

Social Studies 201 – Fall 2006

Final Examination

9:00 a.m – 12:00 noon, December 13, 2006, CL431

Note: Answer any three of the six questions. Each question has equal value. Where the confidence or significance level is not stated in the question, make sure you state the level you are using.

1. Alberta Survey. In 2005, the annual Alberta Survey asked approximately twelve hundred residents of the province to provide their response to the statement “Gays and lesbians should have the right to get married.” Responses were measured on a five-point scale from 1 meaning strongly disagree to 5 meaning strongly agree. Summary data from the survey, organized by age of respondent, is provided in Table 1.

Table 1. Statistics of responses of Alberta residents to statement concerning gays and lesbians right to get married, classified by age of respondent

Age group of respondent	Statistics of response		Sample size
	Mean	Standard deviation	
18-24	3.23	1.62	139
25-34	3.12	1.65	212
35-44	2.83	1.69	251
45-54	2.68	1.72	244
55-64	2.07	1.56	160
65 plus	1.93	1.46	152
Total	2.68	1.69	1,158

Source: Alberta Survey 2005 Public Release Data, <http://www.uofaweb.ualberta.ca/prl/nav02.cfm?nav02=41845&nav01=23785>

Using data from Table 1,

- Obtain interval estimates for the true mean response for all Alberta residents of age (i) 25-34 and (ii) age 45-54.
- Test whether (i) the mean response for all those of age 25-34 differs from a neutral response of 3 and (ii) the mean response of all those of age 18-24 exceeds the neutral response of 3.
- State any assumptions used in answering parts a. and b, along with any possible errors or shortcomings in the conclusions. Also, using the results from a. and b., and the data in Table 1, write a short note describing how responses differ by age.

2. Lifestyle and Health-Risk Behaviour. The data in Table 2 come from a survey conducted by students in Social Studies 306 and are provided in a research report written by the class instructor, Henry Chow. The data refer to the degree of satisfaction expressed by survey respondents concerning their relationship with their significant other and with their family. Responses were measured on a five-point scale from 1, indicating strongly disagree, to 5, indicating strongly agree.

Table 2. Frequency distributions of the degree of satisfaction with significant other and with family, University of Regina undergraduates

Degree of satisfaction	Number of respondents expressing each degree of satisfaction about relationship with:	
	Significant other	Family
Strongly disagree (1)	10	10
Somewhat disagree (2)	34	28
Neutral (3)	159	31
Somewhat agree (4)	91	180
Strongly agree (5)	76	124
Total	370	373

Source: Henry P. H. Chow, *Lifestyle and Health-Risk Behaviour: A Survey of University Students in Regina*, Department of Sociology and Social Studies, University of Regina, 2006, p. 17.

From the data in Table 2,

- Calculate the mean and standard deviation for the degree of satisfaction (i) about relationships with significant other and (ii) about relationships with family. (Use the coding of responses from 1 to 5).
- Test whether the mean level of satisfaction about relationship with significant other exceeds 3.5.
- Test whether the mean level of satisfaction about relationship with family differs from 4.
- In words, write a short description of the results, mentioning any assumptions used and any possible errors in conclusions.

3. Does the Federal Liberal Party deserve to be elected and govern? An Ipsos Reid poll of December 9, 2006 asked Canadian adults the question “Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree that now that the Liberals have a new leader, the Federal Liberal Party deserves to be elected and govern under the leadership of Stephane Dion?”

- a. An article describing the results of the poll claims that there is a sharp divide in opinion at the Manitoba-Ontario border. 182 of the 302 respondents in the four western provinces disagree that the federal Liberal Party deserves to be elected. In contrast, 318 of the 702 respondents east of the Manitoba/Ontario border disagree. For each of the two regions, test whether the proportion who disagree differs from one-half. From these, very briefly explain whether there appears to be a divide at the Manitoba-Ontario border.
- b. Using the data in Table 3, obtain an interval estimate for the proportion of Alberta respondents who strongly disagree. Do the same for the Saskatchewan/Manitoba respondents. From these estimates and Table 3, could you conclude that opinions differ between Alberta and Saskatchewan/Manitoba?

Table 3. Alberta and Saskatchewan/Manitoba responses to question concerning whether Federal Liberal Party should be elected and govern

Response to question concerning election of Federal Liberal Party	Number of respondents in	
	Alberta	Saskatchewan/Manitoba
Strongly agree	7	6
Somewhat agree	18	15
Somewhat disagree	22	15
Strongly disagree	42	24
Total	89	60

Source: <http://www.ipsos-na.com.libproxy.uregina.ca:2048/news/pressrelease.cfm?id=3304>

4. Sample sizes.

a. Sample sizes for estimates of proportions and percentages. Concerning the same poll as that referred to in question 3, Ipsos Reid makes the statement:

These are the findings of an Ipsos Reid poll conducted for CanWest News Service/Global News and fielded from December 5-7th, 2006. For this survey, a representative randomly selected sample of 1004 adult Canadians was interviewed by telephone. With a sample of this size, the aggregate results are considered accurate to within ± 3.1 percentage points, 19 times out of 20, of what they would have been had the entire adult Canadian population been polled. The margin of error will be larger within each sub-grouping of the survey population.

