National Cervical Screening Programme

Monitoring Report Number 52

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About the authors

The authors are based at Cancer Research Division at Cancer Council NSW, Sydney, Australia. They are part of a research group (led by Prof Karen Canfell) which has as its core research focus the epidemiology of cervical cancer, cervical screening and human papillomavirus (HPV) vaccination. This research group has established an extensive track record both in research publication and in successful completion of commissioned projects related to national cervical screening programmes in New Zealand, Australia and England. The group has extensive experience in the analysis of descriptive data from cervical cancer screening programmes. The team also has a range of related skills in the analysis of linked datasets, systematic review and meta-analysis, biostatistics, health economics, and advanced statistical modelling techniques.

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1. Executive Summary

Purpose

This report provides data on performance indicators of the National Cervical Screening Programme (NCSP) for the period 1 July to the 31 December 2019.

Key points on performance/trends

Indicator 1 — Coverage

Indicator 1.1 — Three-year coverage

Target: 80% of eligible women screened within the previous three years.

- Among an estimated 1,314,891 eligible women aged 25-69 years at the end of the monitoring period, 950,679 (72.3%) had a screening test in the previous three years.
- The coverage target was not met nationally (80% of women aged 25-69 years screened in the previous three years).
- The coverage target was not met in any five-year age group.
- No DHB met the coverage target.
- Nationally, screening coverage targets were not met in any ethnic group (European/ Other: 78.9%; Māori: 58.7%; Pacific: 65.7%; Asian: 61.7%).
- Three-year coverage among women aged 25-69 years (72.3%) is higher than that reported in the previous monitoring report (71.4%).
- Three-year coverage is lower in four of the ten age groups, one ethnic group and fourteen of the twenty DHBs.
- Five-year coverage among women aged 25-69 years (86.2%) is higher than that reported in the previous monitoring report (85.5%).
- Five-year coverage among women aged 25-69 years exceeded 80% in all twenty DHBs, in Pacific and European/ Other women, and in all five-year age groups between 30-69 years.

Screens in women aged less than 20 years

Target: None

- In the three years to 31 December 2019, 4,179 women had a cervical sample taken when they were aged less than 20 years. This is fewer than in the previous monitoring period (4,499 women).
- This represents 0.4% of all women (of any age) who were screened in the three-year period (which is similar to the previous monitoring period, 0.4%).
- Most of these women (89.1%) were aged 18-19 years at the time of their cervical sample, similar to the previous monitoring period (89.4%).

Indicator 1.2 Regularity of screening

Target: Not yet defined

Routine screening (3-year recall)

- Among women attending for screening in 2019 following a 3-year recall recommendation, 62.7% were attending on-time; 11.4% more than six months early; and 25.9% more than six months late.
- Between the period 2015 to 2019, the proportion of women who were screened on-time increased in three of the four ethnic groups and increased or remained similar in each of the ten-year age groups. This predominantly reflected a reduction in early re-screening.
- The proportion re-attending more than six months late for their routine screen was consistently higher in Māori and Pacific women than in Asian and European/ Other women, and was generally highest in women aged 30-39 years.

12-month re-screening

- Among women attending for screening in 2019 following a 12-month repeat recommendation, 39.8% were attending on-time; 2.2% more than three months early; and 58.0% more than three months late.
- In all ethnic groups, and all age groups, the majority of women who were re-attending after a recommendation to return in 12 months were re-attending more than three months later than recommended.
- The proportion who were re-attending more than 15 months after a recommendation to return in 12 months was consistently higher in Māori and Pacific women than in Asian and European/ Other women.
- Over the period 2015 to 2019, the proportion of women who were re-attending more than three months early and on-time decreased but the proportion who were re-attending more than three months late for 12-month follow-up increased.

Indicator 2 First screening events

Target: None

- There were 21,091 women who had their first screening event during the current monitoring period – lower than in the previous monitoring period (23,374).
- First screening events generally occur among young women (median age 28 years).
- Asian women appear to have their first screening event at a later age (median age of Asian women attending for their first screening event was 32 years).
- The proportion of women screened who were being screened for the first time was highest for Asian women.

Indicator 3 — Withdrawal rates

Target: Zero between ages 20-69 years

- There were six women aged between 20-69 years who withdrew from the NCSP Register during this six-month period. This is fewer than the number of women in this age range who withdrew during the previous monitoring period (12 women).

Indicator 4 — Early re-screening

Target: Not yet defined

Currently reporting on the percentage of women in routine screening (previous cytology sample negative and recommended to return in 36 months (3 years) who returned for a cytology sample within 30 months (2.5 years) of their index cytology sample.

- 10.5% of a cohort of women with a recommendation to return at the routine interval had at least one cytology sample within 30 months of their index cytology sample.
- Early re-screening varies widely between DHBs, from 7.3% in Mid Central to 14.4% in Waitemata.
- Early re-screening occurs in all ethnic groups but is most common among European/ Other (10.8%) and least common among Pacific women (8.1%).
- Early re-screening occurs in all age groups, but is most common in women aged 20-24 years at the end of the period (14.7%) and least common in women aged 60-64 years at the end of the period (7.4%).
- Early re-screening has decreased overall since the previous report, from 11.4% to 10.5%.

Indicator 5 — Laboratory Indicators

Indicator 5.1 — Cytology reporting

Unsatisfactory cytology

Target: 0.1% - 3% for LBC

- The target for the percentage of LBC samples reported as unsatisfactory was met by four of the six laboratories and was met nationally (1.3%). Both of the laboratories that were outside the target range exceeded the upper target of 3%.
- The rate of unsatisfactory LBC samples is only slightly lower than in the previous report (1.4%).

Negative cytology

Target: No more than 96% of satisfactory cytology samples

- The target for the percent of samples reported as negative was met nationally (93.7%) and met by all six laboratories.

- Nationally, the percent of samples which are negative (93.7%) is higher than what was reported in the previous period (93.0%).

Abnormal cytology

Target: No more than 10% of satisfactory cytology samples

- The target for the percent of samples reported as abnormal was met nationally (6.3%) and by five of the six laboratories.
- Nationally, the percent of samples which are abnormal (6.3%) is lower than what was reported in the previous period (7.0%).

HSIL cytology

Target: No less than 0.5% of satisfactory cytology samples

- The target for the percent of HSIL samples was met nationally and met by five of six laboratories.
- Nationally the percent of HSIL samples (0.7%) decreased since the last monitoring report (0.8%). This rate has reduced or remained similar in all ages; however, in women aged 20-24 years this rate is lower than has ever been previously reported.

Indicator 5.2 <u>Cytology positive predictive value</u>

HSIL + SC

Target: 65% - 85% of HSIL+SC cytology samples should be histologically confirmed as high-grade

- Four of the six laboratories met the target range for HSIL + SC.
- Nationally, the positive predictive value of HSIL + SC (80.0%) has increased since the previous monitoring period (76.1%).

Other cytological abnormalities

Target: None

- Nationally, the positive predictive value of ASC-H has increased since the previous report (50.3% in this report, 48.0% in the previous report).
- Nationally, the positive predictive value of the combination of ASC-H + HSIL + SC has increased since the previous report (69.4% in this report, compared to 66.6% in the previous report).
- Nationally, the percent of glandular cytological abnormalities identified as histological high-grade has decreased since the previous report, from 39.9% to 38.1% (however this measure is generally based on a comparatively small number of samples; 139 samples with histology in the current report).

Indicator 5.3 Accuracy of negative cytology reports

Among cytology slides within the 42 months preceding a histological diagnosis of high -grade/invasive disease originally reported as negative, benign/reactive or unsatisfactory:

Target: Not more than 10% identified as HS1, HS2, SC, AIS or AC1-AC5 (HSIL+) on review

- Nationally, 3.4% of slides originally reported as negative, benign/ reactive or unsatisfactory were consistent with HSIL+ on review.
- All laboratories met the target.

Target: Not more than 20% identified as ASC-H, HS1, HS2, SC, AG4-AG5, AIS or AC1-AC5 (ASC-H+) on review; aim for less than 15%

- Nationally, 6.4% of slides originally reported as negative, benign/ reactive or unsatisfactory were consistent with ASC-H+ on review.
- All laboratories met the target of less than 20% and achieved rates of less than 15%.

Indicator 5.4 Histology reporting

Target: None

- 12,636 histology samples were taken during the current monitoring period. 478 (3.8%) of these were insufficient for diagnosis.
- Results for most severe histology from 10,851 women with samples which were sufficient for diagnosis are presented.
- 57.9% of women had histology samples which were negative/ benign. This reduced to 46.7% of women when negative/ benign hysterectomy samples (total hysterectomy and partial hysterectomy with cervical component) were excluded.
- 18.8% of women had CIN 2/CIN 3 or HSIL histology results.
- 73 (0.67%) women had histology results indicating adenocarcinoma in situ (AIS).
- 70 (0.65%) women had invasive squamous cell carcinoma (ISCC) histology results, 32 (0.29%) women had adenocarcinomas not arising from the endocervix and 18 women had (0.17%) adenocarcinoma arising from the endocervix histology results. One woman (<0.05%) had an adenosquamous carcinoma histology result.

Indicator 5.5 Turnaround times

Cytology

Target: 90% within seven working days; 98% within 15 working days

- The seven-working-days target for cytology was met nationally (96.2%), and by all six laboratories.
- The 15-working-days target was met nationally (99.3%), and by all six laboratories.

- Performance against the seven-working-days target increased since the previous report (95.8% in the previous report, 96.2% in the current monitoring period).
- The overall percent of cytology samples reported within 15-working-days has increased since the previous report (98.8% in the previous report, 99.3% in the current monitoring period).

Histology

Target: 90% within 10 working days; 98% within 15 working days

- Turnaround time target for histology reporting within 10 working days was not met nationally for (89.9%), but was met by five of fourteen laboratories.
- The target for reporting within 15 working days was not met nationally (95.9%), but was met by six of fourteen laboratories.
- The overall proportion of histology samples reported within 15 days decreased since the previous report (96.2% in the previous report, 95.9% in the current monitoring period).

Low-grade cytology with associated HPV triage testing

Target: 98% within 15 working days

- There were 2,990 cytology samples with associated HPV triage testing in the current monitoring period.
- The 15-working-days target for turnaround time for cytology with associated HPV triage testing was met nationally (99.0%).
- Five of the six laboratories met the target.

Indicator 6

<u>Follow-up of women with high-grade cytology – no histology</u>

Histological follow-up

Target: 90% of women should have a histology report within 90 days of their high-grade cytology report date; 99% should have a histology report within 180 days of their cytology report.

- Targets were not met nationally (for either 90 days or 180 days).
- 79.6% of women had a histology report within 90 days of their high-grade cytology report; 87.7% of women had one within 180 days.
- Three DHBs met the target for histological follow-up within 90 days and no DHBs met the target for 180 days.
- Nationally, the proportion of women with histological follow-up is lower within 90 days (from 81.2% to 79.6%) and slightly lower within 180 days (from 87.8% to 87.7%) since the previous monitoring period.
- Compared to the previous monitoring period, the proportion of women with follow-up histology within 90 days is lower for Māori women (from 82.1% to 80.4%), European/ Other women (from 83.4% to 82.3%), Pacific (from 60.2% to 51.5%) and Asian women (from 77.3% to 74.9%).

- The proportion of women with follow-up histology within 180 days is lower for Pacific and European/ Other women, but higher for Māori and Asian women.

Women with no follow-up tests

Target: None

- Nationally, 223 (11.5%) women have no report of a follow-up test of any kind (colposcopy, subsequent cytology, histology or HPV test) within 90 days of their high-grade cytology report, and 121 (6.3%) women have no follow-up test report within 180 days.
- Nationally, the proportion of women with no record of a follow-up test report at 90 days is higher (from 10.9% in the previous period to 11.5% in the current reporting period) while the proportion at 180 days is unchanged (6.3% in both periods).
- Compared to the previous monitoring period, the proportion of women with no follow-up test recorded at 180 days is lower for Māori women (from 7.2% to 6.4%), European/ Other women (from 5.0% to 4.7%) and Asian women (from 8.1% to 7.3%) but higher for Pacific women (from 16.5% to 24.3%).

Indicator 7 Colposcopy

Indicator 7.1 Timeliness of colposcopic assessment – high-grade cytology

Target: 95% or more of women who have evidence of clinical suspicion of invasive carcinoma, or a suspicion of invasive disease (TBS codes HS2, SC, AC1-AC5), receive colposcopy or a gynaecological assessment within 10 working days of receipt of referral. 95% or more of women who have other high-grade cytology samplecytology sample abnormalities (TBS codes ASH, HS1, AG1-AG5, AIS) receive colposcopy within 20 working days of receipt of referral.

- There were 1,933 women with high-grade cytology results who were not already under specialist management (the same women reported on in Indicator 6).
- This comprised 70 women with high-grade results indicating a suspicion of invasive disease and 1,863 women with other high-grade results.
- Nationally, the proportion of women with accepted referrals recorded on the NCSP Register is lower than the previous report (from 87.9% to 87.3%).

Suspicion of Invasive Disease

- Among the 70 women with high-grade cytology results indicating a suspicion of invasive disease, 37 (52.9%) had an accepted referral. Of the women with an accepted referral, 83.8% were seen within 10 working days of their referral being accepted. This is higher than in the previous report (81.3%).

- A colposcopy visit was recorded for 55 of the 70 women (78.6%) up to 31 December 2019 (follow-up time of at least six and up to 12 months).

No Suspicion of Invasive Disease

- Among the 1,863 women with other high-grade cytology results, 1,650 (88.6%) had an accepted referral. Of the women with an accepted referral, 71.5% were seen within 20 working days of their referral being accepted. This is lower than the proportion seen within 20 working days in the previous monitoring period (72.9%).
- A colposcopy visit is recorded for 1,761 (94.5%) of these women up to 31 December 2019 (follow-up time of at least six and up to 12 months).

Indicator 7.2 — Timeliness of colposcopic assessment – low-grade cytology

Target: 95% of women who have persistent low-grade abnormalities or a low-grade abnormality and positive HPV test, must receive a date for a colposcopy appointment within a period that does not exceed 26 weeks of the colposcopy unit accepting the referral from the sample taker.

- There were 3,737 women with persistent low-grade cytology or low-grade cytology and a positive hrHPV test collected in the 6-month period ending 12 months prior to the end of the current monitoring period, i.e. between 1 July - 31 December 2018.
- Subsequent accepted referrals are recorded for 3,215 (86.0%) of these women, and subsequent colposcopy (by 31 December 2019) for 3,414 (91.4%) of these women.
- Nationally, 78.9% of women attended for colposcopy within 26 weeks of their accepted referral. This is lower than in the previous monitoring report (80.1%).

Indicator 7.3 — Adequacy of reporting colposcopy

Target: 100% of medical notes will accurately record colposcopic findings including visibility of the squamo-columnar junction, presence, or absence of a visible lesion, and colposcopic opinion regarding the nature of the abnormality.

- Based on 12,146 colposcopy visits in the current monitoring period recorded on the NCSP Register, no DHB nor the aggregate of colposcopy visits to private practice met the target of 100% completion of all recommended fields.
- All items (degree of visibility of the squamo-columnar junction, presence or absence of a lesion and colposcopic opinion regarding abnormality) were documented for 93.1% of colposcopy visits. Reporting was 100% complete for presence/absence of a lesion, but not for degree of visibility of the squamo-columnar junction, nor for colposcopic opinion regarding abnormality.

- The type of recommended follow-up was recorded for 92.2% of colposcopy visits, and the recommended timeframe for this follow-up was recorded for 91.6% of colposcopy visits.
- Colposcopic appearance was reported as abnormal in 55.1% of colposcopies, and inconclusive in 4.5% of colposcopies.
- Completion of most recommended fields is broadly similar to what was reported in the previous monitoring period.
- Overall completion is slightly higher in this monitoring period (93.1%) than in the previous monitoring period (93.0%).
- The number of colposcopies recorded on the NCSP Register has decreased by 1.0%.
- All DHBs were reporting colposcopy data electronically to the NCSP Register throughout the current monitoring period.

Indicator 7.4 Timeliness and appropriateness of treatment

Target: 90% or more of women with HSIL should be treated within eight weeks of histological confirmation.

- 61.4% of 2,054 women with HSIL histology (CIN 2/3) during the period 1 January to 30 June 2019 have a record of treatment within eight weeks of their histology report.
- The proportion of women with histologically confirmed CIN 2/3 treated within eight weeks of their histology result being reported is higher than the previous monitoring period (from 61.1% to 61.4%).
- No DHB met the target.

Indicator 7.5 Timeliness of discharge following treatment

Target: 90% or more of women treated for CIN 2/3 should have a colposcopy and cytology within the nine-month period post treatment.

