

Non-financial audit guidelines

National Centre for Vocational Education Research

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Contents

- Introduction 4
 - Purpose 4
 - History 4
- Section 1: The audit process 6
 - Retention of records 6
 - Arrangements between state training authorities and training providers 7
 - Arrangements between state training authorities and auditors 7
- Section 2: Evidence of participation 8
 - Evidence to verify participation in a subject enrolment 8
 - General requirements associated with verifying participatory evidence 11
- Section 3: Audit preparation 12
 - Training providers - guide to collating training provider documentation 12
 - State training authorities - guide to collating training provider documentation 12
- Appendix A – Sampling methodologies and IE rate calculation 13
 - Recommended sampling methodology for IE rate 13
 - Invalid enrolment (IE) rate calculation 15

Introduction

This document has been produced by the National Centre for Vocational Education Research (NCVER) and is designed to provide a consistent national framework to assist training providers and state training authority staff in the conduct of a non-financial transaction audit. For the purpose of this document:

- Training providers refers to both registered training organisations (RTOs) listed on the National Training Register <www.training.gov.au> and non-registered training organisations.
- State training authorities (STAs) refers to jurisdictional departments responsible for skills and training.
- Auditors refer to the qualified¹ persons undertaking the non-financial transaction audit.

Purpose

This document provides a national framework for a non-financial transaction audit, guidance on how it should be conducted, and information on how to determine an invalid enrolment rate.

The objective of a non-financial transaction audit is to assess accuracy and reliability of data by identifying whether sufficient evidence of participation for a client is supplied for a subject reported by a training provider in the National VET Provider Collection. The results of the transaction audit are used as a measure of the accuracy and reliability of VET enrolment data, from which an invalid enrolment rate can be calculated. The general acceptable level of the invalid enrolment rate is below 3%.

History

In late 1993, the ANTA² Ministerial Council (MINCO) resolved that auditable non-financial measures of government funded vocational education and training (VET) activity would be established. MINCO subsequently approved a number of performance measures, which were then incorporated by ANTA² CEOs into the National Protocols for Auditing the Vocational Education and Training Maintenance of Effort Activity Measures in June 1995. Amongst the key objectives were to:

- assess the accuracy and reliability of the annual National VET Provider Collection data on the non-financial measures in vocational education and training, and
- assist the achievement of more reliable reporting on performance, and as a consequence, improved VET management by working cooperatively with state and territory agencies on data collection systems, procedures and monitoring.

Between 1996 and 2016, NCVER conducted an annual non-financial transaction audit program to assess enrolment accuracy and reliability of government³ funded training activity reported in the National VET Provider Collection. This was achieved by conducting transaction audits on a sample of

¹ The person has successfully completed a Diploma in Quality Auditing (or equivalent).

² The Australian National Training Authority (ANTA) was abolished in 2005.

³ Government funded refers to enrolments reported with funding source – national of ‘11 – Commonwealth and state general purpose recurrent’.

government⁴ funded enrolments, from which an invalid enrolment (IE) rate was calculated. These non-financial audits were different from the audits/assessments undertaken by the VET regulators that determine whether a registered training organisation is operating effectively within its scope of registration.

In the scope and boundary definitions in the 2005–08 Commonwealth-State Agreement for Skilling Australia’s Workforce, it specified training providers in receipt of government⁴ funding for vocational education should be able to validate each enrolment by a client in an individual subject. To achieve this, the scope and boundaries definitions specified the nationally reported hours of delivery were adjusted down by each state/territory’s public training provider invalid enrolment rate as calculated by NCVER.

In 2008, the Commonwealth and the state/territory governments established the Intergovernmental Agreement on Federal Financial Relations (IGAFFR). Under the IGAFFR the Commonwealth and states entered into a National Agreement for Skills and Workforce Development (2008-16). The national output and performance measures for this agreement and related National Partnership Agreements did not require the adjustment of hours or enrolments by an invalid enrolment rate by NCVER. However, in the Report on Government Services (2008-15), the public training provider invalid enrolment rates were used in calculations of jurisdictional efficiency measures, i.e. full-year training equivalents (FYTEs).

