

<b>Title</b>	<b>Develop a plan to address the needs of adult learners in statistical knowledge and reasoning practice</b>		
<b>Level</b>	<b>6</b>	<b>Credits</b>	<b>8</b>

<b>Purpose</b>	<p>This unit standard is for people with expertise in adult numeracy education, whose prime purpose is to improve the numeracy of learners in a range of settings: training, educational, community or workplace.</p> <p>People credited with this unit standard are able to: describe the key concepts of statistics required by adult learners; describe the statistical enquiry cycle and identify learner needs concerning the statistical enquiry cycle; identify adult learner needs concerning probability, chance and risk; describe learning activities which address common misconceptions in probability, chance and risk; identify adult learner difficulties with evaluating reports that contain graphical representations, summary statistics and variability, and develop worry questions to assist understanding; and prepare a plan to address the statistical literacy needs of adult learners in a specified learning context.</p>
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<b>Classification</b>	Adult Education and Training > Adult Literacy and Numeracy Education
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<b>Available grade</b>	Achieved
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<b>Entry information</b>	
<b>Recommended skills and knowledge</b>	Unit 21199, <i>Demonstrate knowledge of adult numeracy learning and introductory numeracy knowledge</i> , or demonstrate equivalent knowledge and skills.

### Explanatory notes

- For the purposes of this unit standard, the domain Adult Literacy and Numeracy Education includes design, delivery, assessment, and evaluation.
- Learning Progressions for Adult Literacy* (Tertiary Education Commission, 2008), *Learning Progressions for Adult Numeracy* (Tertiary Education Commission, 2008), and supporting professional development resources should be referred to within the context of this unit standard.

- 3 For the purposes of outcome 4 reports, data, and statistics are produced by people other than the learner.
- 4 For the purposes of evidence requirement 3.3 the learning activities do not have to be activities developed by the candidate.
- 5 Definitions  
*Key concepts of statistics* refer to the concepts which provide the base knowledge necessary to critically explore statistically-based claims.  
*Inference* refers to the relationship between sample and population.  
*Learning activities* refer to opportunities between educators and learners, or learners and learners, to apply teaching methods and use resources which promote new or enhanced understanding of concepts.  
*Representativeness* refers to the fallacies and misconceptions held by people when they make judgments about the probabilities of events, eg after flipping a coin several times and getting only tails, there might be a belief that the next toss has to be heads since it is “overdue”, even though each face has the same probability of landing.  
*Statistical literacy* refers to an ability to interpret statistical information and messages, critically evaluate statistical information and messages, and communicate about statistical information and messages.  
*Worry questions* refer to questions posed by readers or reviewers of statistical data, surveys, graphs, etc. as they critically evaluate what is being communicated by and/or claimed by the author(s) of the statistical data, surveys, graphs etc.  
*Summary statistics* refer to averages, mean, median and mode.  
*Variability* refers to – sampling variation, range, quartiles, standard deviation, distribution shape, confidence intervals, margin of error.  
*Statistical enquiry cycle* refers to the steps – problem, plan, data, analysis.  
*PPDAC* refers to problem, plan, data, analysis, conclusion.  
*Sampling* refers to the ideas of – sample size, bias, sampling error, non-sampling errors, representativeness, randomness, comparisons between experimental design, observational studies and surveys.  
*Interpreting the story in the data* refers to posing noticing and worry questions about the data and extracting information.
- 6 The context used to achieve this unit standard may include but is not limited to – subject area, skill area, job requirements, everyday situations.
- 7 The credits of this unit standard have been allocated on the basis that the candidate already has the necessary experience applying a statistical enquiry cycle, using a multi-variate data set.

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## Outcomes and evidence requirements

### Outcome 1

Describe the key concepts of statistics required by adult learners.

#### Evidence requirements

- 1.1 The key concepts of statistics for each of the aspects are described.
- Range aspects include – sampling, inference, summary statistics and variability, statistical enquiry cycle (eg PPDAC), interpreting the story in the data (tables and graphs), probability, chance and risk.
- 1.2 The key concepts of statistics for each of the aspects are described from the perspective of a user or reader of statistics, in the everyday context of the adult learner.

### Outcome 2

Describe the statistical enquiry cycle and identify learner needs concerning the statistical enquiry cycle.

#### Evidence requirements

- 2.1 The statistical enquiry cycle is described in terms of implementing a cycle.
- 2.2 Learner needs concerning the steps of the statistical enquiry cycle are identified.
- Range learner needs may include but are not limited to – everyday, community, study, work place.

### Outcome 3

Identify adult learner needs concerning probability, chance and risk.

#### Evidence requirements

- 3.1 Adult learner needs concerning probability, chance and risk are identified.
- Range adult learner needs may include but are not limited to – everyday, community, study, work place.
- 3.2 Three common misconceptions are described in terms of how they affect adult learner performance in statistical literacy.
- Range common misconceptions may include but are not limited to – representativeness, availability, conjunction fallacy, outcome approach, personal beliefs, superstitions.

**Outcome 4**

Describe learning activities which address common misconceptions in probability, chance and risk.

**Evidence requirements**

- 4.1 Three learning activities are described in terms of how they promote better understanding of the concepts involved.

**Outcome 5**

Identify adult learner difficulties with evaluating reports that contain graphical representations, summary statistics and variability, and develop worry questions to assist understanding.

Range reports may include but are not limited to statistically-based claims found in – media reports, research articles, advertisements, business or political reports; evidence of two reports.

**Evidence requirements**

- 5.1 Difficulties adult learners have when evaluating reports are identified.

- 5.2 A list of worry questions is developed to assist adults in evaluating reports.

Range worry questions include but are not limited to questions that – analyse ideas and information, reflect critically on surface and underlying meanings, evaluate the validity of the claim in relation to the writer's purpose, evaluate the writer's point of view, attitude, bias, or agenda; evidence of six worry questions.

- 5.3 The worry questions created are evaluated in terms of their effectiveness in promoting understanding for adult learners in evaluating reports.

**Outcome 6**

Prepare a plan to address the statistical literacy needs of adult learners in a specified learning context.

Range plan should involve two of – statistical knowledge, statistical investigation cycle, probability, report evaluation.

**Evidence requirements**

- 6.1 Outcomes of the plan include the statistical literacy requirements of adult learners in the specified context.

- 6.2 Plan addresses the outcomes in terms of meeting the statistical literacy requirements of adult learners in the specified context.

6.3 Plan is critically evaluated in relation to addressing the statistical literacy requirements of adult learners in the specified context.

Range evaluation includes – self review, feedback from two sources – supervisor, peer, and/or learner.

**This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.**

#### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	15 April 2011	31 December 2018
Rollover and Revision	2	20 June 2013	31 December 2018
Review	3	15 September 2016	31 December 2018

#### Consent and Moderation Requirements (CMR) reference

0045

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

#### Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMRs). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.