- Based on NCSP Register records, 1,268 women were treated for high-grade lesions in the period 1 July to 31 December 2018.
- 68.3% of women treated have a record of both colposcopy and cytology within the nine months after their treatment visit. 69.7% have a record of at least a colposcopy visit (with or without cytology) in the same time period.
- No DHB met the target for follow-up within nine months post-treatment.

Target: 90% or more of women treated for CIN 2/3 should be discharged back to the sample taker as appropriate.

- There were 900 women who were eligible for appropriate discharge within 12 months of their treatment (71.0% of all women treated for CIN 2/3). Of these women, 742 (82.4%) were discharged to their sample taker within 12 months.
- Nine DHBs met the target of discharging 90% or more women who were eligible for discharge within 12 months.

Indicator 8 HPV testing

Indicator 8.1 HPV triage of low-grade cytology

Target: None set.

HPV triage

- Nationally, 97.1% of women aged 30 years or more with an eligible ASC-US cytology result, and 97.4% of women aged 30 years or more with an eligible LSIL cytology result are recorded as having a subsequent HPV triage test.
- Small numbers of HPV triage tests occur in women aged under 30 years (in 1.0% of women with an ASC-US result, and 0.9% of women with an LSIL result; 22 women in total).
- The proportion of women aged 30 years and over who were eligible for HPV triage of low-grade cytology who subsequently received a triage test is lower than that in the previous monitoring period for women with ASC-US results (97.1% compared to 97.6% in the previous report) but higher for women with LSIL results (97.4% compared to 96.0% in the previous report).

Positive triage tests

- Among women aged 30 years or more with a valid HPV triage test results, 22.3% of women with ASC-US results and 59.4% of women with LSIL results were positive for high-risk HPV (hrHPV).
- Positivity for hrHPV varied by laboratory (from 11.9% to 28.7% for ASC-US, and from 42.9% to 78.1% for LSIL).
- Positivity for hrHPV generally decreased with increasing age.
- The proportion of women whose HPV tests were positive decreased compared to the previous monitoring period for ASC-US (22.3% compared to 23.7% in the previous period), and for LSIL (59.4% compared to 61.2% in the previous period).

Histological outcomes in triage-positive women who attended colposcopy

- Among women with ASC-US cytology and a positive HPV triage test in the six-month period one year prior to the current monitoring period, 91.8% of women have a record of colposcopy and 62.6% have a record of histology within 12 months of their triage test. The corresponding percentages for LSIL are 92.4% with colposcopy and 65.7% with histology within 12 months.
- Among women with colposcopy recorded within 12 months of a positive triage test, the proportion of women that had a CIN 2 or more severe outcome (CIN 2+) was 14.8% for women with triage-positive ASC-US cytology and 13.3% for women with triage-positive LSIL cytology. This corresponded to 53 of the women with ASC-US cytology and 113 of the women with LSIL cytology.
- Among women with histology recorded within 12 months of a triage test, 21.7% of women with ASC-US cytology and 18.7% of women with LSIL cytology had a histological outcome of CIN 2+.

Indicator 8.2 HPV test volumes

Target: None set.

- Nationally, there were 15,736 cervical samples received at laboratories for HPV testing during the current monitoring period.
- Nationally, 15.4% of HPV tests were taken for follow-up of women treated for confirmed high-grade squamous abnormalities in the previous four years (post-treatment follow-up), 36.6% were taken to manage women with high-grade squamous cytology or histology more than three years ago (historical testing), 9.5% were taken at colposcopy (potentially to assist in resolving discordant results), and 17.8% were taken for HPV triage of low-grade cytology in women aged 30 years or more. The remaining 28.4% of HPV tests did not fit into any of the previously described categories, and so the reason for testing was unclear.
- The proportion of HPV tests which are invalid is very small (0.03%).
- Overall HPV test volumes have decreased by 3.4% since the previous monitoring period. The reduction does not appear to be linked to any particular purpose.

Indicator 8.3 Historical HPV tests for follow-up of women with previous high-grade abnormality

Target: None set.

- This analysis followed up 48,896 women who were eligible for historical HPV testing as at 1 October 2009 to ascertain how many women had received an HPV test for management of their historical (more than three years prior) high-grade squamous abnormality.
- There were 34,950 women (71.5%) with a Round 1 historical HPV test recorded, and 30,358 women (62.1%) with a Round 2 historical HPV test recorded.
- The proportion of women who had received a historical HPV test varied by DHB, from 61.2% to 82.2% for Round 1 tests and from 50.3% to 75.0% for Round 2 tests.
- There was variation by age in the proportion of women who had received a historical HPV test. For women aged 25 to 69 years this varied from 60.0% (25-29 years) to 74.4% (60-64 years) for Round 1 tests, and from 40.0% (25-29 years) to 65.3% (65-69 years) for Round 2 tests.
- The proportion of women who had received a historical HPV test varied somewhat by ethnicity, from 54.9% (Pacific women) to 73.3% (European/ Other women) for Round 1 tests and from 42.8% (Pacific women) to 64.6% (European/ Other women) for Round 2 tests.
- The proportion of eligible women with an HPV test recorded is higher than in the previous report, from 70.5% to 71.5% for Round 1 tests, and from 60.5% to 62.1% for Round 2 tests.

2. Background

An organised National Cervical Screening Programme (NCSP) was established in New Zealand in 1990, to reduce the number of women who develop cervical cancer and the number who die from it. The Programme recommends regular cervical screening at three-year intervals for women aged between 20 and 69 years who have ever been sexually active. Part 4A of the Health Act 1956, which came into effect in 2005, underpins the NCSP's operations to ensure the co-ordination of a high -quality screening programme for all women in New Zealand.

Ongoing systematic monitoring is a requirement of an organised screening programme. Such monitoring allows the performance of the Programme to be evaluated and corrective action to be taken as required. Monitoring is carried out through a set of key indicators which cover all aspects of the screening pathway, including participation by women, their clinical outcomes, NCSP provider performance and the Programme overall.

Monitoring reports were produced quarterly from December 2000 to June 2007 (Report 27); and six-monthly thereafter. The audience for these monitoring reports includes the general public, NCSP providers, and the Programme itself.

Technical information on the indicators are available from the Ministry of Health on request.

From Report 30 (July-December 2008) onwards, monitoring has been undertaken with the technical assistance of researchers based at the Cancer Research Division at Cancer Council NSW, Sydney, Australia. This has coincided with the use of a new reporting format, incorporating more explicit definitions and utilising data from the newly developed NCSP Register, so earlier reports are not fully comparable with Report 30 onwards.

The development of these reports has been ongoing, however it is anticipated that from Report 44 going forward, there will be minimal further changes until the NCSP transitions to primary HPV screening in the near future.

NCSP biannual monitoring reports are reviewed by a multidisciplinary advisory and monitoring group, representing NCSP providers and consumers. The group may make recommendations to the NSU for follow-up actions.

Further information about the NCSP Advisory Group and the monitoring and performance of the NCSP is available on https://www.nsu.govt.nz/health-professionals/national-cervical-screening-programme/independent-monitoring-reports and on request from the NCSP:
Email: Ivan_Rowe@moh.govt.nz
Phone: (04) 816 3345, 021 711 432 or Fax: (04) 816 4484

3. Methods

Data used

The analyses in this report are based on data extracted from the NCSP Register on 5 March 2020.

Age

Unless otherwise specified, age is defined as the woman's age at the end of the monitoring period, i.e. the women's age at 31 December 2019.

Hysterectomy-adjusted population

Measures such as coverage require an estimate of the population eligible for cervical screening. This is approximated by applying a hysterectomy-adjustment to the estimated New Zealand female population, to exclude women with a hysterectomy from the eligible population. This is an imperfect adjustor of the proportion of the population eligible for screening, since women with a hysterectomy may or may not require further cervical cytology samples, depending on the type of hysterectomy that they received.

Since Report 49, the hysterectomy-adjustment has used estimates of the hysterectomy prevalence in the New Zealand population from Cleary and Wright.[1] Cleary and Wright used similar modelling techniques to those used by Gray[2] to provide hysterectomy estimates used in previous monitoring reports (Reports 37-48). Alterations to the methods used by Gray[2] include: slight modifications to the model used; additional procedure data and procedure codes were included (to include previously overlooked procedures where the cervix is removed, but did not include sub-total hysterectomies which leave part of the cervix intact); and attempts to account for mortality and migration. Hysterectomy incidence was estimated by fitting models to observed data on hysterectomies obtained from public and private hospital discharge data from the National Minimum Dataset and the Mortality collection and applied these incidence estimates to estimates of the usually resident female population from Statistics New Zealand. The New Zealand Health Survey was used to calibrate the estimates. The resulting estimates of hysterectomy incidence and survival in single-year age groups by calendar year were then used to estimate the prevalence of hysterectomy by five-year age group (among women aged 20-69 years) and calendar year (1957 to 2019). The 31 December 2019 estimates used from Report 49 on and that were employed in this monitoring report were updated to include actual hysterectomy data to 31 December 2016 (supplemented by New Zealand Health Survey data) in five-year age groups to better reflect the hysterectomy prevalence in the population, and have been projected forward using methods similar to previously applied. A known limitation of previous estimates of hysterectomy prevalence is that they did not take into account deaths or women who leave New Zealand after they have a hysterectomy (which would tend to result in an overestimate of hysterectomy prevalence), nor women who migrate to New Zealand who have previously had a hysterectomy (which would tend to underestimate hysterectomy prevalence). In these new estimates attempts to account for mortality and migration have been applied, to reduce these limitations. The estimates of hysterectomy prevalence used in the current report are included in Table 39.

The hysterectomy prevalence data were applied to New Zealand population estimates from Statistics New Zealand so that estimates of the number of women in the New Zealand population (by age, ethnicity and DHB) who had not had a hysterectomy prior to 31 December 2019 were obtained. Hysterectomy prevalence figures for the whole population (the denominator) were age-specific hysterectomy adjustments and were applied equally across the estimated population within each DHB and ethnicity grouping. These adjusted population estimates were then used as the denominator in the hysterectomy-adjusted calculations.

The estimates used for the New Zealand female population (as at 31 December 2019) were also updated from Report 49 onwards, from projections made in 2016 based on 2013 Census data, to projections made in 2018, also based on 2013 Census data[3] .

Ethnicity analysis

The analysis by ethnicity considered four groups – Māori, Pacific, Asian, or European/ Other, based on women's prioritised ethnicity derived from level two ethnicity codes recorded on the NCSP Register. Women for whom ethnicity information was not available were included in the "European/ Other" ethnicity category. The data download used for the current analysis (NCSP Register data as at 5 March 2020) contained ethnicity codes for approximately 99.1% of women on the NCSP Register.

Ethnicity data in New Zealand is collected during encounters with the health system, such as registering with primary care, during an admission to hospital, or during surveys. The Ministry of Health has undertaken a number of activities to improve the quality of ethnicity data, including the development in 2004 of protocols for the collection and recording of ethnicity data.[2] Coding of ethnicity on the NCSP Register follows the classification used by the Ministry of Health. The NCSP is continuing with work to improve the accuracy of ethnicity recording on the NCSP Register. This has included matching women's NHIs for which there is no ethnicity on the register with the Ministry of Health's NHI register to include ethnicities. This matching is done every three months.

Calculating NCSP coverage

The methods developed for calculating the indicators used to monitor the NCSP are reviewed and revised approximately every three years, consistent with other international programmes. In addition, revisions to calculations are made in accordance with changes to New Zealand statistics, such as the population census data and ethnicity recordings. These changes reflect Statistics New Zealand modifications to methods for estimating population statistics. Any changes to methods for numerators or denominators are discussed with and supported by the NCSP Advisory Group. These changes are then approved by the National Screening Unit.

In 2008 the NCSP Advisory Group agreed that NCSP report coverage for women aged 25-69 years at the end of the monitoring period. This includes women aged 22 and over at the beginning of the three-year period but excludes women aged 20 or 21 years at the beginning. This approach is consistent with practice in Australia and England. In England, until 2003, the target age range for screening was 20-64 years, but coverage was calculated for women aged 25-64 years, to ensure only women eligible throughout the period were included. Similarly, in Australia, women are eligible to start screening from 18 years, but coverage is measured among women aged 20-69

years. The difference between the starting ages (two years) is the same as the recommended screening interval in Australia.

The advantage of measuring coverage at ages 25-69 are that it provides a fairer estimate of coverage (by excluding women who are not eligible for the full three-year period) and allows international benchmarking with important peer group countries, including Australia and UK.

In addition to three-year coverage, (discussed above) we also report five-year coverage (as is also done internationally). The change in method is even more important here as women aged 20-24 all need to be excluded as they are not eligible for screening for the full five years prior to the end of the assessment period. Restricting the coverage estimate to the 25-69 age group rather than the 20-69 age group is even more advantageous with respect to the five-year coverage indicator than the three-year coverage indicator.

As with all indicators, coverage indicators and the statistics on which they are based continue to evolve and further changes in the construction of these indicators are to be expected in the future.

4. Biannual NCSP Monitoring Indicators

Indicator 1 – Coverage

This indicator includes two sub-indicators – three-year coverage (Indicator 1.1) and regularity of screening (Indicator 1.2). Indicator 1.1 also describes participation at longer intervals (five-year coverage). These two sub-indicators complement each other, in that the first allows monitoring of women who are screened versus those who are not screened over various timeframes; whereas the second (regularity of screening) allows more detailed monitoring of the timeliness among women who have attended for screening.

This is a re-structure compared to reports prior to Report 44, where only three-year (and five-year) coverage were included in the biannual monitoring reports, and regularity of screening was included in the annual reports. Indicator 1.2, regularity of screening, is analysed annually to allow for the full year to be examined, and so is only included in every second monitoring report.

Indicator 1.1 – Three-year coverage

Definition	The proportion of all 25-69 year old women who have had a screening event (cytology sample, HPV sample or histology sample) taken in the three years prior to the end of the monitoring period. This definition restricts the measure of coverage to the five-year age groups who were eligible for the entire duration of the three-year period, i.e. women aged 25-69 years at the end of the monitoring period. Screening coverage in women aged 20-69 years is also presented, for comparability with previous reports. The denominator (eligible population) for this indicator is adjusted for the estimated proportion of women who have had a total hysterectomy. Women who have withdrawn from or are not enrolled on the NCSP Register are excluded from the counts of women screened. Screening of women aged less than 20 years at the time of their cervical sample is also reported by DHB.
Target	80% of *eligible* women (aged 25-69 years at the end of the period) within three years. This target applies nationally, and also to each ethnicity group (80% for Māori, 80% for Asian, 80% for Pacific, 80% for European/ Other women).
Current Situation	***Coverage*** 950,679 (72.3%) women aged 25-69 at the end of the current monitoring period (31 December 2019) had at least one cervical sample taken during the previous three years. This does not yet meet the target of 80%. 1,133,025 (86.2%) women aged 25-69 at the end of the current monitoring period had at least one cervical sample taken during the previous five years. Three-yearly coverage varied by ethnicity. Coverage targets of 80% were not met for any ethnic group. Coverage among women aged 25-69 years was 58.7%, 65.7%, 61.7% and 78.9% for Māori, Pacific, Asian and European/ Other women, respectively (Figure 1, Table 28). The target coverage of 80% of women screened at least once within the previous three years was not achieved in any of the five-year age groups between 25 and 69 years. Among women aged 25-69 years at the end of the period, coverage was lowest for women aged 25-29 years (61.7%) and was highest for women aged 45-49 (77.8%; Figure 2, Table 29). Coverage was also low for women aged 20-24 years (43.8%), however many women in this age group were not eligible for screening for the entire three-year period as the minimum screening age has increased, and so the target is not applied to this age group.

Three-yearly coverage in women aged 25-69 years varied by DHB from 66.5% (Northland) to 77.0% (Taranaki). No DHBs achieved the 80% target for women aged 25-69 years at the end of the period (Figure 3, Table 27).

Coverage for each of Māori, Pacific, Asian or European/ Other women was also explored at the DHB level (Table 30), and by age group (Table 31). Three-yearly coverage for Māori women ranged from 52.6% (Canterbury) to 66.7% (Tairawhiti; Figure 4). The target level of 80% of Māori women screened within the previous three years was not achieved in any DHB. Three-yearly coverage for Pacific women ranged from 49.9% (Northland) to 75.8% women (Nelson Marlborough; Figure 5). The target level of 80% of Pacific women screened within the previous three years was not achieved in any DHB. Three-yearly coverage in Asian women ranged from 49.8% (South Canterbury) to 74.1% (Tairawhiti; Figure 6). The target level of 80% of Asian women screened within the previous three years was not met in any DHB. Three-yearly coverage for European/ Other women ranged from 70.5% (Wairarapa) to 88.1% (Auckland; Figure 7). The target level of 80% of European/ Other women screened within the previous three years was achieved in seven DHBs (Auckland, Bay of Plenty, Capital and Coast, Lakes, Tairawhiti, Taranaki and Waitemata).