In 2013, the Data Performance Measurement Principal Committee (DPMPC) endorsed the 2013-16 non-financial transaction audit program, which expired at the end of the 2016 calendar year. The end of this agreement, coupled with the expansion of the National VET Provider Collection, has meant that a revised approach to assuring the quality of data in the national VET administrative collections is now required.

For 2016 activity, the monitoring of the accuracy and reliability of government⁴ funded training activity reported as part of National VET Provider Collection is now the responsibility of State training authorities. The national audit guidelines are maintained by NCVER to reflect changes to the AVETMIS Standard⁵ and data administrative practices, and to provide a nationally consistent framework for these transaction audits.

⁴ Government funded refers to enrolments reported with funding source – national of ‘11 – Commonwealth and state general purpose recurrent’.

⁵ AVETMIS Standard stands for the Australian Vocational Education and Training Management Information Statistical Standard.

Section 1: The audit process

The following steps are recommended for a non-financial transaction audit undertaken by State training authorities (STA):

- *Audit plan prepared:* the STA and/or the Auditors prepare an audit plan that details the sampling methodology (see appendix A for recommended sampling methodology), which participatory evidence must be provided in accordance with section 2 of these audit guidelines - evidence of participation, onsite audit details and the audit report requirements.
- *Audit sample(s) generated:* a random sample of student enrolment records for the relevant state or territory is selected from records submitted to the previous year's annual (January–December) National VET Provider Collection, in accordance with the audit plan. Upon request NCVER may draw the audit sample on behalf of the STA. The transaction audit is usually conducted in May/June each year, but can occur at other times depending on the STA's funding agreement with training providers.
- *STA requests audit evidence from training providers:* the STA usually collates the participatory evidence from the training provider. By prior arrangement and where practicable, the Auditors may conduct the audit at the offices of individual training providers.
- *Auditors review evidence:* the participation evidence for each enrolment is then provided to the Auditors for verification. If this is conducted in the STA office, an entry and exit meeting is held with the relevant STA. Evidence must be supplied that meets *at least one* of the seven audit guidelines for determining evidence of participation. The extent of the participation evidence required to support a valid enrolment and its outcome varies and depends on the nature of the outcome (that is, successfully completed, withdrawn etc.).
- *Invalid enrolment (IE) rates calculated:* invalid enrolments are recorded for student enrolments reported in the National VET Provider Collection as having participated in a subject, but where there is insufficient evidence to confirm that the student participated in the training in accordance with the audit guidelines for determining participation. Details of recommended sampling methodology and IE rate calculation are provided in appendix A.
- *Preliminary results completed:* The Auditors provide the STA with an opportunity to seek additional participation evidence from training providers after the completion of the audit. The timeframe for providing additional evidence is five working days from the Auditor's last request for clarification.
- *Audit report prepared:* at the completion of the audit, the Auditors prepare the report, which details the areas of non-compliance for participation evidence at a state level and any areas identified as opportunities for improvement.

Retention of records

Training provider responsibilities

Training providers need to retain enrolment participation records for two years after reporting the activity as part of the annual National VET Provider Collection. Training providers may need to retain

these records for longer if they deliver training under a funding contract or are subject to additional record-retention requirements.

Where evidence records are photocopied, they should be kept by training providers for a minimum of six months following the audit, in the event that details need to be clarified.

State training authority responsibilities

STAs are required to retain enrolment participation records reviewed as part of the transaction audit for six months after the receipt of the audit report.

Arrangements between state training authorities and training providers

STAs should allow up to 10 working days for each training provider to provide enrolment participation evidence. This rule may be varied in special circumstances, at the discretion of STAs (for example, remote locations, limited or part-time administration staff).

