Assignment 5

A4 – 1. The May 8, 1989, issue of *Fortune* magazine described the results of a sample survey dealing with the impact on the U.S. economy of spending by teenagers and younger children.

(a) *Fortune* cites a 1988 sample survey of 1,200 youths aged 6 to 17 who were asked by interviewers: *Do you wish your family were bigger?* Suggest how such a question might be *mis*interpreted by children; also suggest an improved wording for the question and indicate briefly what difficulties are involved in making improvements for use in this survey.

(b) In discussing *adult* perceptions of children's concerns, *Fortune* cites the case of representatives of consumer-products companies being asked what *children* would say they worry most about: *death of a parent*; *nuclear war; a bad report card*. Which of the three alternatives would *you* predict children would choose? Explain briefly.

A5 – 2. In the first Star Sports survey published in the *Toronto Star* on February 3, 1990, readers were asked: *Who is your favourite Toronto athlete?* The winner, based on responses from 3,710 readers and published in the *Star* on Saturday, March 3, was Kelly Gruber, the Blue Jays' third baseman.

(a) Describe briefly the limitations imposed on the answer by the relevant categories of error in such a sample survey.

(b) The description under a photograph of Gruber in the *Star* was .... *Toronto's favourite athlete.* Comment briefly on this description in light of the information given above.

A5 – 3. The article given below entitled "**Tears**," taken from the *Toronto Star*, describes a sample survey and its answers. In *not more than* 200 words, describe the limitations imposed on the answers by the relevant categories of error in such a sample survey. Indicate any information about the survey design/execution which you believe should have been included in the article but is not; describe briefly why this information would be useful.

Tears: Women shed more of them than men

Toronto Star Special

WASHINGTON – Women cry five times as often as men, a typical crying episode lasts about six minutes and tears are most often shed between 7 and 10 p.m., according to a U.S. study.

Minnesota biochemist William H. Frey II calls the study "the first formal investigation of adult human crying behaviour."

Crying stimulated by emotion is unique to the human being, says Frey, 34, who has been testing his theory that emotional tears are nature's way of excreting bodily chemicals that build up in response to stress.

"This hypothesis suggests," he says, "that emotional tears should be chemically different from tears produced in response to eye irritation by onions, for example." While Frey found "a statistically significant difference in the amounts of protein" in emotional and irritant tears, chemicals found in emotional tears have yet to be linked with emotional stress.

More Women

In his recent investigation of crying frequency, 286 females and 45 males ("men volunteered much less often than women") kept records for 30 days of all emotional and irritant crying episodes. Less detailed crying information was gathered from 201 females and 124 males.

"From a biochemical viewpoint, people who are sad or depressed could be suffering from a chemical imbalance," claims Frey, "that is restored, at least partially, by the excretion of certain substances in tears."

Although Frey owns up to shedding emotional tears "maybe once every three or four months," the subjects of his study cried much more often:

□ Women cried about 5.3 times in the month, men about 1.4 times.

□ Only 6 per cent of females reported no emotional episodes, while 45 per cent of the males reported none.

□ Most male crying episodes (71 per cent) were comprised of "watery eyes" only, without "flowing tears" (which nearly half of female crying episodes included).

□ Nearly three-fourths of the females and 58 per cent of the males reported feeling "generally positive" about crying. Eighty-five per cent of females and 73 per cent of males said they usually felt better after crying.

□ The stimulus for female crying episodes: 40 per cent interpersonal relations (arguments, weddings, etc.), 27 per cent media (movies, TV etc.), 6 per cent sad thoughts, 1 per cent physical pain and 26 per cent "other." Stimulus for male crying: 36 per cent interpersonal relations, 9 per cent sad thoughts and 19 per cent other.

□ "A lump in the throat" occurred in half of female and 29 per cent of male crying episodes, sobbing in 14 per cent of female and 10 per cent of male episodes.

□ Sixty-eight per cent of males and 46 per cent of females said they could stop themselves from crying.

□ There was no significant correlation of emotional crying frequency with age.

WASHINGTON POST.

A5 - 4. The article EM8302 reprinted overleaf on page 0.21-2, from the *Kitchener-Waterloo Record* of September 8, 1983, describes the results of two Gallup polls of Canadian voters' political preferences in July and August, 1983.