Three-yearly coverage for Māori women ranged from 55.0% (25-29 years) to 63.6% (55-59 years; Figure 8). The target level of 80% of Māori women screened within the previous three years was not achieved in any age group. Three-yearly coverage for Pacific women ranged from 49.5% (25-29 years) to 82.0% of women (60-64 years). The target level of 80% of Pacific women screened within the previous three years was met in one age group (60-64 years). Three-yearly coverage in Asian women ranged from 39.5% (25-29 years) to 75.2% (60-64 years). The target level of 80% of Asian women screened within the previous three years was not met in any age group. Three-yearly coverage for European/ Other women ranged from 70.7% (65-69 years) to 83.2% (45-49 years). The target level of 80% of European/ Other women screened within the previous three years was achieved in four age groups (each of the five-year age groups between ages 35 and 54 years).

When compared to the findings for three-year coverage, five-year coverage had broadly similar patterns of variation by age, DHB, and ethnicity. For women aged 25-69 years at the end of the monitoring period, five-year coverage varied from 80.6% for Northland to 91.0% for Capital & Coast (Figure 9, Table 32); by age from 75.4% for women aged 25-29 years to 92.4% for women aged 45-49 years (Figure 10, Table 34) and from 72.5% (Asian) to 92.8% (European/ Other; Figure 11, Table 33). Five-yearly coverage for Māori women ranged from 64.3% (Canterbury) to 82.9% (Tairawhiti; Figure 12, Table 35). Five-yearly coverage for Pacific women ranged from 63.2% (Northland) to 91.5% (Auckland; Figure 13, Table 35). Five-yearly coverage for Asian women ranged from 58.5% (South Canterbury) to 85.4% (Tairawhiti; Figure 14, Table 35). Five-yearly coverage in European/ Other women ranged from 83.7% (Wairarapa) to all women (Auckland and Tairawhiti; Figure 14, Table 35). Coverage was estimated to be over 100% of the eligible population in some cases (Table 35); this is likely

to be due to limitations in the estimates for population and hysterectomy prevalence.

Screens in women aged less than 20 years

A total of 4,179 women who were aged less than 20 years at the time of their cervical sample had a cervical sample taken in the three years to the 31 December 2019. This represents 0.4% of women who were screened at any age (Table 37).

The number of women who were aged less than 20 years at the time they were screened varied by DHB from West Coast (25) to Canterbury (771), however some differences in counts are to be expected due to differences in population size and age structure between DHBs. In order to take differences in population size between DHBs into account, the number of women who were screened in the previous three years and aged 15-19 years at the time of their cervical sample in each DHB was divided by the estimated population of females aged 15-19 years in that DHB. Note that as the events occurred over a three-year period, and the population estimate is for a single year, this cannot be interpreted directly as the proportion of 15-19 year old females in each DHB who have been screened in the last three years. However, this does allow the variation in DHB populations to be partly accounted for, and thus can give an indication of where screening among women aged less than 20 years is more or less common. Estimates for this proportion ranged from Northland (1.3%) to Canterbury (4.5%). Some DHBs screen a relatively low number of women when they are younger than 20 years, but at a comparatively high rate, because their population is small (for example West Coast). Details of screens of women aged less than 20 years by DHB are presented in Figure 15, and Table 36 to Table 38) .

Further exploratory analysis determined that a very high proportion of the women who were aged less than 20 years at the time of their cervical sample were aged 18-19 years at the time (89.1%; Table 38). This may represent opportunistic screening of women aged 18-19 years. This proportion varied from 72.0% in West Coast to 96.3% in Capital & Coast. Where this proportion is higher, it indicates that a larger proportion of screening in women aged less than 20 years may be attributable to opportunistic screening of women aged 18-19 years; as this proportion decreases, it indicates that more of the screening in women aged under 20 years is occurring in women aged under 18 years, and less may be attributed to opportunistic screening of women aged 18-19 years.

Trends

Coverage

Overall coverage in New Zealand among women aged 25-69 years is higher in the current monitoring report (72.3% within the last three years, and 86.2% within the last five years) compared to the previous monitoring period (71.4% within the last three years, and 85.5% within the last five years).

Over the last two monitoring periods the proportion of Asian women screened is higher: from 59.8% in the previous period to 61.7% in the current

period. Māori women screened is lower: from 61.6% in the previous period to 58.7% in the current period. Pacific women screened is higher: from 65.1% in the previous period to 65.7% in the current period. European/ Other women screened is higher; from 77.2% in the previous period to 78.9% in the current period (Figure 19, Table 42). Trends over the last four monitoring periods by DHB are shown in Figure 17 and Table 40.

Screens in women aged less than 20 years

The number of women screened who were aged under 20 years is lower; from 4,499 in the previous monitoring period to 4,179 in the current monitoring period. The proportion of all women with screening events who were aged less than 20 years at the time of the event is similar (0.4% in both periods; Figure 20).

The proportion of these women who were aged 18-19 years is lower than in the previous monitoring period (89.1%, compared to 89.4% previously; Figure 21). As in previous reports, it would appear that in New Zealand overall, screens in very young women are reducing, and when women aged less than 20 years are screened, it mostly reflects opportunistic screening of women aged 18-19 years.

Comments

As noted in the *Trends* section, the estimates for the number of women eligible for screening including hysterectomy adjustment were updated in previous and current reports, and these changes mean that differences in coverage compared to prior reports should be interpreted with caution, as these may partially reflect differences in the population estimates. The estimates of age-specific hysterectomy prevalence used in the current report are included in Appendix A (Table 39). Table 39 also includes a comparison with the hysterectomy prevalence estimates used in the previous monitoring report.

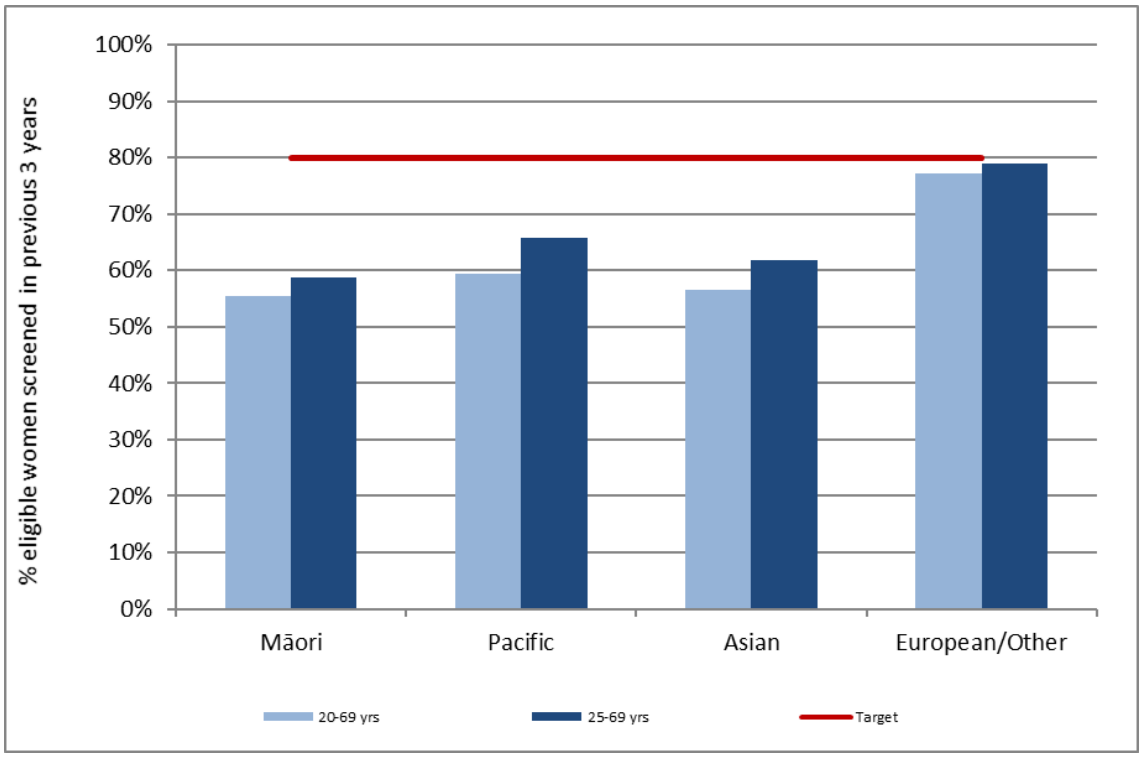
As discussed in the Methods section of this report (Hysterectomy-adjusted population; page 13), the hysterectomy prevalence estimates used to make the adjustment includes all women with a hysterectomy, some of whom may still require cervical screening. These women will have been removed from the denominator but may still appear in the numerator. As a result of these limitations, coverage must be interpreted with some caution. We explored the impact of the hysterectomy-adjustment on the results by calculating coverage as a proportion of the total New Zealand female population (i.e. regardless of whether they have had a hysterectomy or not). Results for this analysis appear in Table 39.

Counts of women screened used to estimate coverage (numerator) exclude women who are not enrolled on the NCSP Register, whereas the hysterectomy-adjusted population estimates (denominator) represent all women in New Zealand without a hysterectomy, regardless of whether they are enrolled on the NCSP Register. Therefore, the coverage estimates may be an underestimate of the actual coverage rates achieved; however, the impact is likely to be very small.

Concerns about under- and over-counting of different ethnicity groups have led the Ministry to use the NHI for ethnicities as other Ministry collections do. This report relies on NCSP Register ethnicities; however regular matching is done with the NHI register for women on the NCSP Register who have no ethnicity recorded on the NCSP Register.

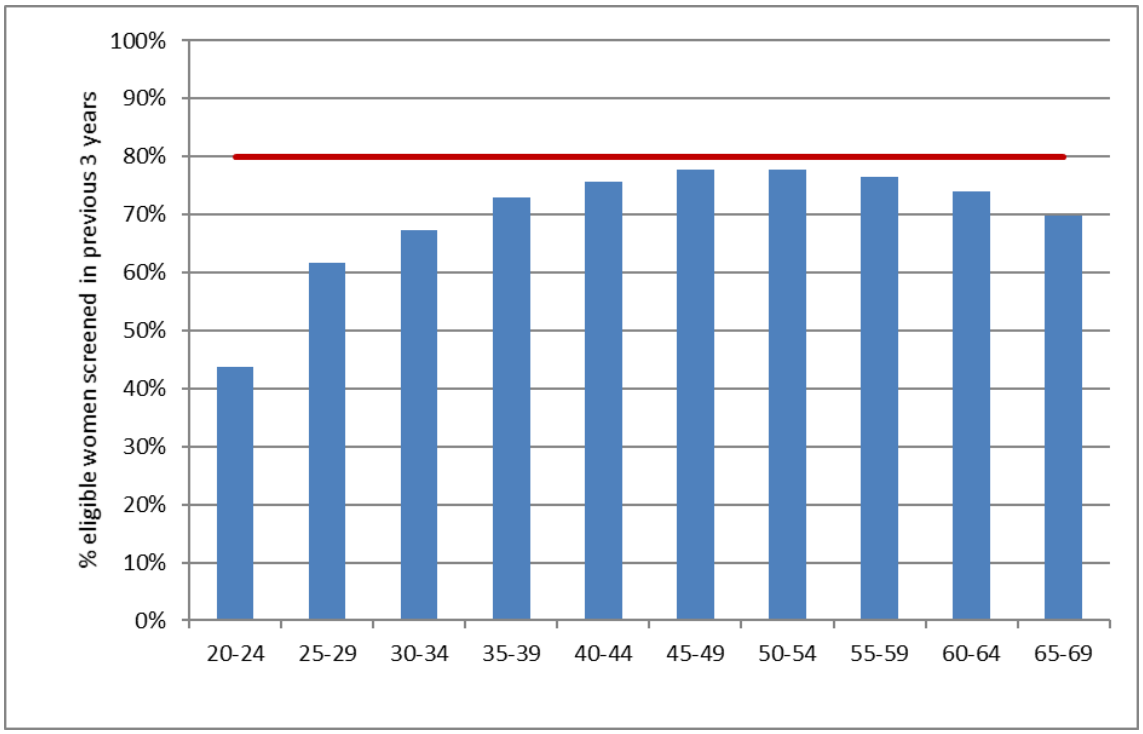
In November 2019, National Cervical Screening Programme increased the recommended starting age for cervical screening from 20 to 25 years, based on evidence that screening women between the ages of 20 and 24 provides little benefit to women and can cause harm.[4] This change is in line with the screening start age in many other countries. Coverage in women aged 20-24 years is likely to gradually decrease as a result of this change, and will no longer be routinely reported after this monitoring report, consistent with the change in recommended starting age. Another effect of this change is that as women respond to the updated recommendations, coverage in women aged 25-29 years will need to be interpreted with some caution, as over time women will have had a shorter period in which they were eligible for screening.

Figure 1 - Three-year coverage by ethnicity (women 25-69 years screened in the three years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population)



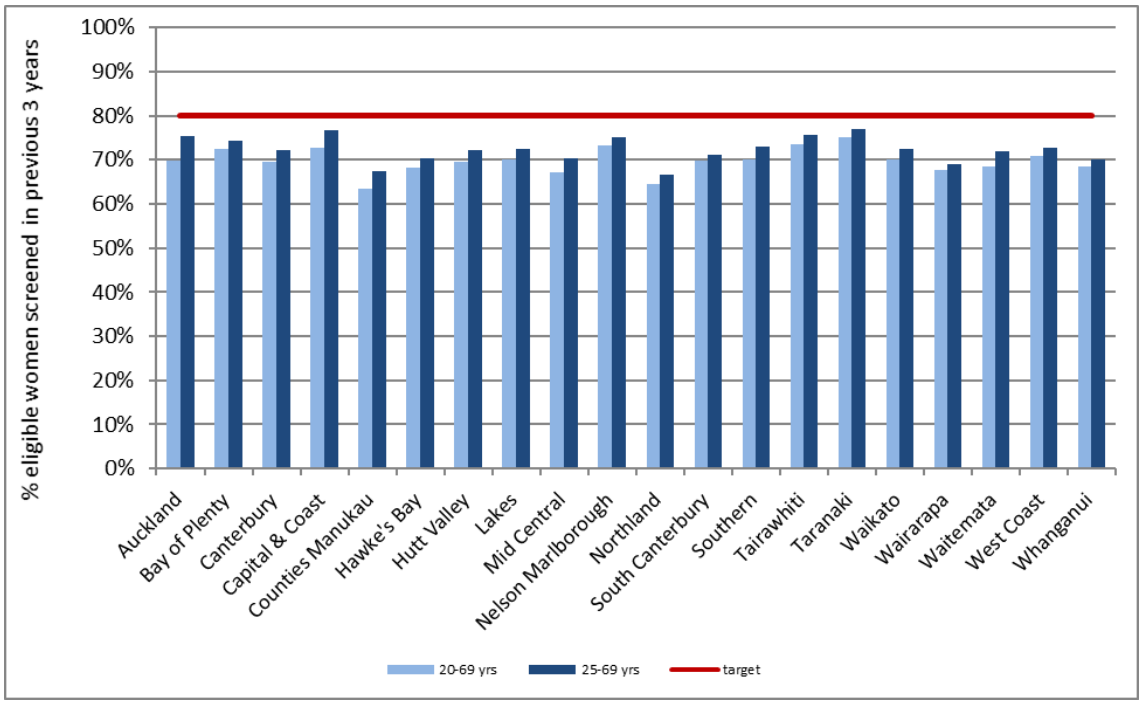
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. Target: 80% for ages 25-69 years, hysterectomy adjusted. See also Table 28.