It is recommended that STAs allow training providers only one opportunity for clarification.

Arrangements between state training authorities and auditors

By prior arrangement, and where practicable, the Auditors may visit individual training providers or faculties on request (rather than reviewing enrolments at a central office location).

Section 2: Evidence of participation

Evidence to verify participation in a subject enrolment

Documented evidence of a client's participation in a subject is sought from the training provider. A variety of evidence types satisfies participation at the subject level. The audit attempts to utilise the recording models used by training providers to assure client participation at the subject enrolment level, where appropriate.

Participation needs to be demonstrated, irrespective of the mode of delivery. However, it is essential that the requirements to verify enrolment participation in flexible delivery modes are no more stringent than those required for traditional or class-based delivery.

To be valid, the participation evidence provided must contain:

- the client's name or identification number, and
- a subject identifier, and
- a date (day, month and year) when the participation occurred, and
- for online activity or electronic-based signatures or electronic-based training, records must be accompanied by a statement and supporting documents to demonstrate that the records are accessed and held in a secure environment, safe from unauthorised access, loss or damage, and that authorisations have been applied at the delivery level.

Participation evidence

Participation evidence must fall into one of the following categories:

1. *Evidence of work submitted relating to engagement by the client in the subject*

In cases where this information cannot be recorded on the work itself, separate evidence must accompany the work to allow it to be linked to the client, the subject and the date completed; for example, identification of a client by Identifier (ID) and a delivery schedule or equivalent, detailing how the piece of work covers the subject in question, including due dates and milestones.

2. *Instructor notes based on communication between the instructor and the client establishing the client's involvement in the subject learning activity*

This includes personal interviews, telephone, email or other communication modes indicating evidence of the engagement of a client in a learning activity of the subject.

3. *A training provider endorsed attendance roll*

The roll must:

- be recognised by the training provider as a tool to record attendance as a part of their normal processes, and
- contain the instructor's signature, printed name and date (or electronic equivalent), and
- show that the actual subject was delivered at the point at which the client is marked on the roll.

Note: Where the roll indicates that the client has only attended the first class of an enrolment period, supporting documentation must be supplied demonstrating that there was engagement in the learning activities of the subject during the first class. Attendance at an induction or orientation class alone is not sufficient evidence of participation.

For clustered delivery:

- Where the subjects are delivered consecutively (or 'holistically'), a roll must be annotated to indicate what training was actually delivered in the session at the subject level.
- For other types of clustered delivery, a delivery schedule or equivalent must be provided to demonstrate the training, at the subject level, on the date(s) the client was in attendance.

For electronic rolls:

- Support documentation is required to indicate the processes involved in annotating, entering, updating and generating the rolls, as well as how to interpret the rolls and demonstrate that the records are held in a secure environment, safe from unauthorised access, loss or damage, and that authorisations have been applied at the delivery level.

4. Primary documentation that provides evidence of assessment

Primary documentation must be either a secure paper-based or electronic record that indicates an actual result consistent with assessment.

- For a pass or recognition of prior learning (RPL) outcome, a non-zero mark or grade for a component of the subject or the final result, or an assessment record that supports client activity in the subject must be supplied.
- For withdrawn/discontinued (40) and continuing enrolments (70) outcomes completed via RPL, evidence of participation must be in the form of at least one non-zero mark or grade for a component/element of the subject.
- For all other outcomes, additional evidence of participation will be required.

Evidence of client results must have an endorsement at the delivery level to confirm the accuracy of the client information, such as the signature of the instructor.

5. Signed statement from the relevant training provider staff affirming a client's participation (when the primary documentation is not available due to event of extreme circumstances)

In the event of extreme circumstances that prevent the provision of primary documentation (for example, fire, flood or other equivalent circumstance), staff directly associated with the delivery and who are authorised by the training provider may be prepared to attest participation in the subject enrolment in question. In all such cases, the staff member is required to submit and sign a statement affirming their evidence.

