

CHAPTER 9

*School-level Statistical Education in New Zealand**

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New Zealand has a central Education Authority; because of its relatively small size and good communications it has been possible to introduce rather quickly a very substantial amount of Statistics in school courses, although the extent of the Senior Secondary syllabus is currently under review.

Details of the syllabuses at the various levels follow.

At the *Primary School level*, charts are used to give a picture of observations and events, with specific mention of circular and bar graphs. There is then data collection, with range and average, and double bar graphs, with extensions to the mode and median. Probability is to be illustrated with sets and subsets, with mutually exclusive events specially mentioned.

At the *Junior Secondary level*, both Probability and Statistics are pursued further. In Probability, based on sets: independent events, experiments to estimate probabilities, Venn diagrams, long-run frequency, introduction to probability distributions (e.g. rectangular and normal). In Statistics: further data collection and interpretation, mean, median, mode, range; discrete and continuous variables, pie charts, grouped frequency distributions, histograms, frequency polygons, cumulative frequency curves, population parameters.

At the *Senior Secondary level*, Sixth Form (at about age 16) technically provides University entrance, although in practice most students stay on at Secondary School for Seventh Form. The University Entrance mathematics syllabus (to which there are locally recognized alternatives) contains a short compulsory, and a longer optional, section on Probability and Statistics. The prescriptions include: probability, sample space, mutually exclusive and independent events, the binomial distribution with mean and standard deviation, population parameters and sample statistics (mean, standard deviation, median, range), frequency distributions, random samples, variation in random samples, normal distribution. An alternative syllabus at present under consideration contains a substantial section on Probability and Statistics: probability as an idealization of long-run proportion, addition rule for disjoint events, multiplication rule for independent events, sampling procedures (random number tables), presentation of sample data (parameters and statistics), use of summation notation. In its optional section are: the binomial distribution, approximation by the normal distribution, fitting data by the normal distribution, estimation of the binomial parameter and its standard error, with sample size necessary.

* This brief report has been compiled from material supplied by Professor D. Vere-Jones and Mr. B.W. Werry.

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At Seventh Form level, Applied and Pure Mathematics are supposed to be alternatives, although in practice almost all who take Applied also take Pure Mathematics. (There are current proposals to change this.) In the ambitious Statistics section of the Applied Mathematics prescription are: Conditional probability, expectation algebra, hypergeometric, Poisson and normal distributions, least squares regression (with standard errors), hypothesis testing, confidence intervals, the t -test, tests based on the chi-squared distribution.

PART 4

Africa