Figure 2 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population)



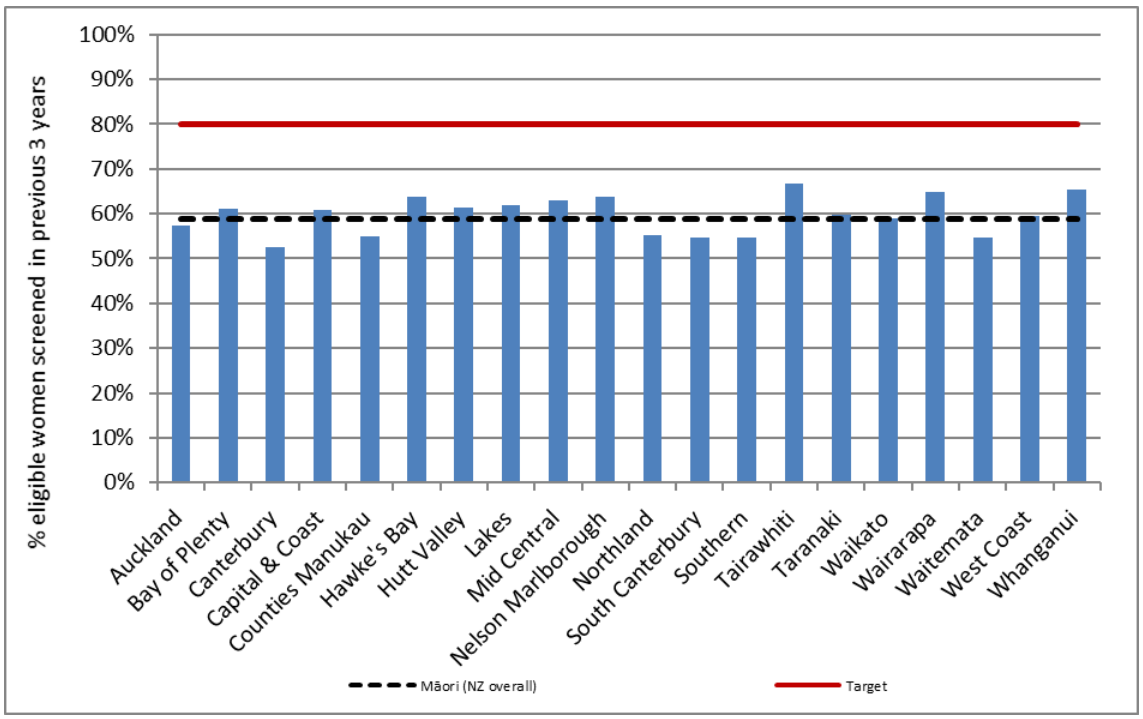
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. Target: 80% for ages 25-69 years, hysterectomy adjusted. See also Table 29.

Figure 3 - Three-year coverage by DHB (women 25-69 years screened in the three years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population)



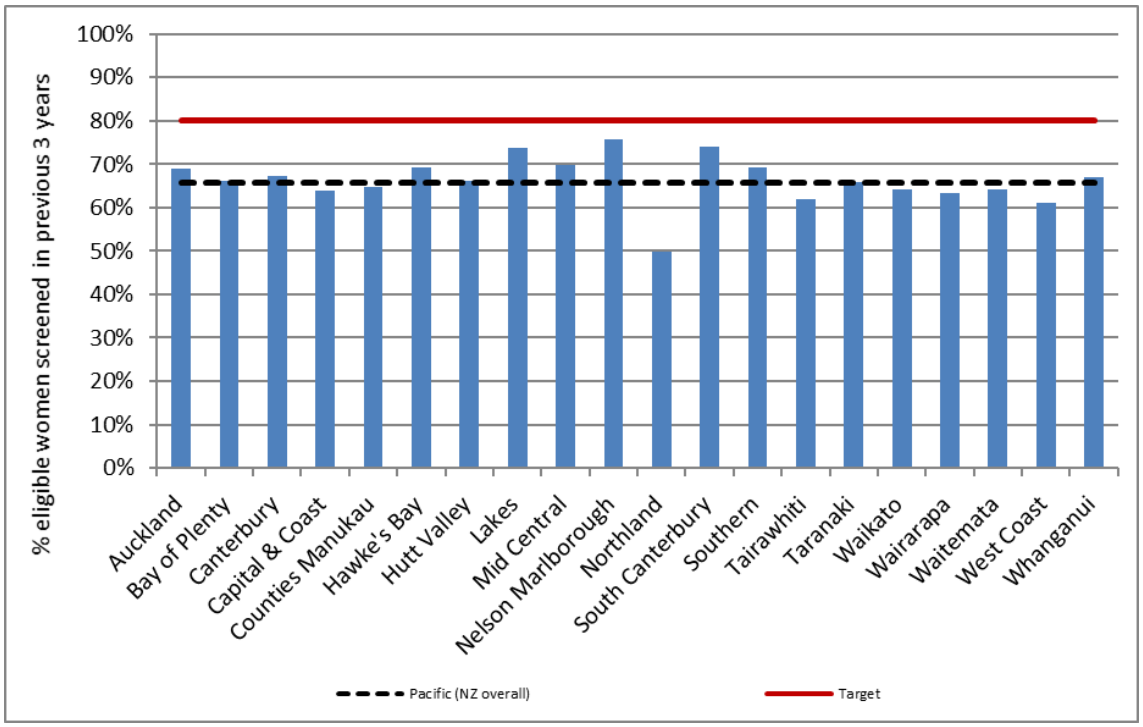
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted. See also Table 27.

Figure 4 - Three-year coverage in Māori women (women 25-69 years screened in the three years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population), by DHB



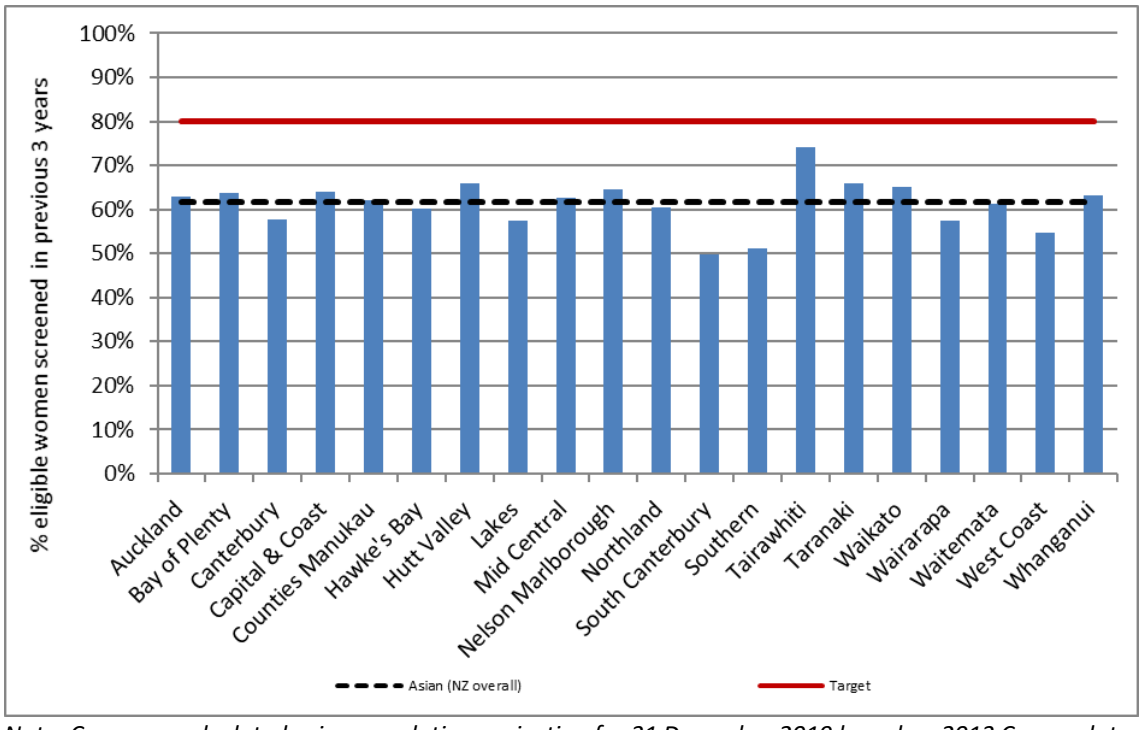
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 5 - Three-year coverage in Pacific women (women 25-69 years screened in the three years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population), by DHB



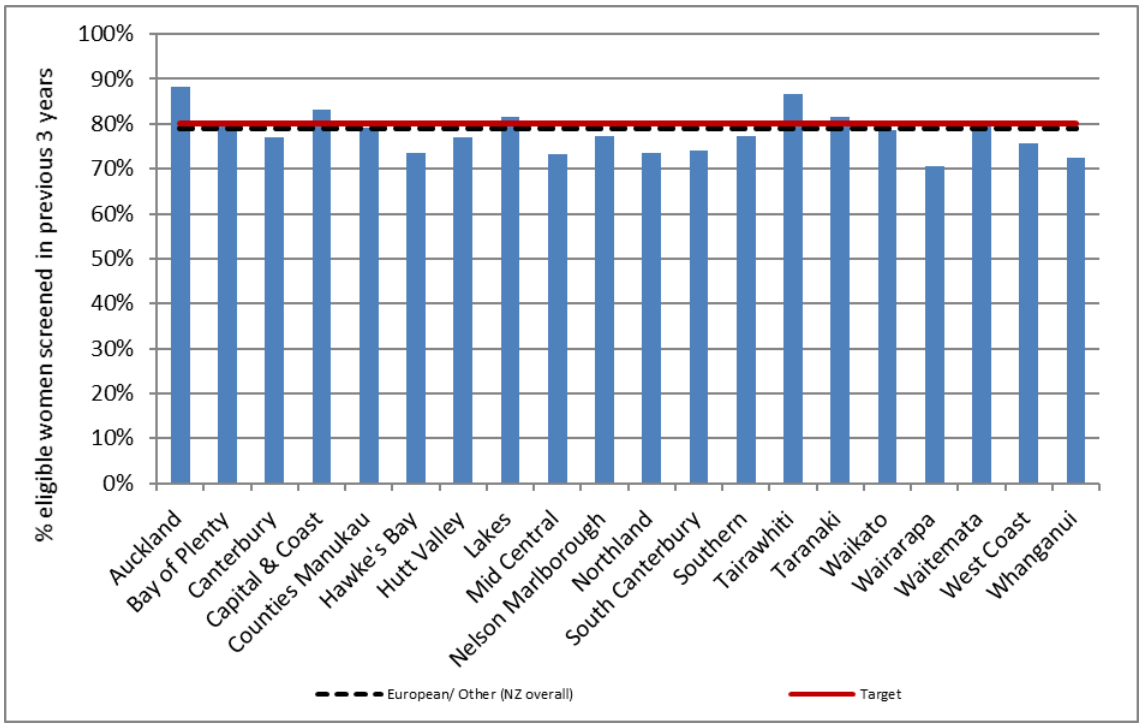
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 6 - Three-year coverage in Asian women (women 25-69 years screened in the three years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population), by DHB



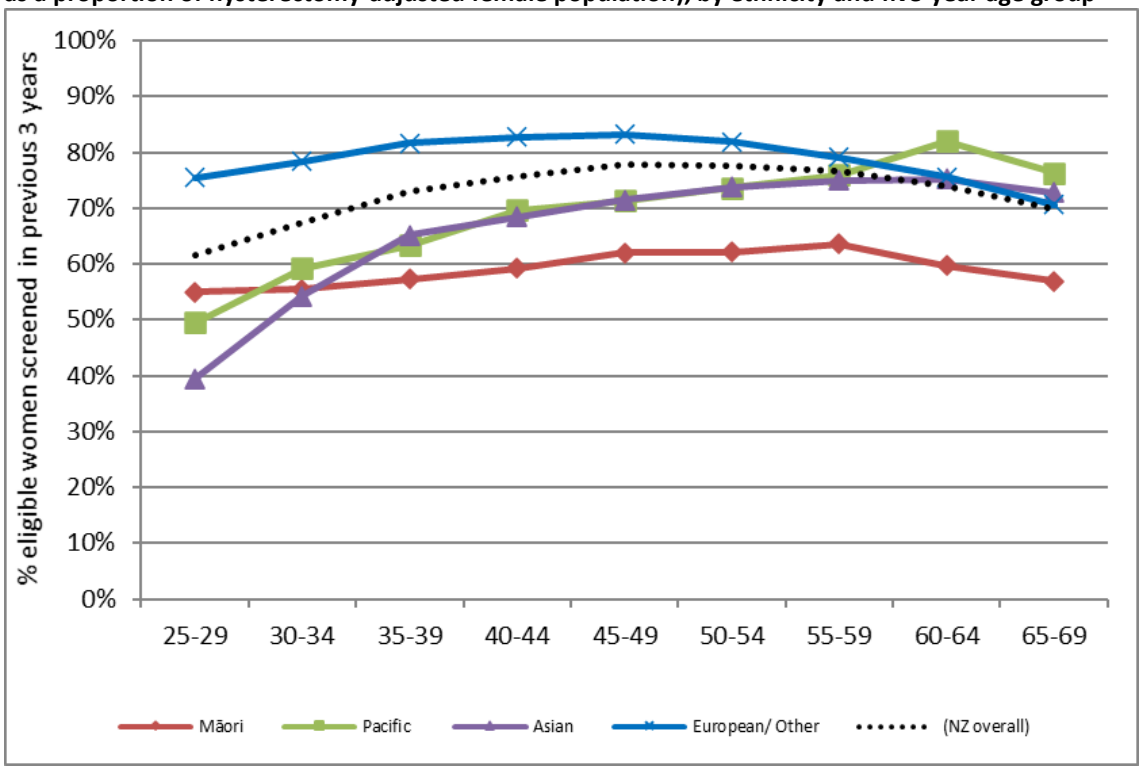
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 7 - Three-year coverage in European/ Other women (women 25-69 years screened in the three years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population), by DHB



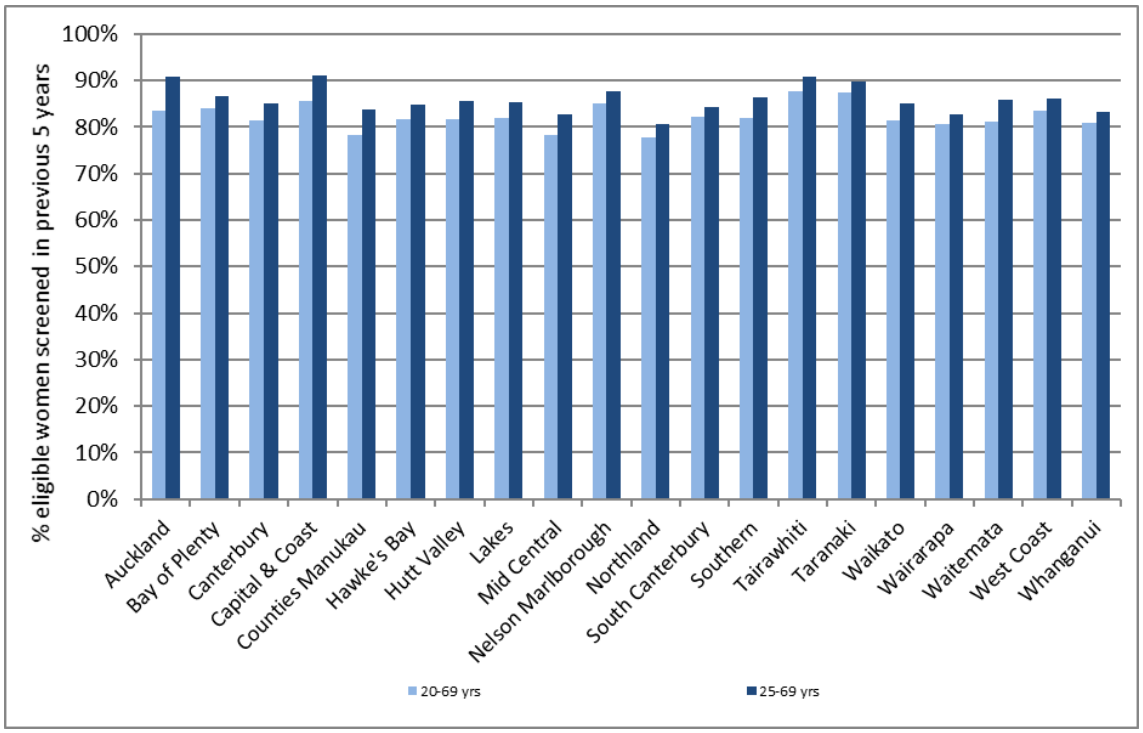
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 8 - Three-year coverage (women 25-69 years screened in the three years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population), by ethnicity and five-year age group