Two elements are required to be certified by an appropriate staff member:

- a full explanation of the reasons why primary evidence is not available, and
- a signed and dated statement containing a full explanation of the type of evidence being provided and affirmed.

Note: the evidence provided will be assessed on a case-by-case basis to substantiate the claim that the client participated and thereby verify the enrolment (for example, a signed document stating that participation in the enrolment occurred will not meet verification requirements).

6. Login and engagement with learning activity for the subject

Where a client has a secure login to a specific learning activity (for the subject) in which they are enrolled, the login record demonstrating online engagement with the learning activity can act as evidence of participation.

Note: Evidence must be accompanied by a statement and supporting documents to demonstrate that the records are held in a secure environment, safe from unauthorised access, loss or damage, as well as any documentation to assist the interpretation of the evidence supplied (for example, mappings of local to national outcomes).

7. Record of staff/client engagement in flexible and distance modes of learning

A record is required to demonstrate engagement with the learning activity at a subject level, one that indicates that the client has commenced working on the learning materials received.

General requirements associated with verifying participatory evidence

- The Auditors may be required to make a judgement call when common elements of competency across several subjects are provided to validate more than one subject; the judgement will be based on the merits of the evidence provided.
- Where a final assessment in the next collection year is supplied to justify participation in a subject for a continuing enrolment in the current collection year, the Auditors will verify each enrolment for participation on its merits. The Auditors will adopt as a guiding principle: reported activity has only one claim for the enrolment and it is reported with subsequent final outcome.
- The Auditors will not accept training provider-based certificates in isolation as evidence to satisfy participation at the subject level.
- Statements from clients declaring they participated in the subject will only be accepted if evidence of extreme and exceptional circumstances, such as fire, flood or theft, is provided (see audit evidence guideline number 5).
- Verification of enrolments will be disallowed where documents such as 'catch all' sets of questions are provided as the only evidence of participation for a subject. These sets of questions are typically completed on the first day of client attendance and cover all subjects within the cluster. In these instances, the nature of the question is simple and has limited educational use (for example, student completing simple questions on their first day to determine their level of knowledge on the topic prior to the subject being taught).
- In line with existing audit practice where, based on the evidence, the recognition of prior learning (RPL) outcome reported in the National VET Provider Collection is incorrect; the Auditors will note it as a quality issue and assess the evidence against the guidelines for verification. Additional work may be required by the training provider if the student requests a correction to their education data when the USI (unique student identifier) transcript service is available.
- In accordance with the AVETMISS Data Element definition (edition 2.2, outcome identifier – national is '61 – Superseded subject'), where a subject has been superseded, the superseded subject outcome must not be used until training activity has commenced in the replacement subject. There must be evidence of the training activity itself in the replacement subject; evidence of enrolment procedures or entry of data in a student management system is not sufficient.
- The Auditors are generally not familiar with every online/electronic platform or student management system, and may be unable to interpret codes, keys or symbols displayed on the evidence without sufficient supporting explanation.

Section 3: Audit preparation

Training providers – guide to collating training provider documentation

All efforts should be made to conduct the audit in an effective and efficient manner, with minimal disturbance to normal practices. NCVER recommends the following guidelines to facilitate the audit verification process in jurisdictions.

Organising the documentation

- All evidence relating to a single enrolment should be kept together. The original documentation or good-quality photocopies are acceptable. In relation to the photocopied evidence, a cover email/letter from the person responsible at the training provider should be included. The email/letter should state that the original evidence has been sighted, and include the date and signature of the person responsible for copying the original evidence.
- Training providers should keep their own records (in order of unique sample number), indicating the type of evidence provided for each enrolment and whether it satisfies the evidence requirements.
- Evidence documents should be collated and submitted with the documentation for the sample drawn. The initial sample evidence should be placed on top and the subsequent sample below (and so on). The evidence within a sample should be sequenced in order of the unique sample number.
- Care should be taken to check that the specified subject and the dates of the activity can be unambiguously identified (for example, highlighted) on all documentation.
- The client name/identifier, actual attendance or engagement result should be highlighted. This is particularly important where photocopies are provided and cover pages may have been omitted.
- Any supporting documentation should be included to enable the Auditors to interpret the documentation supplied (for example, mapping of local outcome code to outcome identifier - national, explanation of keys or legends displayed on the evidence).

