Social Studies 201 – Fall 2004

Final Examination – 9:00 a.m to 12:00 noon, December 13, 2004

Answer any three of the six questions. Each question has equal value.

1. Age at marriage. In 1976 the mean age at marriage for Canadian males was 27.9 years and for Canadian females was 25.3 years. Using the data in Table 1, obtained from a sample of Saskatchewan adults in 2001, answer the following.

a. Test whether the mean age at first marriage for Saskatchewan males differs from the mean age reported for Canadian males in 1976. For Saskatchewan females, test whether the mean age at first marriage is lower than the Canadian mean for females in 1976. (0.10 significance in each case).

b. Obtain a 90% interval estimate for the mean age at first marriage (i) for all Saskatchewan males in 2001; and (ii) for all Saskatchewan females in 2001.

c. Write a short note on the results of a. and b., commenting on possible errors in your conclusions.

Table 1. Statistics of age at first marriage, Saskatchewan, 2001

Characteristic	Sex of respondent	
	Male	Female
Mean age	27.52	24.67
Standard deviation of age	8.07	7.68
Sample size	321	352

Source: 2001 data from Statistics Canada. General Social Survey of Canada, 2001. Cycle 15: Family History (Union file) [machine readable data file]. Ottawa, ON: Statistics Canada. 4/23/2003. 1976 data from Roderic Beaujot and Kevin McQuillan, *Growth and Dualism*, Gage Publishing Limited, Toronto, 1982, p. 132.

2. Federal-provincial health agreement of September 2004. An Environics Research Group survey, conducted in late September and early October 2004, reported "Majority Satisfied with Health Agreement." Using data from the survey in Table 2:

a. Obtain a 94% interval estimate for the proportion of Quebec residents who are satisfied (very or somewhat) with the agreement. Obtain the corresponding interval estimate for the rest of Canada. From these interval estimates, explain what you conclude about differences of opinion between Quebec and the rest of Canada on this issue.

b. Environics reports that the "survey was conducted by telephone among a representative sample of 2,027 adult Canadians … A sample of this size has a margin of error of plus or minus 2.2 percentage points, 19 in 20 times." Using a formula from the class, verify this statement. Obtain the comparable margin of error for (i) Quebec and (ii) rest of Canada.

Table 2. Percentage distributions of views about the September 2004 health agreement. Canada, Quebec, and rest of Canada

View or opinion concerning health agreement	Per cent with each view in each region		
	Canada	Quebec	Rest of Canada
Very satisfied	18	22	16
Somewhat satisfied	62	54	65
Neutral	2	5	1
Somewhat dissatisfied	14	14	14
Very dissatisfied	4	5	4
Total	100	100	100
Sample size	2,027	498	1,529

Source: Environics Research Group, "Majority Satisfied with Health Agreement," 10/19/2004, http://erg.environics.net/news/default.asp?aID=568.

3. Multiculturalism – opinions about funding festivals. In 1991, the Angus Reid Group surveyed Canadians about their views on multiculturalism. In this survey, the mean response to the statement concerning government funding of festivals and special events was 3.4, where opinions were measured on a five-point scale, with 1 indicating strong disagreement, and 5 indicating strong agreement. In addition, 26% of Canadians disagreed with government funding of festivals and special events. Use the data in Table 3 to compare University of Regina undergraduate responses to those from the 1991 study of all Canadians.

a. Using the five point scale, calculate the mean and standard deviation for the responses of University of Regina students.

b. Test whether University of Regina students express a lower mean response with funding festivals than the Canadian mean.

c. Test whether a larger proportion of University of Regina students disagree (strongly or somewhat) with government funding of festivals and special events than did Canadians in 1991.

d. Outline any possible errors in your conclusions about b. and c.

Table 3. Number of University of Regina respondents with each view about government funding festivals and special events

Respondents' views about funding festivals and events	Number of respondents
Strong disagree (1)	91
Somewhat disagree (2)	151
Neutral (3)	199
Somewhat agree (4)	150
Strongly agree (5)	106
Total	697

Source: Survey of Student Attitudes and Expriences, Fall 1998, University of Regina

4. Sleep time. According to a Statistics Canada survey, Canadians report sleeping a mean of approximately seven hours per day. Data for two subgroups of the Saskatchewan respondents in the survey are provided in Table 4. Using these data:

a. For those aged 20-24, with one or more children in the household, obtain 90% interval estimates of mean hours of sleep daily for (i) males and (ii) females. From the data in Table 4 and these interval estimates, what can you conclude about mean hours males and females sleep each day?

b. Test whether there is sufficient evidence to conclude that either (i) Saskatchewan males aged 20-24 with one or more children in the household, or (ii) Saskatchewan females aged 20-24 with one or more children in the household, sleep less than seven hours per day, on average. (0.05 significance).

c. How large a sample size would be required to determine the mean number of hours a group sleeps, correct to within one-quarter hour, eighteen times in twenty? Within five minutes, eighteen times in twenty?