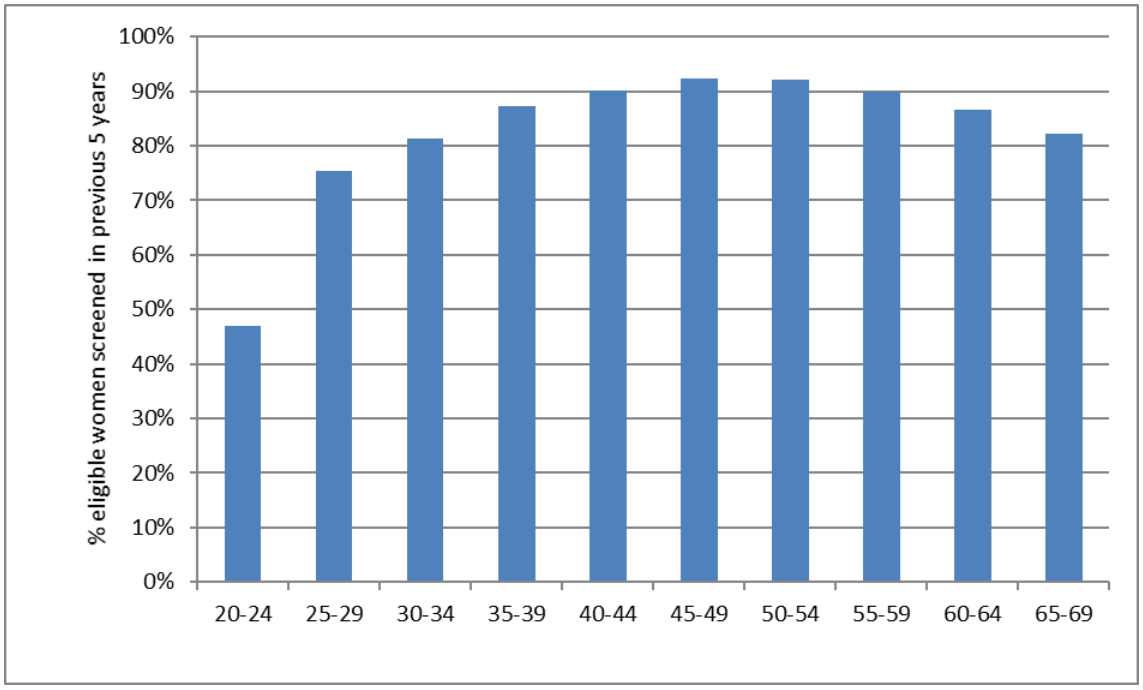
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 9 - Five-year coverage by DHB (women screened in the five years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population)



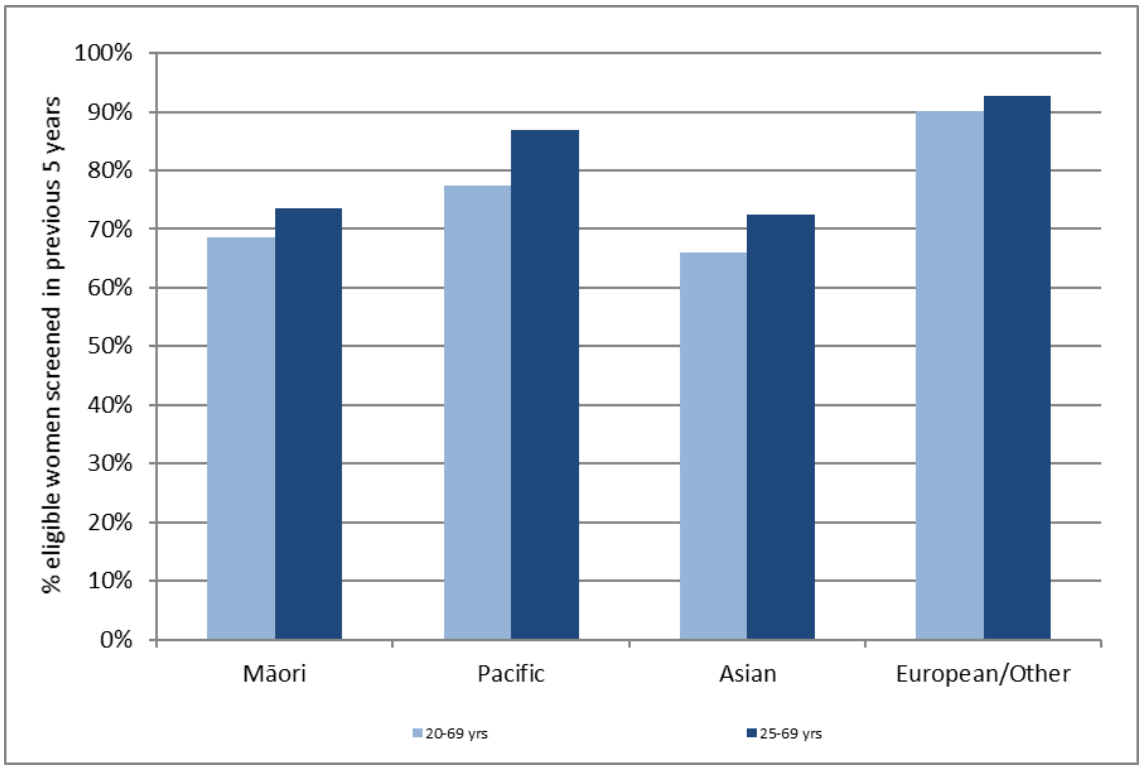
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. See also Table 32.

Figure 10 - Five-year coverage by five-year age-group (women screened in the five years prior to 31 December 2019, as proportion of hysterectomy-adjusted female population)



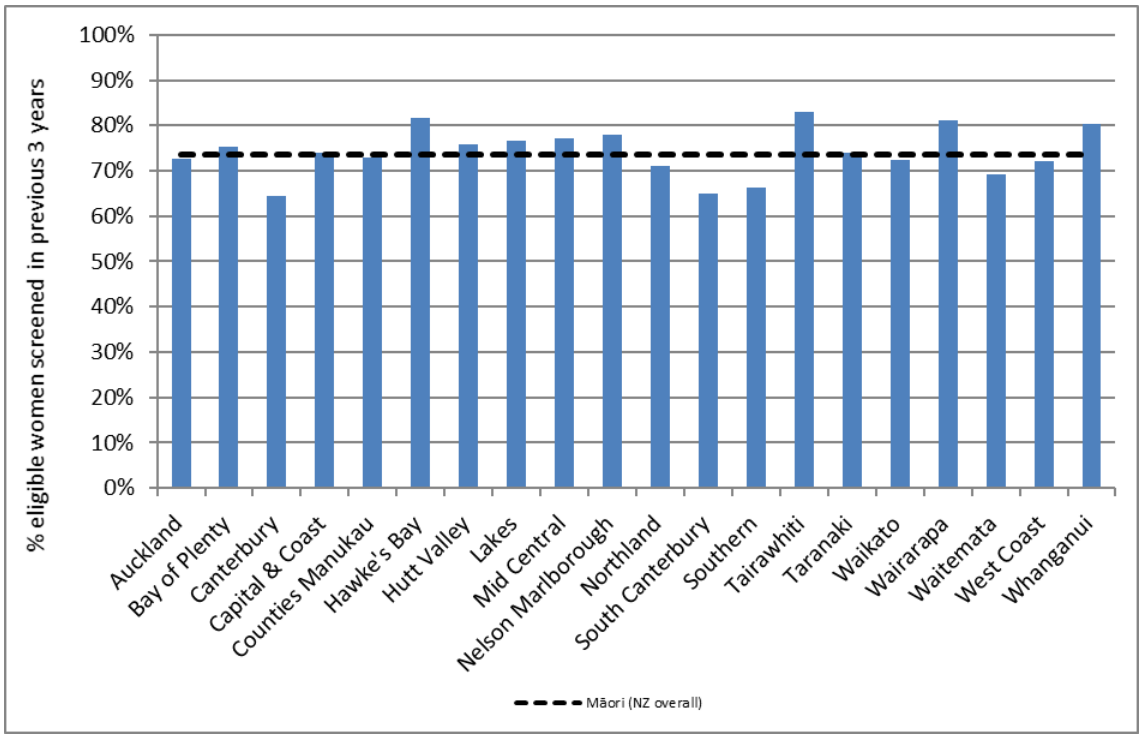
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. See also Table 34.

Figure 11 - Five-year coverage by ethnicity (women screened in the five years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population)



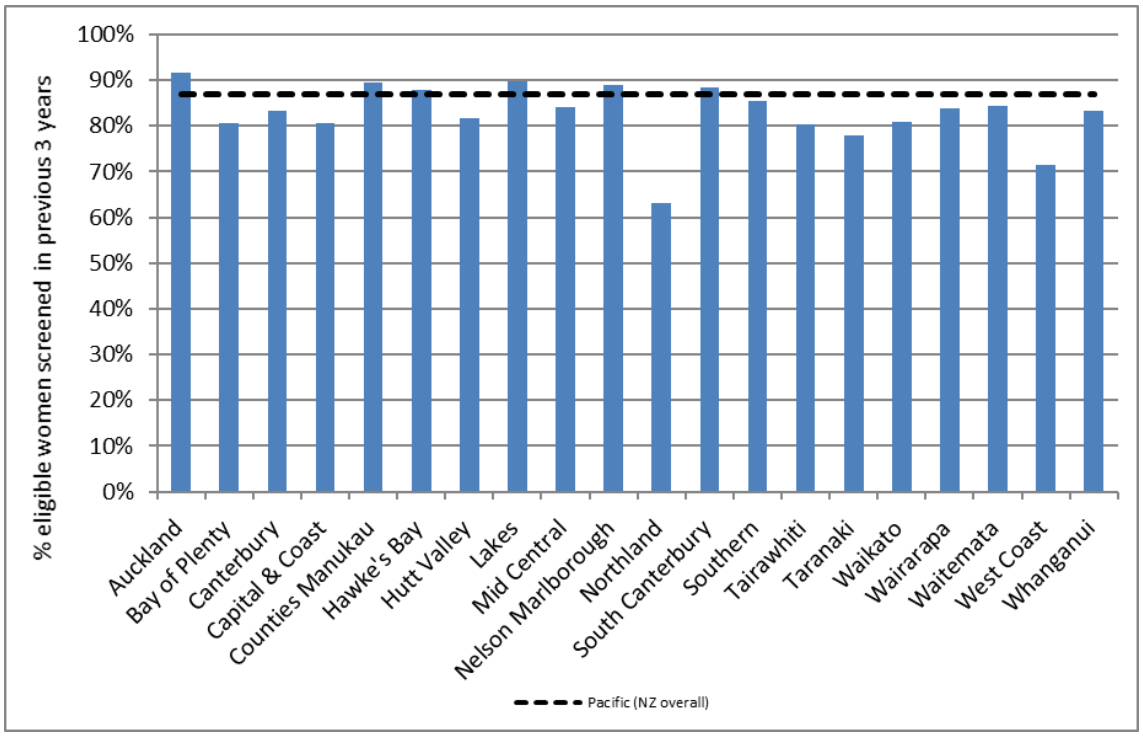
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data. See also Table 33.

Figure 12 - Five-year coverage in Māori women (women 25-69 years screened in the five years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population), by DHB



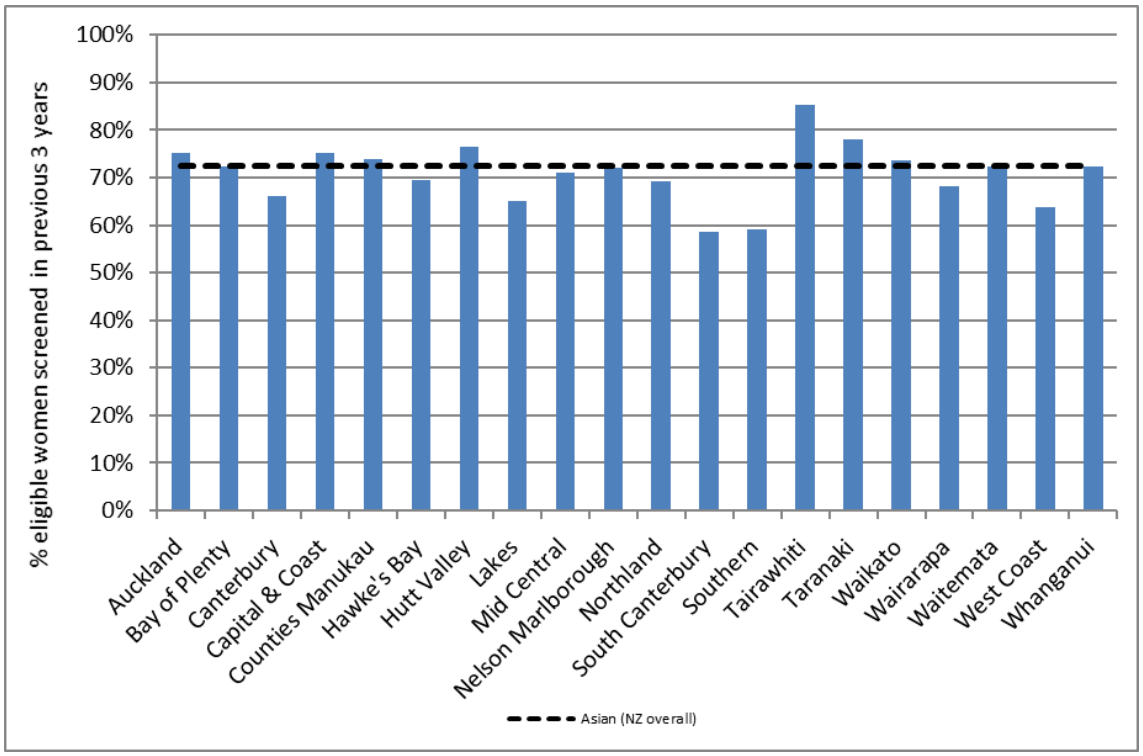
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data.

Figure 13 - Five-year coverage in Pacific women (women 25-69 years screened in the five years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population), by DHB



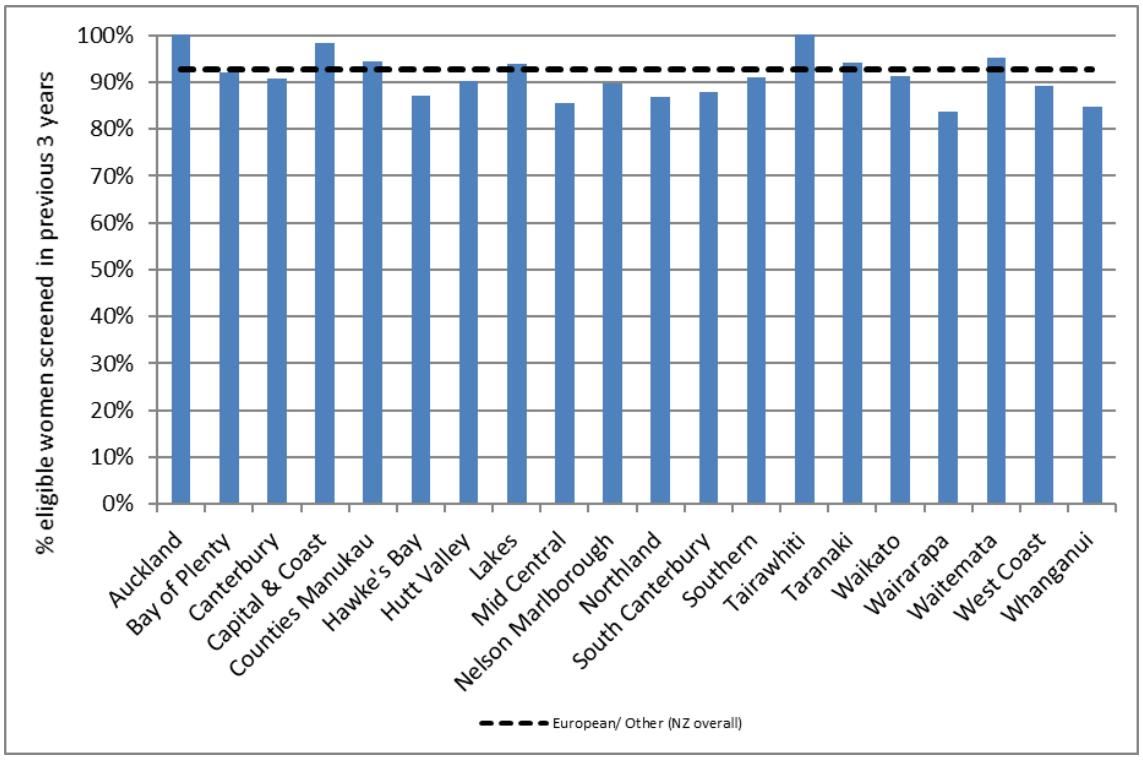
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data.