State training authorities – guide to collating training provider documentation

- If NCVER is drawing the sample on behalf of the STA, the STA should ensure that all the presented evidence contains the NCVER ID, that the evidence is presented in NCVER ID sequence, and that all evidence is made available on the first day of the audit.
- STAs should provide any supporting documentation to enable the Auditors to interpret the documentation supplied (for example, mapping of local outcome code to outcome identifier - national or local client identifier to national reported client identifier).

Appendix A – Sampling methodologies and IE rate calculation

Recommended sampling methodology for IE rate

The transaction audit is usually limited to activity funded under the state/territory funding contract. For the majority of the jurisdictions, two transaction audits are recommended: one applies to the public training providers (for example, TAFE) and the other to the private training providers. Additional audits maybe required for those states/territories that report adult community education (ACE) or agricultural college training activity. The sampling methodology should be defined in the jurisdiction’s audit plan.

It is recommended the transaction audit is conducted using an ‘End date’⁶ sampling methodology, where the sample is drawn from the population of all enrolments submitted to the annual National VET Provider Collection with:

- a *Funding source – national* of ‘11 – Commonwealth and state general purpose recurrent’; and
- *VET flag* of ‘Y – Yes – the intention of the program of study is vocational’; and
- the agreed ‘at-risk’ *Outcome identifier – national* (referred to as ‘outcome’) for the sector. These ‘at risk’ outcomes are outlined in table 1.

Table 1 Transaction audit 'at risk' outcomes

| Value | Description – <i>Outcome identifier – national</i> | Public | Non-public |
|-------|--|--------|------------|
| 20 | Competency achieved/pass | x | ✓ |
| 30 | Competency not achieved/fail | ✓ | ✓ |
| 40 | Withdrawn/discontinued | ✓ | ✓ |
| 51 | Recognition of prior learning granted | ✓ | ✓ |
| 52 | Recognition of prior learning not granted | ✓ | ✓ |
| 60 | Credit transfer/national recognition | x | x |
| 61 | Superseded subject | x | x |
| 70 | Enrolment continuing into a following collection year | x | x |
| 81 | Non-assessed enrolment – satisfactorily completed | ✓ | ✓ |
| 82 | Non-assessed enrolment – withdrawn or not satisfactorily completed | ✓ | ✓ |
| | Sample size | 250 | 100 |

⁶ The term ‘End date’ sampling methodology refers to the sampling frame only including the training activity where the final outcome of training has been reported in the annual National VET Provider Collection.

In November 2006, the former National Training Statistic Committee (NTSC), endorsed the following assumptions and exclusions for the purpose of the 'End date' transaction audit; which remain unchanged:

- '20 – Competency achieved/pass' outcomes are assumed to have a zero error rate. This is determined through a risk-based approach, whereby the audit assumes no invalid enrolments from the passes for public training providers but they would be included for non-public training providers.
- '60 – Credit transfer' outcomes should be excluded because there is no participation in training by the student to verify, and at the time when the training was originally undertaken, it would have been part of an assurance process.
- '70 – Continuing enrolment' outcomes should be excluded because the training is yet to be completed, and enrolments should not be within audit scope more than once. When the training outcome is finalised (as a pass, withdrawn etc.), this enrolment is then within the scope of audit. It should be noted that this is in line with national reporting, whereby continuing unit enrolments are not reported until the final year. This prevents the double-counting of the enrolments and hours.

