

Assessment Report

New Zealand Scholarship Statistics 2024

Performance standard 93201

General commentary

Candidates are expected to demonstrate a comprehensive understanding of achievement objectives from the Statistics strand of the curriculum, up to and including Level 8. This includes statistical concepts and skills assessed by the NCEA Level 3 Statistics Achievement Standards. Successful candidates demonstrated well-developed knowledge of statistical ideas, which evidenced their participation in various learning experiences across a broad range of topics, as opposed to relying on rote memorisation or rehearsed answers from previous examination questions.

The examination consisted of four questions aligned with the 2024 assessment specification, each candidate was required to respond to all four questions. These questions were set within real-world contexts and spanned areas such as statistical investigations, statistical literacy, and probability. Each question integrated content from multiple areas, emphasising data analysis and interpretation. Candidates encountered data presented in a range of familiar and unfamiliar formats and were required to interpret features of the data within the given context.

Candidates who demonstrated strong performance were typically those with experience conducting various types of investigations, employing diverse data sources and analytical methods. Candidates need to demonstrate confidence in identifying potential limitations of different statistical investigation methods in context. This was particularly evident in Question One (a)(ii) which required candidates to identify and evaluate non-sampling errors and their impacts on conclusions. Most candidates were able to identify that these studies were not experimental and that causal claims could not be made, however they did not adequately discuss sample-to-population inference or the limitations of the sampling strategies in relation to the extension of results from these studies.

Successful candidates displayed proficiency in working with a variety of statistical graphs, outputs, and other data-based visualisations, effectively integrating contextual knowledge into their responses. They demonstrated strong competencies in calculations related to probability concepts and distributions, coupled with an understanding of key modelling principles which were informed by contextual considerations. While most successful candidates were able to calculate relative risks between groups, responses to Question Four (a)(i), (ii), and (iii) indicated challenges in accurately interpreting these calculations.

Report on performance standard

Candidates who were awarded Scholarship with **Outstanding Performance** commonly:

- made insightful connections to context and across different data displays
- compared proportions using a relative approach
- applied statistical models in context with a high degree of accuracy
- were familiar with the key aspects of experimental design and sample-to-population inference
- considered the limitations and strengths of experimental design in a specific context
- reflected on the nature of the data and the appropriateness of the sampling methods used in its collection
- used appropriate statistical language and terminology that enhanced their interpretation of evidence

- demonstrated an understanding of the impact of features of data on modelling or estimations
- formed correct probability representations to solve problems.

Candidates who were awarded **Scholarship** commonly:

- interpreted information from various data displays and test outputs
- evidenced comments and comparisons numerically
- created and interpreted appropriate confidence intervals from correct margin of error calculations
- selected and evidenced appropriate statistical models for given situations
- showed an understanding of experimental design and conduct
- demonstrated the ability to identify appropriate parameters for statistical models
- identified limitations of various probability distributions in a specific context
- demonstrated understanding of the limitations of various sampling methods in a specific context
- identified and calculated relevant proportions to compare results within a complex two-way table.

Candidates who were **not awarded Scholarship** commonly:

- did not read graphs or questions carefully
- did not provide responses in context
- did not provide numeric evidence when making comments and comparisons about data
- demonstrated a lack of understanding of key experimental design principles
- demonstrated a lack of understanding of key sample-to-population inference principles
- were unable to identify appropriate statistical models or parameters for a specific context
- confused measures of centrality or neglected to specify the relevant statistic
- could not identify key features or trends from figures and often wrote lengthy descriptions of insignificant features or trends.