Figure 14 - Five-year coverage in Asian women (women 25-69 years screened in the five years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population), by DHB



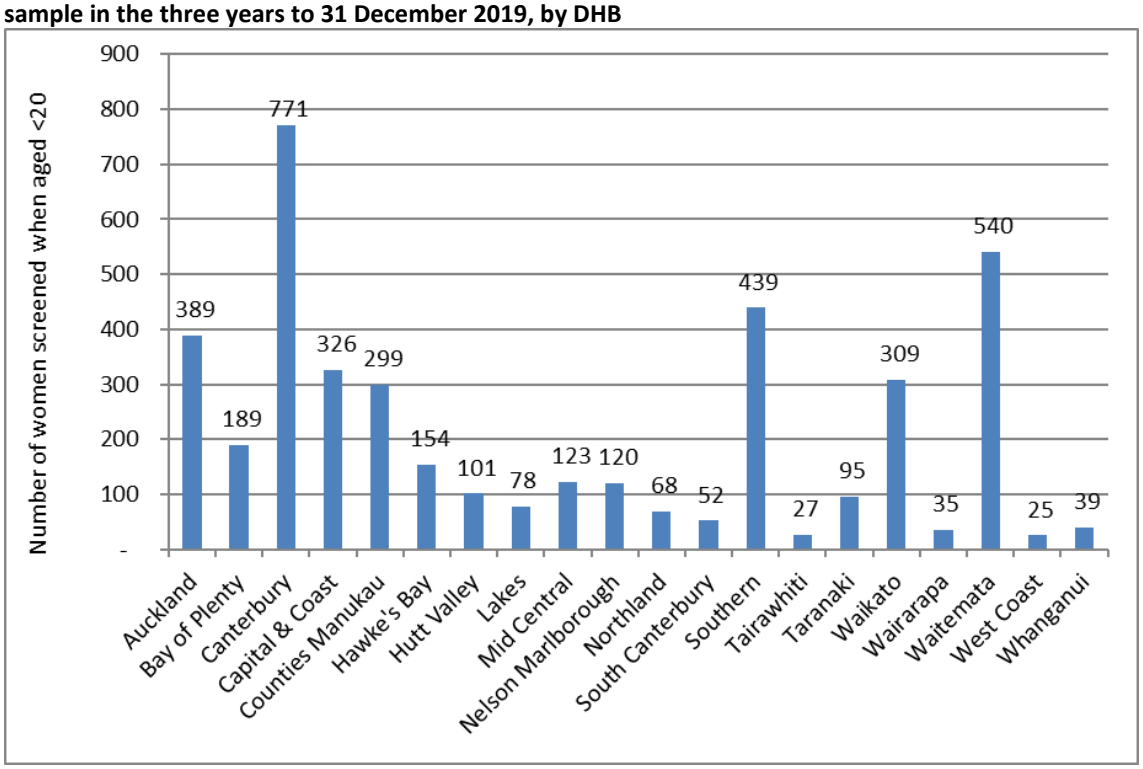
Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data.

Figure 15 - Five-year coverage in European/ Other women (women 25-69 years screened in the five years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population), by DHB



Note: Coverage calculated using population projection for 31 December 2019 based on 2013 Census data.

Figure 16 - Number of women screened who were aged less than 20 years at the time of their cervical sample in the three years to 31 December 2019, by DHB



See also Table 36.

Figure 17 - Trends in three-year coverage by DHB (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population)

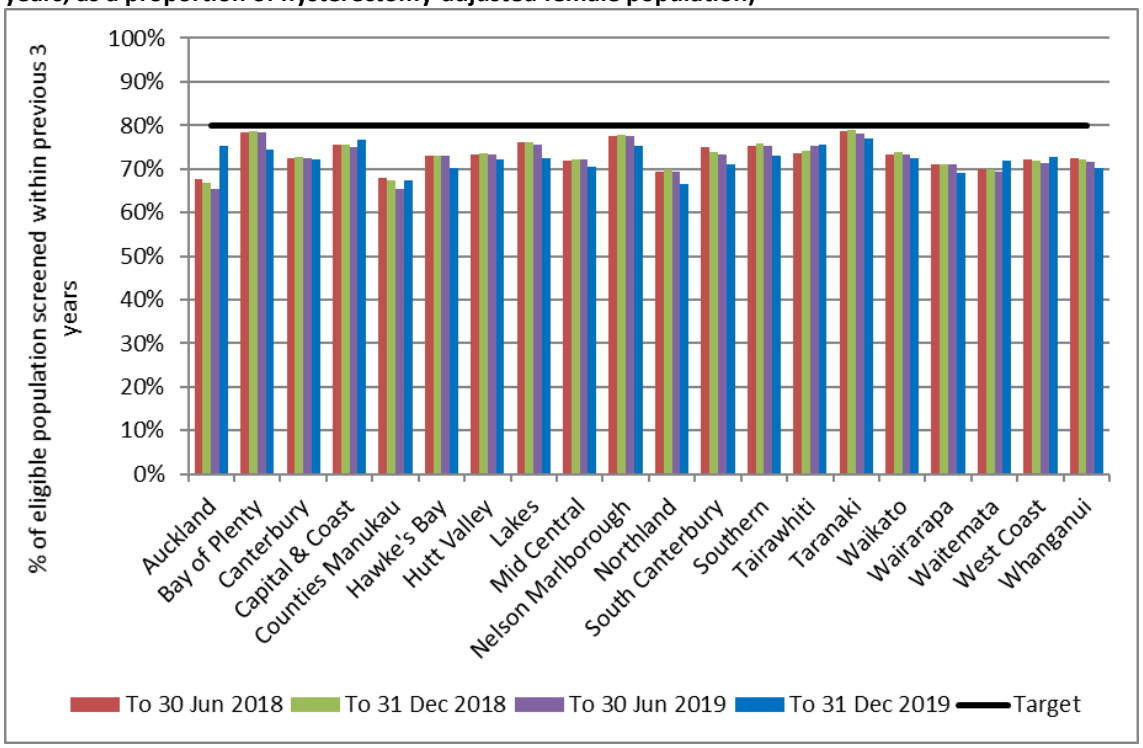


Figure 18 - Trends in three-year coverage by age (women screened in the previous three years, as a proportion of hysterectomy-adjusted female population)*

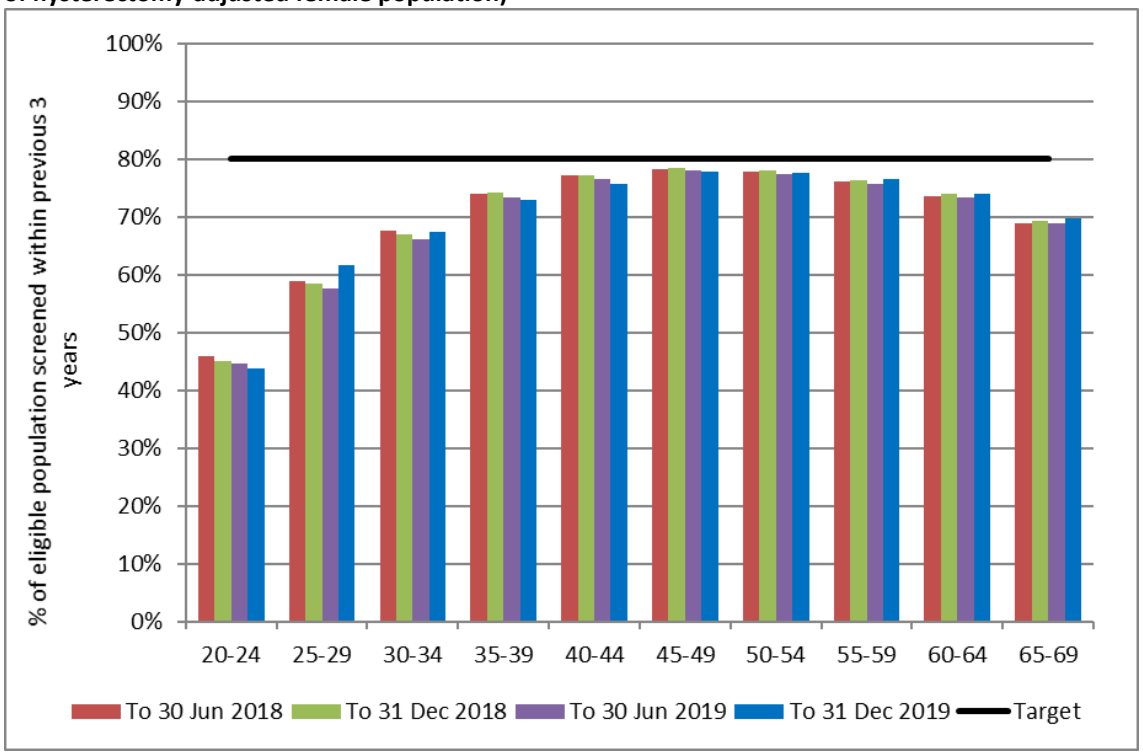
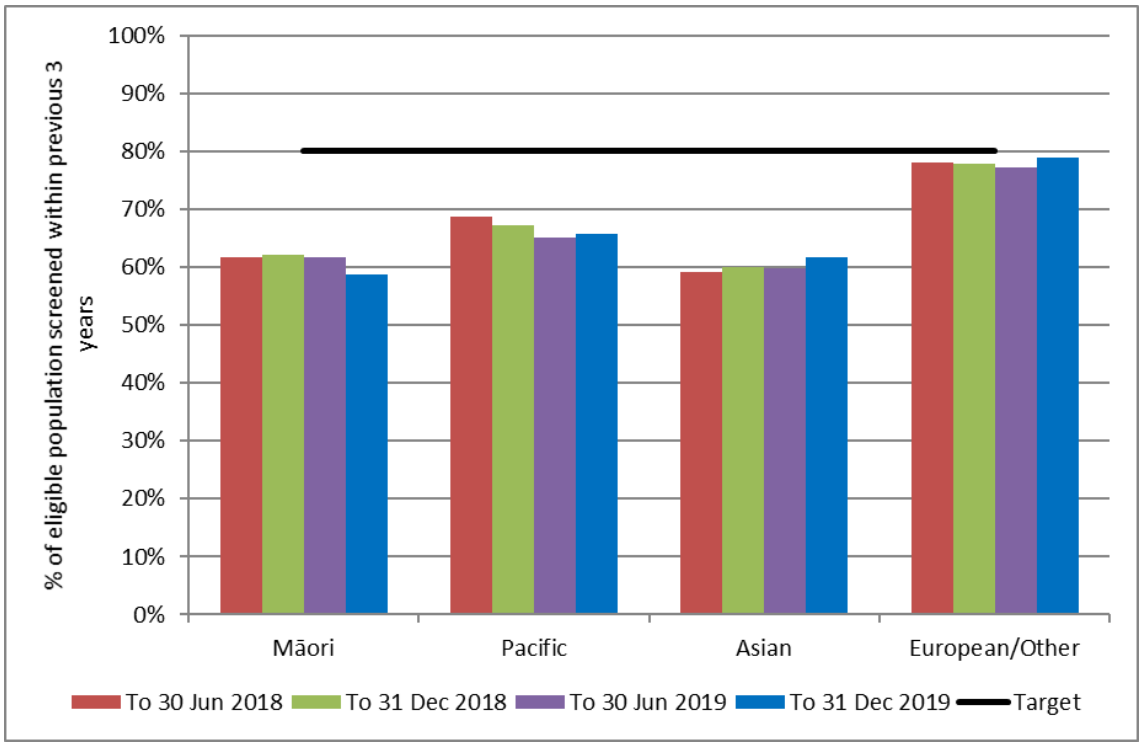
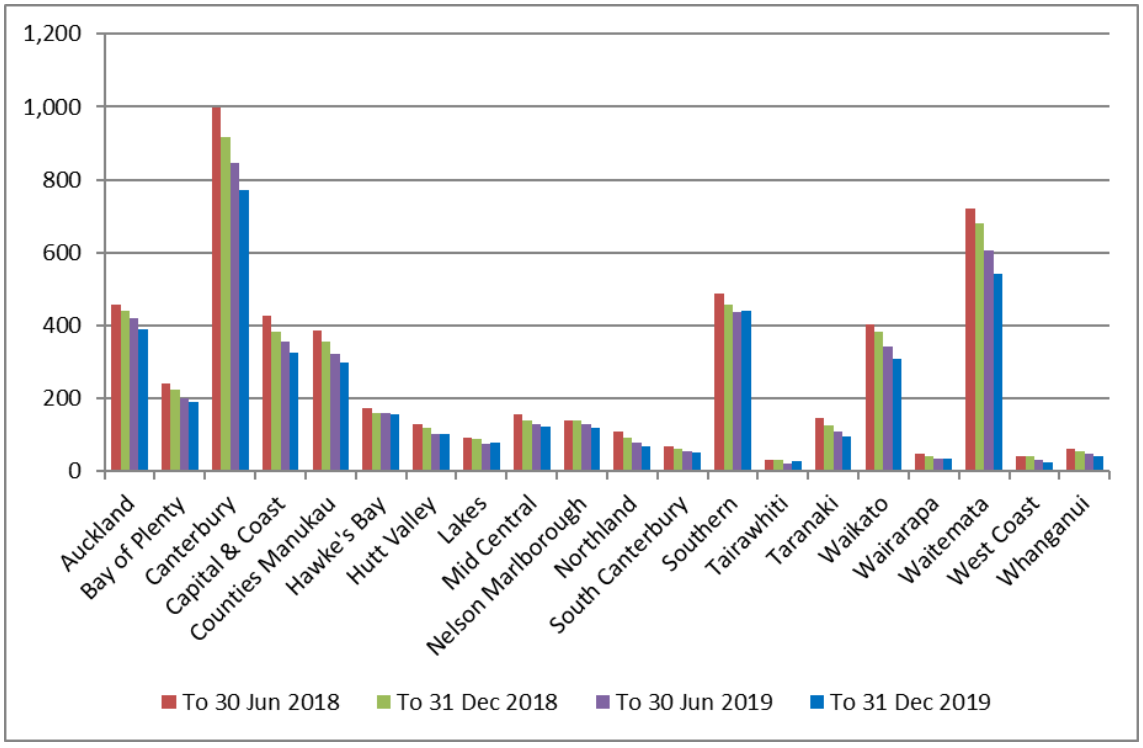


Figure 19 - Trends in three-year coverage by ethnicity (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population)*



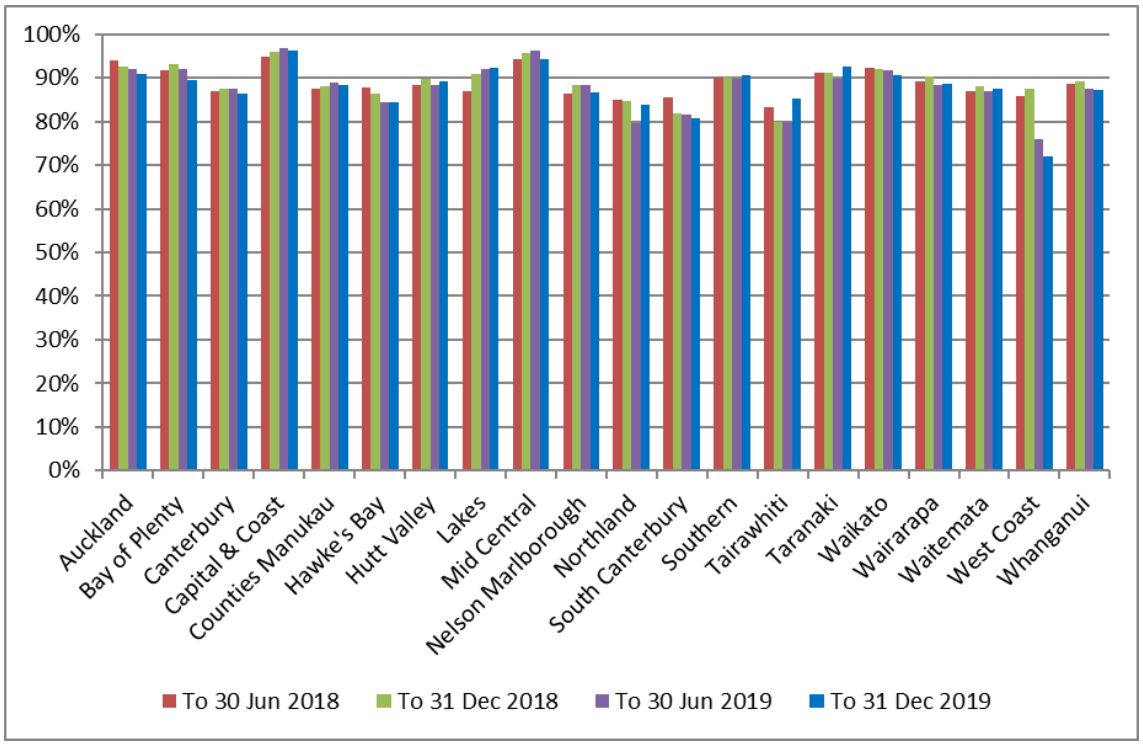
**Note: Coverage calculated using population projection at the date shown based on 2013 Census data. Updated population and hysterectomy 2013 Census population projection was used to calculate coverage for 31 December 2019. Target 80%. See also Table 42.*

Figure 20 - Trends in the number of women screened in the preceding three years who were aged less than 20 years at the time of their cervical sample, by DHB



See also Table 36.

Figure 21 - Trends in the percent of women aged less than 20 years at the time of their cervical sample who were aged 18 or 19 years, by DHB



Indicator 1.2 – Regularity of screening

Definition

This indicator reports on the timeliness of attendance, both for women recommended to return at the routine time of three years, or at an earlier interval of 12 months (for example following a recent abnormality).