In January 2015, the AVETMISS Data Element definitions (edition 2.2) added a new outcome: '61 - superseded subject'.

- '61 - superseded subject' outcomes should be excluded because participation of training by the student will be verified as part of the assurance process in the replacement subject.

Public training provider

A simple random sample of 250 enrolments should be drawn from all enrolments identified in the 'End date'⁷ population from the STA's public provider annual (January–December) National VET Provider Collection submission. The sampling criteria for the transaction audit are detailed in table 1.

Non-public training provider (private providers, ACE and agricultural colleges)

The purpose of the private training provider, ACE and agricultural college transaction audit is to provide the STA with an indication of the likely ongoing systemic issues requiring attention for each of the sectors (private training providers, ACE training providers and/or agricultural colleges) in their jurisdiction.

To reduce the potentially large amount of administrative work involved in compiling evidence, the Auditors should accept a request from the STA to draw the audit sample from 15 randomly selected training providers for both the private provider and the ACE sector, according to the number of enrolments identified in the 'end date'⁷ population'. To obtain a mix of private training providers and ACE training providers, each one is classified as either a small, medium or large training provider, based on the number of enrolments.

The Auditors should also accept a request from the STA to exclude training providers from the audit if they had ceased to exist, were currently under investigation, or had recently been involved in an Australian Quality Training Framework audit or other STA audit.

⁷ The term 'End date' population refers to training activity where the final outcome of training has been reported in the annual National VET Provider Collection.

Private training providers

A simple random sample of 100 enrolments, stratified by the 15 private training providers (small, medium and large), should be drawn from all of their associated enrolments in the 'end date'⁸ population from the STA's private provider annual (January–December) National VET Provider Collection submission. The sampling criteria for the transaction audit are detailed in table 1.

ACE training providers

A simple random sample of 100 enrolments, stratified by the 15 ACE training providers (small, medium and large), should be drawn from all of their associated enrolments in the 'end date'⁸ population from the STA's ACE annual (January–December) National VET Provider Collection submission. The sampling criteria for the transaction audit are detailed in table 1.

Agricultural college training provider

A simple random sample of 100 enrolments should be drawn from all enrolments identified in the 'end date'⁸ population from the STA's agricultural college annual (January–December) National VET Provider Collection submission. The sampling criteria for the transaction audit are detailed in table 1.

Invalid enrolment (IE) rate calculation

The invalid enrolment rate is calculated in two steps:

- For each outcome (o) we estimate the invalid rate (i_o) as the number of invalid enrolments (a_o) divided by the number of enrolments selected in the sample (n_o) and is $i_o = \frac{a_o}{n_o}$.
- The IE rate is then weighted across the outcomes. The IE rate (i_o) is multiplied by the number of enrolments in the population associated with this outcome (N_o); then the sum of the number of enrolments deemed invalid in the population across all outcomes is divided by the total number of enrolments in the population (N) multiplied by 100, and is

$$IE \text{ rate} = \frac{\sum_{o=1}^{10} (N_o i_o)}{N} * 100.$$

Similarly, the standard error calculation follows the stratified sample estimation methodology. The Standard Error ("SE") is an indication of the reliability of the IE rate estimate. A small SE is an indication that the sample IE rate is a more accurate reflection of the actual population IE rate. The SE informs that we can be 95% confident that our observed sample IE rate is +/-1.96 * standard error from the population IE rate.

$$\text{The standard error is, } se = \sqrt{\frac{1}{N^2} \sum_{o=1}^{10} \frac{N_o^2 (N_o - n_o)}{N_o - 1} \cdot \frac{i_o (1 - i_o)}{n_o}}.$$

⁸ The term 'End date' population refers to training activity where the final outcome of training has been reported in the annual National VET Provider Collection.

Invalid enrolment rate – public training provider (example only)

As an example, table 2 shows how the estimated IE rate for the 2015 public provider sample of 250 (non-pass) enrolments using an ‘End date’⁹ sampling methodology was calculated.

