

Social Studies 201
Second Midterm Examination

9:30 – 10:20, Wednesday, November 10, 2004

Answer any three (3) of the five questions. Each question has equal value.

1. Education level of Saskatchewan urban population. Table 1 gives percentage distributions of years of education for Saskatchewan adults, aged 25-64. Obtain the standard deviation and coefficient of relative variation of years of education completed for adults in (i) Regina and Saskatoon, and (ii) other cities in Saskatchewan. In a sentence or two, explain which of the two urban areas has greater variation in years of education completed.

Table 1. Percentage distribution of years of education completed for adults aged 25-64, large and small Saskatchewan cities, 2001

Education level of Saskatchewan adults		Percentage of adults	
Highest level of education completed	Years completed (X)	Regina and Saskatoon	Other cities in Saskatchewan
Less than secondary	10	20	34
Completed secondary	12	23	21
Certificate/diploma	13	14	17
College	14	17	15
University	16	26	13
Total		100	100

Source: Census of Canada, 2001

2. Explanations of probability

a. The *Leader-Post* of November 8, 2004 (pp. A1-A2) reported on a survey of 2,100 Canadians which asked “Who was prime minister of Canada during the Second World War?” Possible responses were Mackenzie King, Lester Pearson, Wilfrid Laurier, and Louis St. Laurent. The report stated:

More than half of those over [age] 60 correctly identified King, with 16 per cent naming Pearson. Respondents aged 45 to 59 were twice as likely to choose King over Pearson. ... But more than a third of the 30-to-44 demographic – 35 per cent – named Pearson as our wartime PM, while only 25 per cent got it right.

(i) Identify a pair of dependent events from this quote and (ii) explain which interpretation of probability (subjective, frequency, theoretical) appears to be associated with “likely” in the second line of the quote.

b. A study by Douglas L. Palmer stated that “prejudice and racism seems to increase in direct parallel to the numbers of immigrants.” At the same time, “negative feelings toward immigrants do not connect with unemployment rates.” Explain how independence and dependence are involved in this quote.

(From www.sfu.ca/~riim/riim-info.webarchive/msg00542.html November 8, 2004)

3. Importance of having at least one child. In the General Social Survey, Cycle 15, 2001, respondents were asked to rate the importance of having children. Respondents were given the statement “My happiness requires having at least one child” and asked to rate the importance of this to them on a four-point scale from 1 indicating ‘very important,’ 2 indicating ‘important,’ 3 indicating ‘not very important,’ to 4 indicating ‘not at all important.’ Responses to this statement from a random sample of the ten males and nine females in this survey gave the following results.

Males: 1, 2, 4, 2, 2, 1, 3, 1, 2, 3

Females: 1, 1, 2, 1, 1, 3, 1, 1, 1.

Use these responses to determine the standard deviation and coefficient of relative variation of response for (i) male respondents, and (ii) female respondents. Write a short note comparing the responses of males and females.

4. Religiosity of Saskatchewan adults. Table 2 shows the relationship between the frequency of attendance of 1,069 Saskatchewan adults in the year 2001, and when these same respondents were age 15.

Table 2. Cross-classification of frequencies of attendance at religious services for Saskatchewan adults in 2001 and when they were age 15

Frequency of attendance in 2001	Frequency of attendance at age 15			Total
	At least once a month (M15)	Several times a year (S15)	Not at all (N15)	
At least once a month (M)	420	47	43	510
Several times a year (S)	196	89	39	324
Not at all (N)	102	34	99	235
Total	718	170	181	1,069

Source: Statistics Canada, General Social Survey, 2001. Cycle 15: Family History (Main File) [machine readable data file]. 3rd edition. Ottawa, ON: Statistics Canada 7/2/2003.

- a. If an individual is randomly selected from the respondents in Table 2, what is the
 - i. Probability of having attended at least once a month when age 15?
 - ii. Probability the individual has never attended religious services?
 - iii. Probability that they either were or are regular attenders, at least once a month.
- b. Are the events of attending several times a year at age 15 (S15) and the event of not attending in 2001 (N) independent of each other?
- c. Explain whether those who attended at least once a month at age 15 more or less likely than those who attended several times a year at age 15 to have the same attendance pattern in 2001.

5. Distribution of years of education

a. Normal distribution. The mean years of education for the 3,862 Saskatchewan adults in the Survey of Labour and Income Dynamics, 2000 was 12.4 years and the standard deviation was 3.1 years. If years of education is a normally distributed variable, obtain the following.

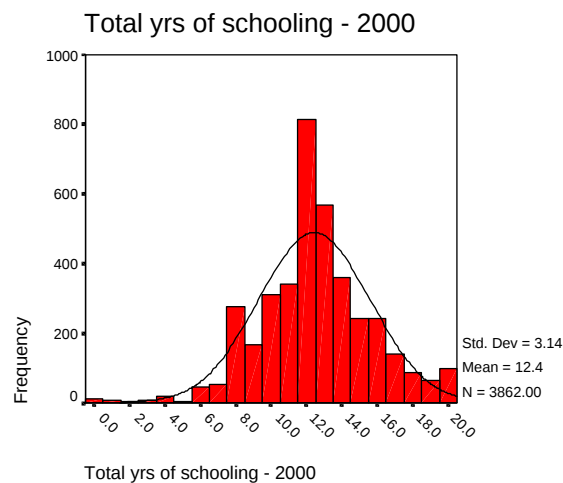
- Proportion of adults with less than 9 years of education.
- Proportion of adults with at least 9 but less than 12 years of education.
- Percentage of adults with 16 or more years of education.

b. Use Table 3 and Figure 1 for this part. Compare the results you obtained in part a. with the actual percentages from Table 3 and the histogram of Figure 1 (with the normal curve superimposed on the frequency distribution). From this comparison, explain whether years of education appears to be normally distributed or not.

Table 3. Percentage distribution of years of education of Saskatchewan adults, 2000

Years of education	Percentage
Less than 9	11.3
9 to under 12	21.4
12	24.0
13 to under 16	27.5
16 plus	15.8
Total	100.0

Figure 1. Histogram of distribution of years of education of Saskatchewan adults, 2000, with normal curve superimposed on the histogram



Source: Data from Statistics Canada. Survey of Labour and Income Dynamics (SLID), 2000. Person file [machine readable data file]. Ottawa, ON. Statistics Canada. 7/16/2003.