For women recommended to return at a three-year interval, on-time screening is defined as attending between 30-42 months of their previous test (that is, within +/- six months of their due date). Early and late screening are therefore respectively defined as women who attend either within 30 months (<2.5 years), or more than 42 months (>3.5 years) of their previous test. The timing of early re-screening in this context matches the definition used within Indicator 4 (the differences between early re-screening in this Indicator and in Indicator 4 are described in the Comments section).

For women recommended to return at a 12-month interval, on-time screening is defined as attending between 9-15 months of their previous test (that is, within +/- three months of their due date). Early and late screening are therefore respectively defined as women who attend either within 9 months, or more than 15 months of their previous test.

The measure is calculated by constructing a reference cohort consisting of satisfactory cytology samples ("reference samples") collected from women aged 20-69 years in the five years prior to the end of the current monitoring period (31 December 2019).

The most recent satisfactory cytology sample from these women prior to the reference sample was identified on the NCSP Register. The recommendation code of these prior samples was used to classify the reference samples as either early, on-time, or late. Only reference samples where the prior sample indicated an expected screening interval or either three years (recommendation code R1 or B2B0) or 12 months (recommendation code R6, R7, R8, B2B7, B2B7A, or B2B7H) were included. Reference samples where no prior satisfactory cytology sample was identified on the register with a collection date of 1 January 2000 or later, or where the prior sample had any other recommendation code, were excluded from the analysis. These women were either under specialist management, had an expected screening interval of less than 12 months, or there was insufficient information to infer an expected screening interval. Reference samples collected at colposcopy were also excluded as these may have arisen in relation to symptoms or other clinical indications.

Results over the observed year are presented based on the quarter of the year the reference cytology sample was collected. Therefore, a result for the first quarter of 2019 reports the percentage of women who attended for screening within that quarter, who were attending either early, on-time or late in relation to the recommendation associated with their prior cytology test (i.e. the total of these three categories in each quarter sums to 100%).

	For this measure age relates to the woman's age on the date of her reference cytology sample (i.e. the attendance which is classified as either early, on-time or late).
Target	Not yet defined, however aim to maximise on-time attendance.
Current Situation	In total over the period 2015-2019, satisfactory cytology samples were collected from 1,241,086 women aged 20-69 years (based on their age at the time of the sample). Of these, 1,112,150 women met all inclusion criteria and 1,707,530 cytology samples collected from these women are included as reference cytology samples for analysis in this report. This section will focus on the results for the 12 months prior to the end of the current monitoring period (31 December 2019), while trends over the past five years are described in the *Trends* section. ***Routine screening (3-year recall)*** Among women attending for screening in 2019 following a 3-year recall recommendation, 62.7% were attending on-time; 11.4% more than six months early; and 25.9% more than six months late (Figure 22). *By ethnicity* The proportion of women re-attending in 2019 who were on-time was highest for European/ Other (64.4%), and lowest in Pacific women (53.5%) (Figure 23). The proportion of women returning for routine screening who were re-attending early was highest for European/ Other women (11.7%) and lowest for Pacific women (8.6%). The proportion of women screened who were re-attending later than recommended was highest for Pacific women (38.0%), and lowest for European/ Other women (23.9%). Details of the number of re-attendances in each category are shown in (Table 43). *By age* The proportion of women attending for screening in 2019 who were re-attending on-time was highest for women aged 60-69 years (71.6%) and lowest for women aged 30-39 years (56.1%) (Figure 24). The proportion of women who were re-attending early, ranged from 7.3% (60-69 years) to 17.9% (20-29 years). The proportion of women screened who were re-attending later than recommended was highest for women aged 30-39 years (31.3%) and lowest for women aged 60-69 years (21.1%). Details of the number of re-attendances in each category are shown in (Table 44). ***12-month re-screening*** Among women attending for screening in 2019 following a 12-month repeat recommendation, 39.8% were attending on-time; 2.2% attended screening more than three months early; and 58.0% more than three months late (Figure 25). *By ethnicity* The proportion of women re-attending in 2019 who were on-time was highest for Asian (42.8%), and lowest in Pacific women (26.6%). The proportion of

women returning for 12-month repeat screening who were re-attending early was very small in all groups but was highest for European/ Other women (2.4%) and lowest for Pacific and Asian women (1.6%). The proportion of women screened who were re-attending later than recommended was relatively high in all groups, but was highest for Pacific women (71.8%), and lowest for European/ Other women (55.4%; Figure 26). Details of the number of re-attendances in each category are shown in (Table 45).

By age

The proportion of women attending for screening in 2019 following a 12-month repeat recommendation who were re-attending on-time was highest for women aged 20-29 years (44.8%) and lowest for women aged 40-49 years (35.9%). Very few women were re-attending early; this ranged from 1.8% (60-69) to 2.5% (20-29 years). The proportion of women screened who were re-attending later than recommended was over 50% in all age groups but was highest for women aged 40-49 years (62.1%) and lowest for women aged 20-29 years (52.8%; Figure 27). Details of the number of re-attendances in each category are shown in (Table 46).

Trends

Routine screening (3-year recall)

Over the period 2015 to 2019, the proportion of women who were screened on-time increased from 61.3% to 62.7%. This predominantly reflected a reduction in the proportion of women who were being screened early (fell from 16.1% to 11.4%). There was also an increase in the proportion of women who were returning late (from 22.6% to 25.9%; Figure 28).

By ethnicity

Over the period 2015 to 2019, the proportion of women who were screened on-time increased in three of the four ethnic groups, with the increase being largest in Asian women and the largest decrease, from 55.0% in 2015 to 53.5% in 2019, being in Pacific women. In all groups, this predominantly reflected a reduction in the proportion of women who were being screened early, as this fell in all groups. There were also increases in the proportion of women who were returning late in every group (Table 47). The proportion returning late was higher in Pacific and Asian women than in Māori and European/ Other women (Figure 29).

By age

Over the period 2015 to 2019, the proportion of women who were screened on-time increased or remained similar in all age groups, with the increase being largest in women aged 20-29 years. In all groups, there was a substantial reduction in the proportion of women who were being screened early, however there was also an increase in the proportion of women who were returning late (Table 48). The increase in the proportion of women returning late was highest for women aged 60-69 years, and lowest for women aged 30-39 years. On-time screening tended to increase with increasing age and was consistently highest in women aged 60-69 years. On-time screening was lower for women aged 20-29 years at the beginning of the 5-year period but by the

end of the observation period the 30-39 age group had the lowest on-time screening proportion (Figure 30).

12-month re-screening

Over the period 2015 to 2019, the proportion of women who were re-attending on-time for 12-month follow-up decreased somewhat, from 41.5% in 2015 to 39.8% in 2019, as did the proportion who were re-attending more than three months early, which decreased from 3.1% to 2.2%. There was a corresponding increase in the proportion of women who were re-attending more than 15 months after a recommendation to return in 12 months, which increased from 55.4% in 2015 to 58.0%. This means that over the entire period 2015-2019, the majority of women who were re-attending after a recommendation to return in 12 months were re-attending more than three months later than recommended (Figure 31).

By ethnicity

Over the period 2015 to 2019, the proportion of women who were re-attending on-time for 12-month follow-up decreased in all ethnic groups, as did the proportion who were re-attending early. The proportion of women who were re-attending at more than 15 months after a recommendation to return at 12 months increased or remained similar in all ethnic groups, with a maximum increase of 3.7% in Pacific women (68.0% in 2015 to 71.8% in 2019). The proportion of women returning less than nine months after a recommendation to return in 12 months was generally small but still decreased in all groups. The proportion returning on-time was consistently higher in Asian and European/ Other women than in Māori and Pacific women. Conversely, the proportion who were re-attending more than 15 months after a recommendation to return in 12 months was consistently higher in Māori and Pacific women than in Asian and European/ Other women. By 2019, and in all ethnic groups, the majority of women who were re-attending after a recommendation to return in 12 months were re-attending more than three months later than recommended (Figure 32).

By age

Over the period 2015 to 2019, the proportion of women who were re-attending on-time and early for 12-month follow-up decreased or increased only slightly in all age groups. The proportion of women who were re-attending at more than 15 months after a recommendation to return at 12 months increased in all age groups, but the increase was comparatively small in women aged 20-39 years (0.9% and 1.0% for women aged 20-29 and 30-39, respectively), whereas it ranged from 3.3% (40-49 years) to 7.4% (60-69 years) in women in older age groups. The proportion of women returning less than nine months after a recommendation to return in 12 months was very small and broadly similar in all age groups, however the proportion returning on-time was consistently highest in women aged 20-29 years in 2015 and 2019. The proportion returning on-time was lowest in women aged 30-39 years in 2015 but lowest in women aged 40-49 in 2019. The proportion who were re-attending more than 15 months after a recommendation to return in 12 months was highest in women aged 30-39 years in 2015 and 40-49 years in 2019. The proportion returning

late was initially lowest in women 60-69 years, but this proportion increased in this age group over the time period, and so by 2019 the proportion returning at least 3 months late was lowest in women aged 20-29 years. By 2019, and in all age groups, the majority of women who were re-attending after a recommendation to return in 12 months were re-attending more than three months later than recommended (Figure 33).

Comments

This indicator is reported in every second monitoring period to allow for the full year to be examined. It has been included in the biannual monitoring report since Report 44 (July – December 2015). Earlier versions of regularity of screening were included in the NCSP Annual Reports for 2012 and 2013, however this indicator has been moved to the biannual reports for easier comparison with other screening-related indicators. The NCSP Annual Reports now contain cancer (incidence and mortality) data only, and all screening-related indicators are in biannual reports.

This indicator reports on regularity of screening among women who have attended for screening; however, it does not capture women who have not attended for screening at all. Indicator 1.1, Coverage, is able to provide some insight into the overall proportion of women who have not attended (for example, those not screened in the previous five years).

Indicators 1.2 and 4 both examine women recommended to return at the routine interval of three years who return early. The difference between these indicators are the women observed (cohorts) and how proportions are calculated. Indicator 4 identifies women with a cytology test taken in a specific earlier time period (between 1 February – 31 March 2017 in the current report) with a recommendation that the next test should be taken at the usual screening interval of three years ("routine screening"). Women with a subsequent cytology test taken within 30 months (i.e. at least six months early) are then identified – that is, this is a prospective investigation of all women within an historical cohort, including those who have re-attended, and those who have not. As described above, Indicator 1.2 identifies cytology tests within specific time periods (e.g. October - December 2019), then identifies the recommendation associated with the immediately preceding cytology test in each woman (whenever that occurred), and assesses whether the woman was returning early, on-time, or late. The proportion reported is women attending in the given time period who are attending for routine screening at least six months early, as a proportion of all women re-attending for routine screening in the same time period. That is, Indicator 1.2 is a proportion of women attending in the relevant time period (and does not take into account women not attending for screening), and it addresses the question – "*What proportion of women who are re-attending for routine screening in a particular time period are returning at least six months early?*". Indicator 4 takes into account all women who were given the recommendation to return at the routine interval, regardless of whether they return or not. It addresses the question – "*What proportion of women recommended to return in three years for routine screening return at least six months early?*"

Figure 22 - Timeliness of re-attendance in 2019 following a routine (3-year) repeat screening recommendation

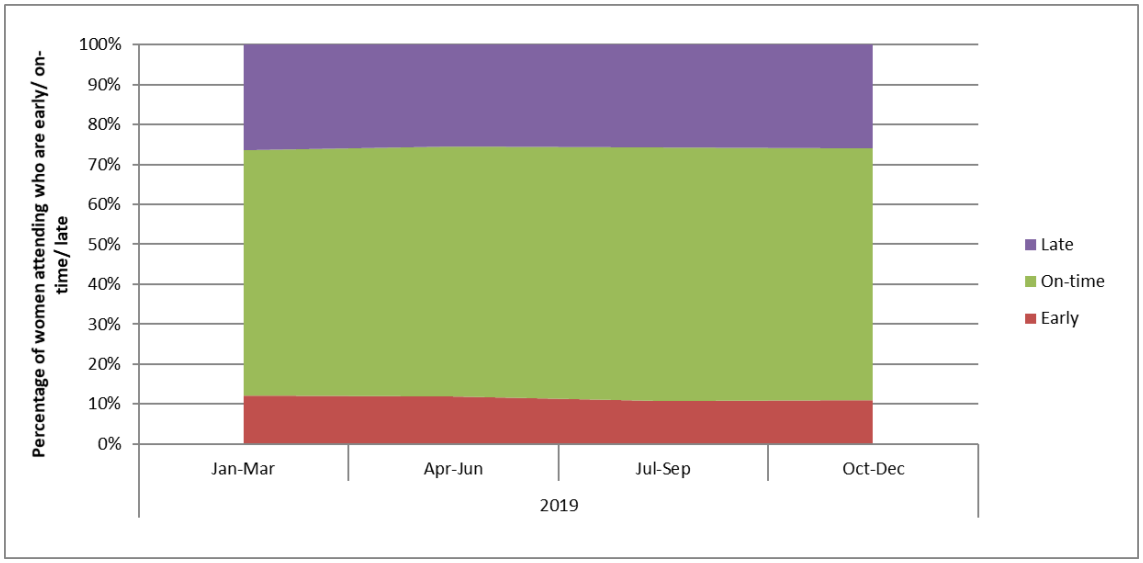


Figure 23 - Timeliness of re-attendance following a routine (3-year) repeat screening recommendation among women re-attending for screening in 2019, by ethnicity

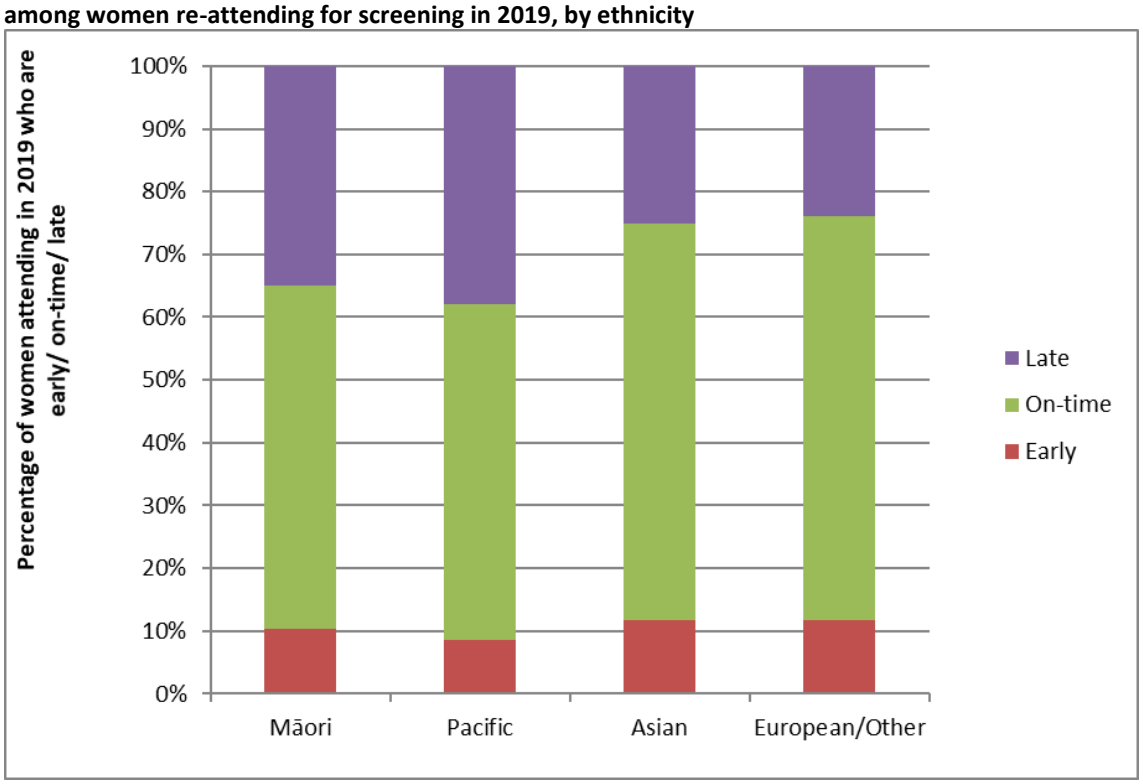


Figure 24 - Timeliness of re-attendance in 2019 following a routine (3-year) repeat screening recommendation among women re-attending for screening in 2019, by age