Table 2 ‘End date’ estimate of IE rate for public training provider (example only), 2015 activity

| AVETMISS outcome identifier | Enrolments with outcomes | Enrolments in audit sample | Total invalid enrolments | Rate of total invalid enrolments | Number of invalid enrolments (estimate) |
|---|--|----------------------------|--------------------------|----------------------------------|---|
| | N_o | n_o | a_o | $i_o = \frac{a_o}{n_o}$ | $i_o * N_o$ |
| 20 Competency achieved/pass | 74 593 | 0 | 0 | 0 | 0 |
| 30 Competency not achieved/fail | 926 | 13 | 1 | 0.077 | 71.23 |
| 40 Withdrawn/discontinued | 14 913 | 149 | 4 | 0.027 | 400.35 |
| 51 Recognition of prior learning granted | 5 461 | 55 | 0 | 0 | 0 |
| 52 Recognition of prior learning not granted | 59 | 2 | 0 | 0 | 0 |
| 81 Non-assessed enrolment – satisfactorily completed | 1 999 | 23 | 0 | 0 | 0 |
| 82 Non-assessed enrolment – withdrawn or not satisfactorily completed | 683 | 8 | 0 | 0 | 0 |
| Total | 98 634 | 250 | 5 | | 471.58 |
| IE rate (estimated) | $471.58 / 98\ 634 * 100 = \mathbf{0.48\%}$ | | | | |
| Standard error | 0.22% | | | | |

The estimated IE rate is calculated as follows:

- (i) Calculate for each AVETMISS outcome identifier, the proportion of invalid enrolments in the audited sample. For example for ‘30 - Competency not achieved/fail’, there was $1/13 = 0.077$ (or 7.70%) invalid enrolment in the sample.
- (ii) For each AVETMISS outcome identifier, estimate the number of invalid enrolments that would have occurred in the true population based on their incidence in the sample population. For example for ‘30 - Competency not achieved/fail’, $(1/13) * 926 = 71.23$.
- (iii) Calculate the invalid enrolment rate by summing the estimated number of invalid enrolments in the true population, divided by the total number of enrolments in the true population. The result is expressed as a percentage by multiplying by 100. For example, the public training provider invalid enrolment rate was;

$$471.58 / 98\ 634 * 100 = 0.48\%$$

⁹ The term ‘End date’ sampling methodology refers to the sampling frame only including the training activity where the final outcome of training has been reported in the annual National VET Provider Collection.

The standard error is calculated using the formula on page 15. For example in table 2, for '30-Competency not achieved/fail' the following calculation was made:

$N_0=926$, $n_0= 13$, $i_0 = .077$ (or 7.70%), $i_0 * N_0 = 71.3$, $N = 98\ 634$

(i)
$$\frac{N_0^2(N_0 - n_0)}{N_0 - 1} = 926^2(926 - 13) / 926 - 1 = 846\ 352$$

(ii)
$$\frac{i_0(1-i_0)}{n_0} = 0.077(1 - 0.077) / 13 = 0.0055$$

(iii)
$$\frac{N_0^2(N_0 - n_0)}{N_0 - 1} \times \frac{i_0(1-i_0)}{n_0} = 846\ 352 \times 0.0055 = 4\ 655$$

(iv) This process is then repeated for each outcome, and summed. This summed value is then multiplied by one divided by the total number of enrolments in the population (N_0) and the square root is taken. The result is expressed as a percentage by multiplying by 100.

$$\sqrt{\frac{1}{98634^2} * 48693} * 100 = 0.22\%$$

For the public provider example in table 2, with an estimated IE rate of 0.48%, and a margin of error (at 95% confidence) for the IE rate of (1.96 * standard error (+/- 0.22%)), then the true IE rate is most likely between 0.05% and 0.91%.

Invalid enrolment rate – non-public training providers (example only)

As an example, table 3 shows how the estimated IE rate for the 2015 non-public training providers using an ‘End date’¹⁰ sampling methodology was calculated.