- i. Verify the statement that the margin of error is ± 3.1 percentage points, 19 times out of 20. Show your calculations.
 - ii. The sample size for the four western provinces is 302. How large would the margin of error be for estimating percentages or proportions for this subgroup (19 times out of 20)?
 - iii. For all Canada, how large a sample size would be required to obtain the percentage who say that the Liberals deserve to be elected, accurate to within 2 percentage points, seventeen in twenty times?
- b. Sample size for a mean. For the Alberta Survey in Table 1, how large a sample size of Alberta adults would be required to obtain an estimate of the mean response correct to within 0.1 points on the five-point scale, with confidence 99%?

5. Occupational attainment of females across generations. In his analysis of changes in the occupational attainment of several generations of Canadians, University of Calgary professor Richard A. Wanner presents the data in Table 4. Wanner measures the occupational attainment of individuals by using the Blishen scale, a scale that ranges from 0, for very low status occupations, to 100, for very high status occupations. In Table 4, female respondents from the various surveys analyzed by Wanner are organized by the year in which they entered the labour force. The table also provides the mean occupational status of the fathers of female respondents in each labour force entry cohort.

Table 4. Statistics of occupational status of females and their fathers, various cohorts

Females who entered the labour force in:	Occupational status		Sample size	Father's occupational status
	Mean	Standard deviation		
1920-1929	35.6	10.5	309	28.3
1940-1949	41.9	12.8	1,713	33.6
1960-1969	45.4	13.0	3,382	37.2
1980-1989	46.1	13.6	705	43.4

Source: Richard A. Wanner, "Twentieth-Century Trends in Occupational Attainment in Canada," *Canadian Journal of Sociology*, Fall 2005; 30, 4, Table 1.

- Test whether the mean occupational status of females is greater than that of their fathers for females who entered in the labour force in (i) 1920-1029 and (ii) 1980-89. (0.01 level o significance).
- What is the interval estimate for the mean occupational status of all Canadian females who entered the labour force in (i) 1960-1969 and (ii) 1980-1989? (99% confidence level).
- Using the results from a. and b. and the data in Table, briefly describe the pattern of changes in female occupational status and changes relative to the occupational status of their fathers.

6. Feminization of professions. Tracey L. Adams, examining the dental profession in Ontario, presents the data in Table 5 concerning the regional distribution of dentists.

- The data of Table 5 have been reorganized into Table 6 to provide counts (observed number of cases) and expected counts (expected number of cases). The Pearson chi-square statistic and degrees of freedom is in Table 7. Use the chi-square test to analyze the relationship between type of dentist and region.
- Obtain interval estimates for the proportion of (i) male specialists who work in large urban areas and (ii) female specialists who work in large urban areas.
- Adams comments that “the findings suggest that women specialists are more likely than men to work in large urban centres (61% of female respondents compared to 48%) and less likely to work in rural areas (0% women and 7% men).” Using the results from a. and b., how sound is the conclusion of Adams?

Table 5. Cross-classification of type of dentist by region of Ontario

TYPE * REGION Crosstabulation

Count		REGION				Total
		Rural	Suburban	Small urban	Large urban	
TYPE	Male -- general	26	50	65	77	218
	Female -- general	21	34	28	55	138
	Male -- specialist	4	8	16	26	54
	Female -- specialist		4	7	17	28
Total		51	96	116	175	438

Source: Tracey L. Adams, “Feminization of Professions: The Case of Women in Dentistry,” *Canadian Journal of Sociology*, Winter 2005; 30, 1, p. 84.

Table 6. Observed and expected counts for Table 5

TYPE * REGION Crosstabulation

			REGION				Total
			Rural	Suburban	Small urban	Large urban	
TYPE	Male -- general	Count	26	50	65	77	218
		Expected Count	25.4	47.8	57.7	87.1	218.0
	Female -- general	Count	21	34	28	55	138
		Expected Count	16.1	30.2	36.5	55.1	138.0
	Male -- specialist	Count	4	8	16	26	54
		Expected Count	6.3	11.8	14.3	21.6	54.0
	Female -- specialist	Count	0	4	7	17	28
		Expected Count	3.3	6.1	7.4	11.2	28.0
	Total	Count	51	96	116	175	438
		Expected Count	51.0	96.0	116.0	175.0	438.0

Table 7. Chi-square statistics for Table 6

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.415 ^a	9	.059
Likelihood Ratio	19.619	9	.020
Linear-by-Linear Association	7.901	1	.005
N of Valid Cases	438		

a. 1 cells (6.3%) have expected count less than 5. The minimum expected count is 3.26.