Table 4. Hours of sleep daily reported by respondents with different characteristics, Saskatchewan, 2001

Characteristics of members of the group	Statistics of daily hours of sleep		Sample size
	Mean	Standard deviation	
Males, 20-24, 1+ child	6.25	1.14	12
Females. 20-24, 1+ child	6.84	1.34	25

Source: Statistics Canada. Canadian Community Health Survey, Cycle 1.1 (2000-2001) [machine readable data file]. Release 2 Edition. Ottawa, ON: Statistics Canada. July 23, 2003.

5. University report card. *The Globe and Mail* of October 13, 2004, p. A15, contained an article "University Report Card" summarizing the opinions of undergraduates across Canada concerning their educational experiences at university. The data in Table 5 provide summary statistics for ratings of educational experiences and student services at the universities. These values come from a rating on a five-point scale, with A+ being 4.6 and above, A being 4.4, A minus being 4.2, and so on, down to D being less than a 3.0. The University of Regina rated 4.2, or A minus on educational experience, and 4.0 or B plus on student services. Consider the universities in this table as a random sample of all universities.

Table 5. Statistics and sample sizes for student ratings of educational experiences and student services at Canadian universities, by size of university

Size of university	Educational experience		Student services		Sample size
	Mean	Standard deviation	Mean	Standard deviation	
Large (25,000+ students)	3.91	0.11	3.89	0.15	9
Medium (12,500-25,000)	4.19	0.23	4.04	0.19	17
Small (under 12,500)	4.27	0.20	4.05	0.17	12
Total	4.15	0.24	4.00	0.18	38

Source: http://www.theglobeandmail.com/generated/realtime/specialReportCard.html

a. Obtain 98 per cent interval estimates for the mean educational experience (i) for all large universities, and (ii) for all small universities.

b. For small universities, test whether the mean (i) for educational experiences exceeds 4 (a B+ level) and (ii) for student services differs from 4.

c. Write a short note describing the differences of educational experiences and student services by size of university, commenting on whether respondents consider smaller universities to be doing a better job.

6. Jobs of immigrants. Data for Table 6 come from a 1998 study of immigrants to Canada, who came to Alberta between 1992 and 1997. The number in each cell of Table 6 represents the number of individuals with each combination of occupations in the home country and in Canada. For example, for those who had professional occupations in their home country, in Alberta 10 had obtained professional jobs by 1998, 19 had clerical or sales jobs, and 10 had blue collar jobs. The expected counts and the chi-square statistics come from the SPSS program, with the assumption of no relation between occupation in home and Canada producing these expected counts.

Table 6. Cross-classification of occupation of immigrants in home country and in Canada – counts and expected counts

HOME * CANADA Crosstabulation

			CANADA			
			1 Profession	2 Clerical/sales	3 Blue collar	Total
HOME	1 Profession	Count	10	19	10	39
		Expected Count	1.6	17.1	20.3	39.0
	2 Clerical/sales	Count	2	103	70	175
		Expected Count	7.4	76.7	90.9	175.0
	3 Blue collar	Count	3	34	105	142
		Expected Count	6.0	62.2	73.8	142.0
Total		Count	15	156	185	356
		Expected Count	15.0	156.0	185.0	356.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	93.169[a]	4	.000
Likelihood Ratio	73.759	4	.000
Linear-by-Linear Association	55.118	1	.000
N of Valid Cases	356		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 1.64.

Source: Harvey Krahn, Tracey Derwing, Marlene Mulder, Lori Wilkinson, "Educated and Underemployed: Refugee Integration into the Canadian Labour Market," *Journal of International Migration and Integration*, Vol. 1, No. 1, Winter 2000, pp. 67 and 69.

a. The authors of the article state there is "some correlation between occupations held in the home country and occupations held at the time of the interview." Use the chi-square test and the Pearson chi-square statistic to test this statement. (0.01 significance).

b. The authors also state "the majority of managerial/professional refugees experience downward occupational mobility after arriving in Canada." Assuming this is a random sample of immigrants, test whether more than one-half of the 39 immigrants who were originally professionals, in their home country, were at lower status occupations (clerical/sales or blue-collar) in Alberta in 1998. (0.02 significance).

c. Using a. and b. and Table 5, write a short note summarizing the results.