

Chapter 2

#12 (3 points) To vote or not to vote. *Who* - Sample of 1000 adult Canadians.

What - Gender, province, party preference, age group, opinion on timing of the next federal election.

When - January 2008.

Where - Respondents were spread across Canada.

Why - For the public interest, and perhaps the interest of political parties.

How - A telephone poll using Harris/Decima database and methodology.

Variables - There are five variables, all categorical: gender, province, party preference, age group: 18-34, 35-49, 50+, opinion on election timing.

#22 (3 points) Fuel economy. *Who* - Every model of automobile in Canada.

What - Vehicle manufacturer, vehicle type, weight (probably in kg), horsepower, and gas mileage (in L/100km) for city and highway driving.

When - This information is collected currently.

Where - Canada.

Why - Transport Canada and Natural Resources Canada use the information to track fuel economy of vehicles.

How - The data is collected from the manufacturer of each model. *Variables* - There are six variables. City mileage, highway mileage (L/100km), weight, and horsepower are quantitative variables. Manufacturer and type of car are categorical variables.

Chapter 3

#18 (10 points) Fat and fatter.

a) $(4850/14807) \times 100 = 32.8\%$. The table with the marginal totals is given below.

	2005				
1995	Underweight	Normal	Overweight	Obese	Total
Underweight	91	241	0	0	332
Normal	110	4850	2348	265	7573

Overweight	0	547	3188	1383	5118
Obese	0	66	270	1448	1784
Total	201	5704	5806	3096	14807

b) $(5806+3096)/14807 \times 100 = 60.1\%$

c) There were 7573 normal weight Canadians in 1995 and 2348+265 of them became overweight or obese by 2005. That is, $(2348+265)/7573 \times 100 = 34.5\%$ of normal weight Canadians in 1995 became overweight or obese by 2005.

d) There were 5704 normal weight Canadians in 2005 and 547+66 of them were overweight or obese by 1995. That is, $(547+66)/5704 \times 100 = 10.7\%$ of normal weight Canadians in 2005 were overweight or obese in 1995.

e) There were a total of $5118+1784 = 6902$ overweight or obese Canadians in 1995

and $547+66 = 613$ of them got their weight down to normal by 2005. That is, $613/6902 \times 100 = 8.9\%$ of overweight or obese Canadians in 1995 got their weight down to normal by 2005.

#19 (5 points) Canadian languages.

a) 21,130,000 Canadians speak English only. $21,130,000/31,241,000$ total Canadians $\approx 67.6\%$

b) 4,142,000 Canadians speak French only and 5,449,000 speak both French and English, for a total of 9,591,000 French speakers. $9,591,000/31,241,000$ total Canadians $\approx 30.7\%$

c) 4,011,000 French and 3,018,000 French and English speakers yield a total of 7,029,000 French speakers in Quebec. $7,029,000/7,436,000$ Quebec residents $\approx 94.5\%$

d) 7,029,000 Quebec residents speak French and 9,591,000 Canadians speak French. The percentage of French-speaking Canadians who live in Quebec is $7,029,000/9,591,000 \approx 73.3\%$

e) If language knowledge were independent of province, we would expect the percentage of French-speaking residents of Quebec to be the same as the overall percentage of Canadians who speak French. Since 30.7% of all Canadians speak French while 94.5% of residents of Quebec speak French, there is evidence of an association between language knowledge and province.

#30 **Blood proteins.** The two-way table and the conditional distribution (percentages) of protein (presence or absence) for each blood type are given below. It looks like the proportion of individuals with this protein is higher among the individuals with blood type B.

Blood Type

Protein	Type A	Type B	All
Absent	35	40	75
Present	5	20	25
All	40	60	100

Tabulated statistics: Protein, Blood Type

Using frequencies in Count

Protein	Type A	Type B	All
Absent	87.50	66.67	75.00
Present	12.50	33.33	25
All	100	100	100