, median, and 33rd percentile for each of (i) Roman Catholic, (ii) Anglican, and (iii) Baptist?
 - (b) Someone suggests that the mean could be calculated by attaching the number 52 to weekly, 12 to monthly, 4 to occasionally, and 0

to not at all. Using these values, calculate the mean for Baptists.
In words, explain what this mean represents.

- (c) Explain which religious affiliation is associated with the greatest attendance and which the least.

Table 4: Religious Service Attendance of Children by Religious Affiliation, Canada, 1994-1995

| Religious Affiliation | Per Cent who Attend: | | | |
|--------------------------|----------------------|---------|--------------|------------|
| | Weekly | Monthly | Occasionally | Not at All |
| Roman Catholic | 22 | 18 | 31 | 29 |
| Anglican | 18 | 16 | 30 | 36 |
| Baptist | 61 | 10 | 12 | 17 |

Figure 1: Weekly Hours Worked at a Job for 1995 and 1999 University of Regina Graduates