(a) Describe a possible *frame(s)* for such a sample survey.

(b) Suggest three different sources of study, non-response and measurement error' that might arise in the survey.

(c) Discuss critically the statement at the top of the middle column: *The poll is based on interviews with 1,055 people and is accurate to within four percentage points 19 times out of 20.*

(*continued overleaf*)

A5 – 4. (cont.) (d) Assuming that the sample size in the July poll was the *same* as for the August poll and using other information given early in the article EM8302, find an approximate 95% confidence interval for the *change* in support of the Conservatives among all decided voters.

(e) Explain briefly how the confidence interval in (d) takes account of sample error and other relevant categories of error and then comment briefly on the headline of the article EM8302.

EM8302:

NDP gains while Tories slip in poll

TORONTO (CP) – Support for the federal Progressive Conservatives is slipping among committed voters while the New Democratic Party is gaining favour, a Gallup poll released today suggests.

The August poll, conducted eight weeks after Brian Mulroney was chosen the new Conservative leader, said 50 per cent of decided voters would support the Conservatives in an election, a drop of five percentage points from a July poll.

At the same time, the poll suggests, the NDP increased its share to 20 per cent from 16 per cent a month earlier, while the Liberals garnered 28 per cent, up one percentage point.

Twenty-six per cent said they were undecided compared with 23 per cent in July.

"Nothing much has changed", Conservative party president Peter Elzinga said of the results. "We're still well ahead, the Liberals are still in serious trouble and the NDP has just climbed up from rock bottom".

NDP leader Ed Broadbent said the results are "a good sign for the New Democratic Party right across Canada and it will mean that our own members will be going into Parliament more determined than ever."

Parliament reopens Monday.

The poll is based on interviews with 1,055 people and is accurate to within four percentage points 19 times out of 20, says Gallup.

This means Conservative support could range from 46 per cent to 54 per cent of decided voters, the NDP's between 16 and 24 per cent and the Liberals' between 24 and 32 per cent.

The poll provides no precise regional breakdown because the smaller sample size for each region increases the margin for error. But it suggests the NDP's gains came at Conservative expense in the Atlantic provinces, Ontario and the West.

Reached Wednesday night in Liverpool, N.S., where he is attending a federal caucus meeting, Broadbent said Canadians are listening to the party's message on medicare and unemployment "and that's encouraging."

Federal Labour Minister Andre Ouellet, remarking on the apparent dip in Conservative support, said, "The situation seems to be coming back to normal and the gap between the Conservatives and the NDP should shrink in the coming months".

Ouellet, attending a Quebec Liberal caucus meeting at a Quebec resort, said he believes Liberal popularity will increase as anti-inflation measures and job-creation programs take effect.

"We're still relatively low but I'm not surprised by the situation".

A5 – 5. The page at the right, reproduced at about 58% of its original size, was the covering letter with a questionnaire sent to all faculty and staff at the University of Waterloo. Assuming that these were the only individuals surveyed, in *not more than* 250 words, discuss possible limiations imposed on survey answers by study error, non-response error and measurement error.

CENTRE FOR CONTACT LENS RESEARCH

SCHOOL OF OPTOMETRY, UNIVERSITY OF WATERLOO

DISCONTINUATION OF CONTACT LENS WEAR

LETTER OF INFORMATION

It has been estimated that within North America between 10% to 30% of the contact lens population have discontinued lens wear.

With this questionnaire we hope to identify the percentage of contact lens wearers in Waterloo who have discontinued, the reasons for discontinuation and at what stage after being first fitted this occurred. The information collected will help to improve our understanding of premature contact lens discontinuations which will be of benefit to existing and future contact lens wearers. Complete confidentiality is assured in this project.

If you have discontinued contact lens wear or are presently wearing contact lenses, it is vital to the success of the survey that you complete this questionnaire with care and attention. It should only take approximately 10 minutes of your time. Please return the questionnaire to Kathryn Weed, Centre for Contact Lens Research, School of Optometry (CCLR OPT 206). For further information please phone 885 1211 x2694.

If you have never worn contact lenses or do not wish to participate please return the unanswered questionnaire to the above address.

Thank you very much for your time and attention.

This questionnaire has been approved by the Office of Human Research and Animal Care.