Table 3 ‘End date’ estimate of IE rate for non-public training providers (example only), 2015 activity

| AVETMISS outcome identifier | Enrolments with outcomes | Enrolments in audit sample | Total invalid enrolments in audit sample | Rate of total invalid enrolments in audit sample | Number of invalid enrolments (estimate) |
|---|---|----------------------------|--|--|---|
| | N_o | n_o | a_o | $i_o = \frac{a_o}{n_o}$ | $i_o * N_o$ |
| 20 Competency achieved/pass | 206 437 | 83 | 3 | 0.036 | 7 461.58 |
| 30 Competency not achieved/fail | 4 287 | 7 | 0 | 0.000 | 0.00 |
| 40 Withdrawn/discontinued | 19 984 | 6 | 4 | 0.667 | 13 322.67 |
| 51 Recognition of prior learning granted | 7 879 | 2 | 1 | 0.500 | 3 939.50 |
| 52 Recognition of prior learning not granted | 26 | 0 | 0 | 0 | 0.00 |
| 81 Non-assessed enrolment – satisfactorily completed | 800 | 2 | 1 | 0.500 | 400.0 |
| 82 Non-assessed enrolment – withdrawn or not satisfactorily completed | 623 | 0 | 0 | 0 | 0.00 |
| Total | 240 036 | 100 | 9 | | 25 123.75 |
| IE rate (estimated) | 25 123.75 / 240 036*100 = 10.47% | | | | |
| Standard error | 2.62% | | | | |

The estimated IE rate is calculated as follows:

- (i) Calculate for each AVETMISS outcome identifier, the proportion of invalid enrolments in the audited sample. For example for ‘20 - Competency achieved/pass’, there were $3/83 = 0.036$ (or 3.61%) invalid enrolments in the sample.
- (ii) For each AVETMISS outcome identifier, estimate the number of invalid enrolments that would have occurred in the true population based on their incidence in the sample population. For example for ‘20 - Competency achieved/pass’, $(3/83) * 206\,437 = 7461.58$.
- (iii) Calculate the invalid enrolment rate by summing the estimated number of invalid enrolments in the true population, divided by the total number of enrolments in the true population. The result is expressed as a percentage by multiplying by 100. For example, the non-public training providers invalid enrolment rate was;

$$25\,123.75 / 240\,036 * 100 = 10.47\%$$

¹⁰ The term ‘End date’ sampling methodology refers to the sampling frame only including the training activity where the final outcome of training has been reported in the annual National VET Provider Collection.

The standard error is calculated using the formula on page 15. For example in table 3, for '81 - Non-assessed enrolment - satisfactorily completed' the following calculation was made:

$N_o=800$, $n_o= 2$, $i_o = .500$ (or 50%), $i_o * N_o = 400.00$, $N =240 036$

(i) $\frac{N_o^2(N_o - n_o)}{N_o - 1} = 800^2(800 - 2)/ 800 - 1 = 639 199$

(ii) $\frac{i_o(1-i_o)}{n_o} = 0.5 (1 - 0.5)/2 = 0.1250$

(iii) $\frac{N_o^2(N_o - n_o)}{N_o - 1} \times \frac{i_o(1-i_o)}{n_o} = 639 1989 \times 0.125 = 79900$

(iv) This process is then repeated for each outcome, and summed. This summed value is then multiplied by one divided by the total number of enrolments in the population (N_o) and the square root is taken. The result is expressed as a percentage by multiplying by 100.

$$\sqrt{\frac{1}{240\,036^2} * 39651100} * 100 = 2.62\%$$

For the non-public provider example in table 3, with an estimated IE rate of 10.46% with a margin of error (at 95% confidence) for the IE rate of (1.96 * standard error (+/- 2.62%)), then the true IE rate is most likely between 5.32% and 15.60%.



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