# Wolff 2-33

# From Ronald W. Wolff: "stochastic modeling and the theory of queues processes", Prentice-Hall 1989

A sample of size 1000 adult women is drawn for a survey in which each woman is asked two questions:

 (i) How many children did your mother have?

 (ii) How many children did you have? (Assume their childbearing days are over.)

Suppose the distribution of number of children per woman has not changed over time and is $\alpha_j = \frac{1}{3}, j = 1, 2, 3$.

 (a) What is the average response (approximately) to question (i)?

 (b) What is the average response (approximately) to question (ii)?

 (c) If we did not know that $\{\alpha_j\}$ has not changed, the results of (a) and (b) might lead us to the conclusion that family sizes are decreasing. Instead, what is the explanation for these results? Would increasing the sample size help? [There is a subtle asumption needed in (a). What is it?]