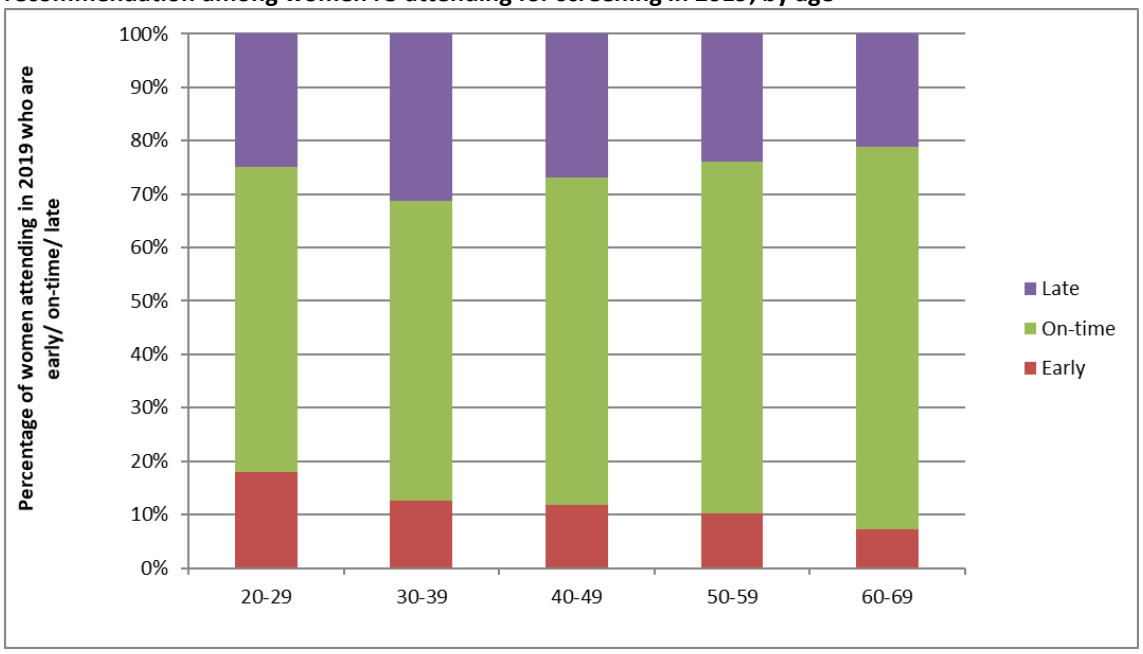


Figure 25 - Timeliness of re-attendance among women re-attending for screening in 2019 following a 12-month repeat screening recommendation

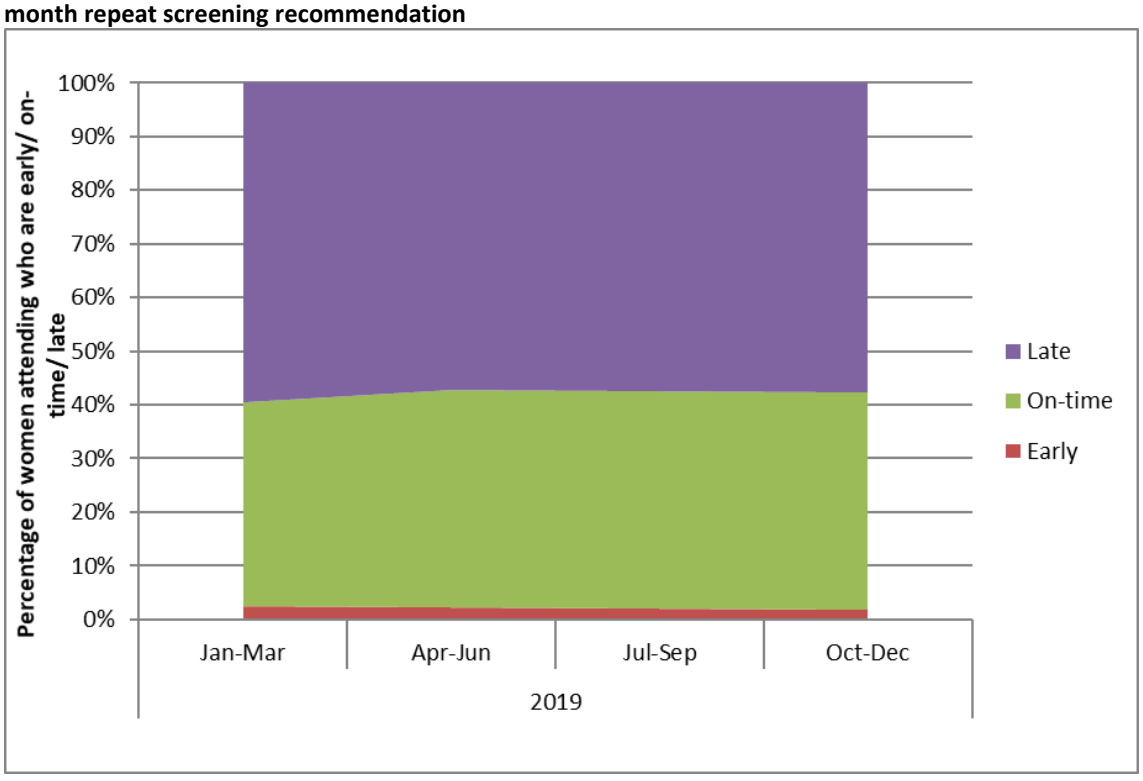


Figure 26 - Timeliness of re-attendance among women re-attending for screening in 2019 following a 12-month repeat screening recommendation, by ethnicity

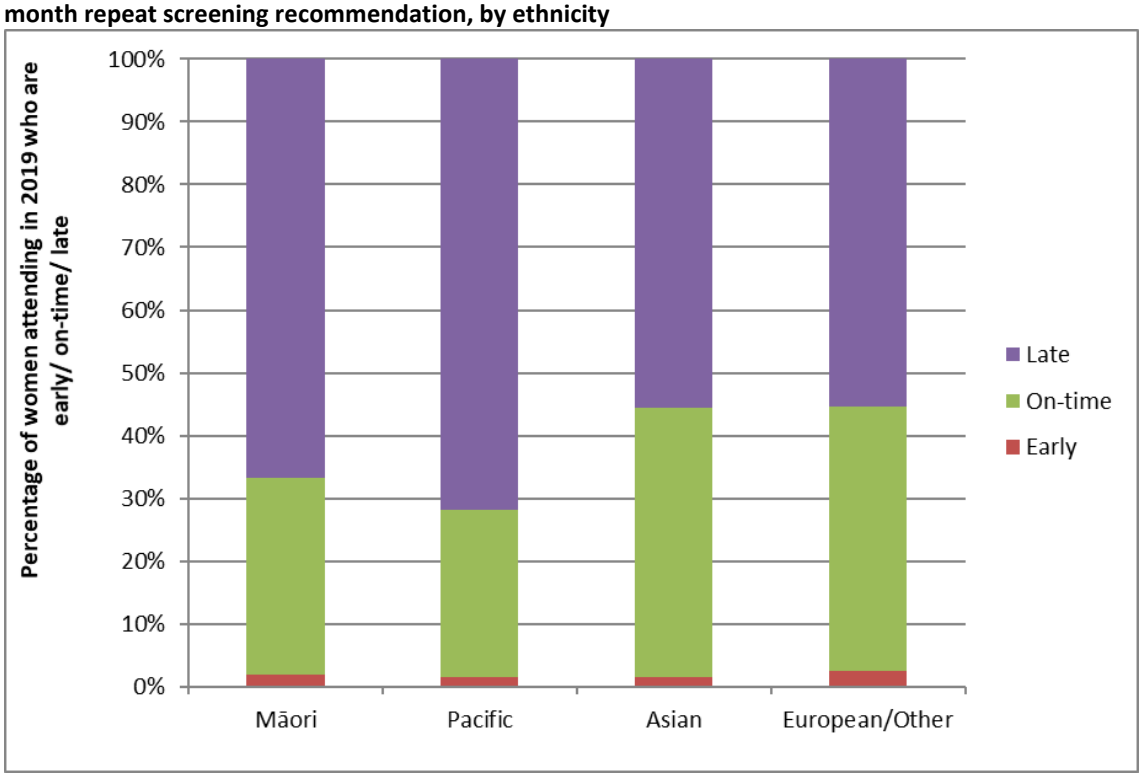


Figure 27 - Timeliness of re-attendance among women re-attending for screening in 2019 following a 12-month repeat screening recommendation, by age

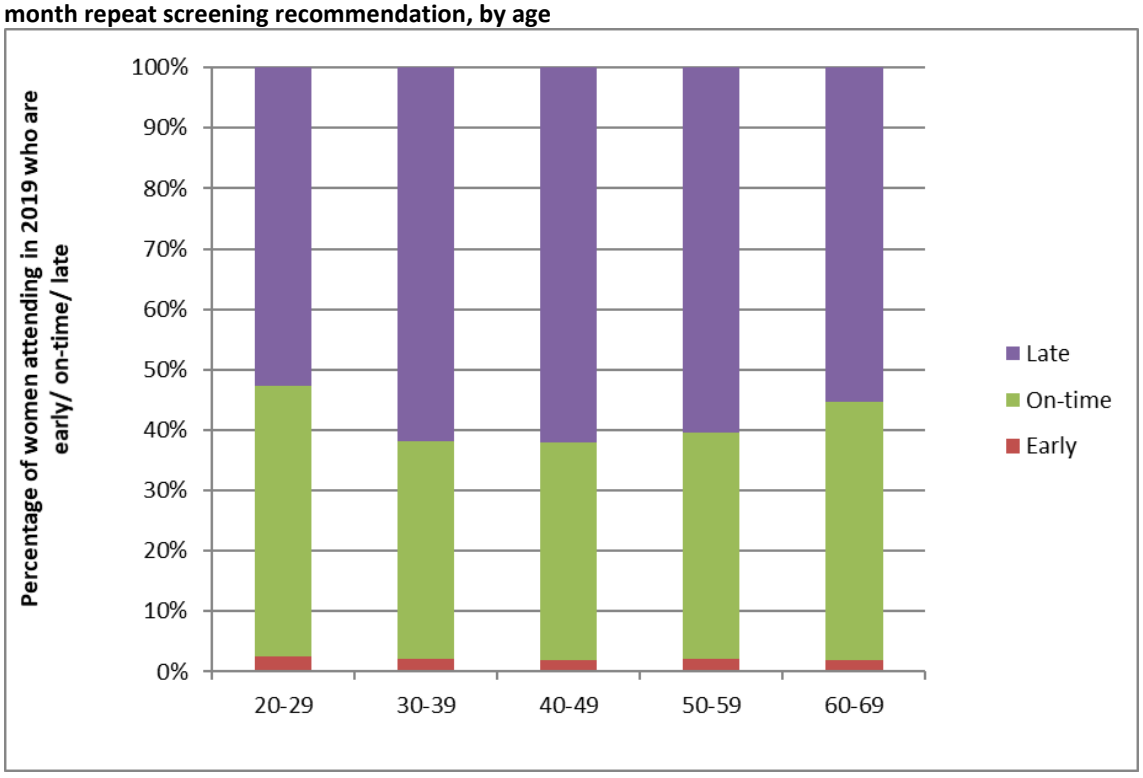


Figure 28 - Trends in the timeliness of re-attendance following a routine (3-year) repeat screening recommendation

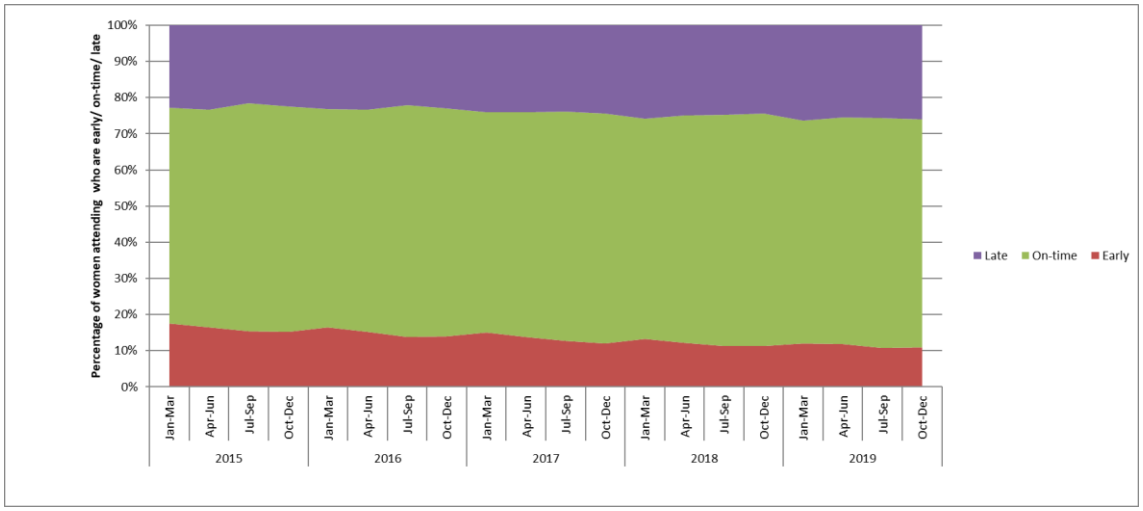


Figure 29 - Timeliness of re-attendance following a routine (3-year) repeat screening recommendation (percent), 2015-2019, by ethnicity

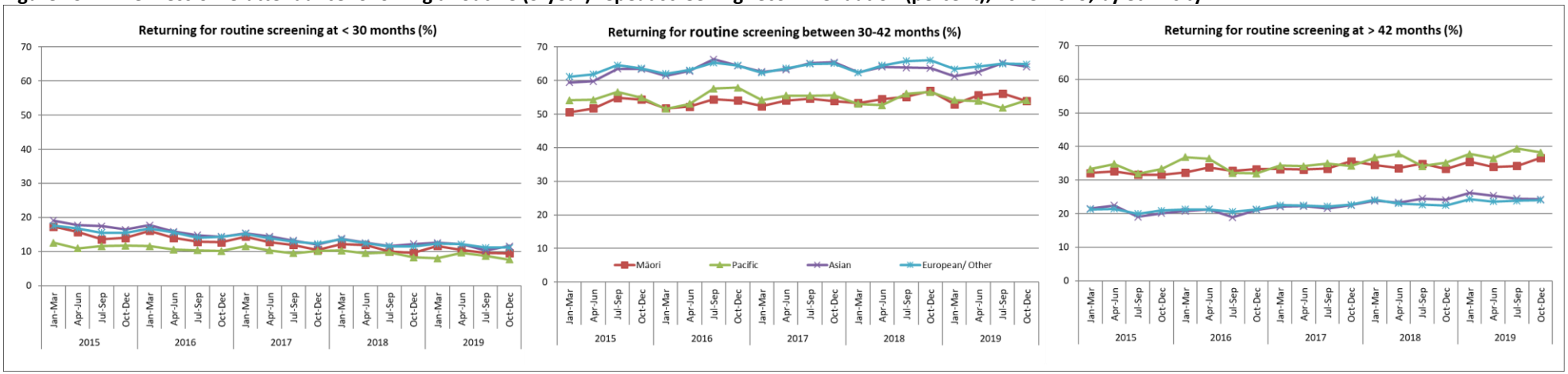


Figure 30 - Timeliness of re-attendance following a routine (3-year) repeat screening recommendation (percent), 2015-2019, by age

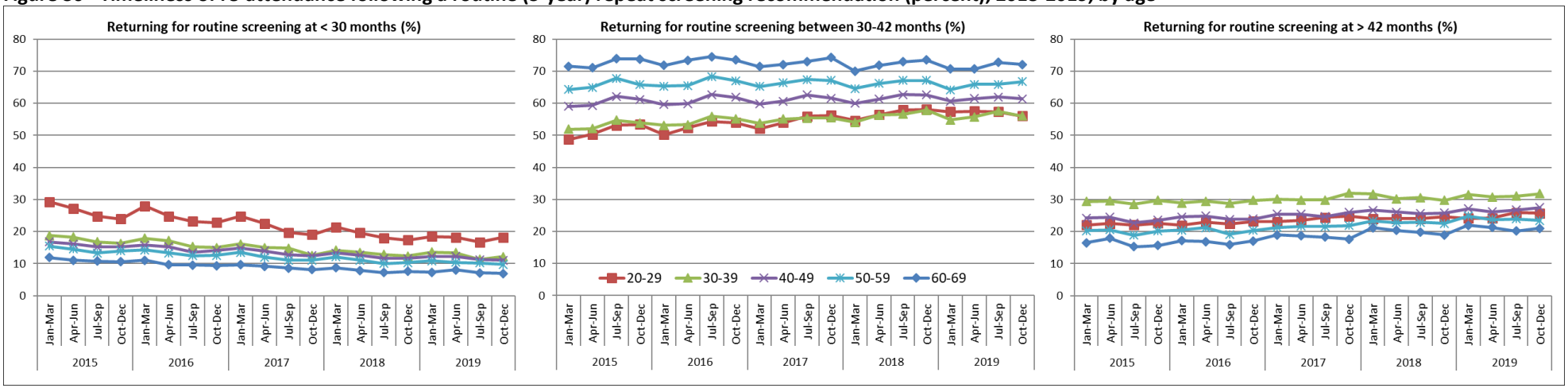


Figure 31 - Trends in the timeliness of re-attendance following a 12-month repeat screening recommendation

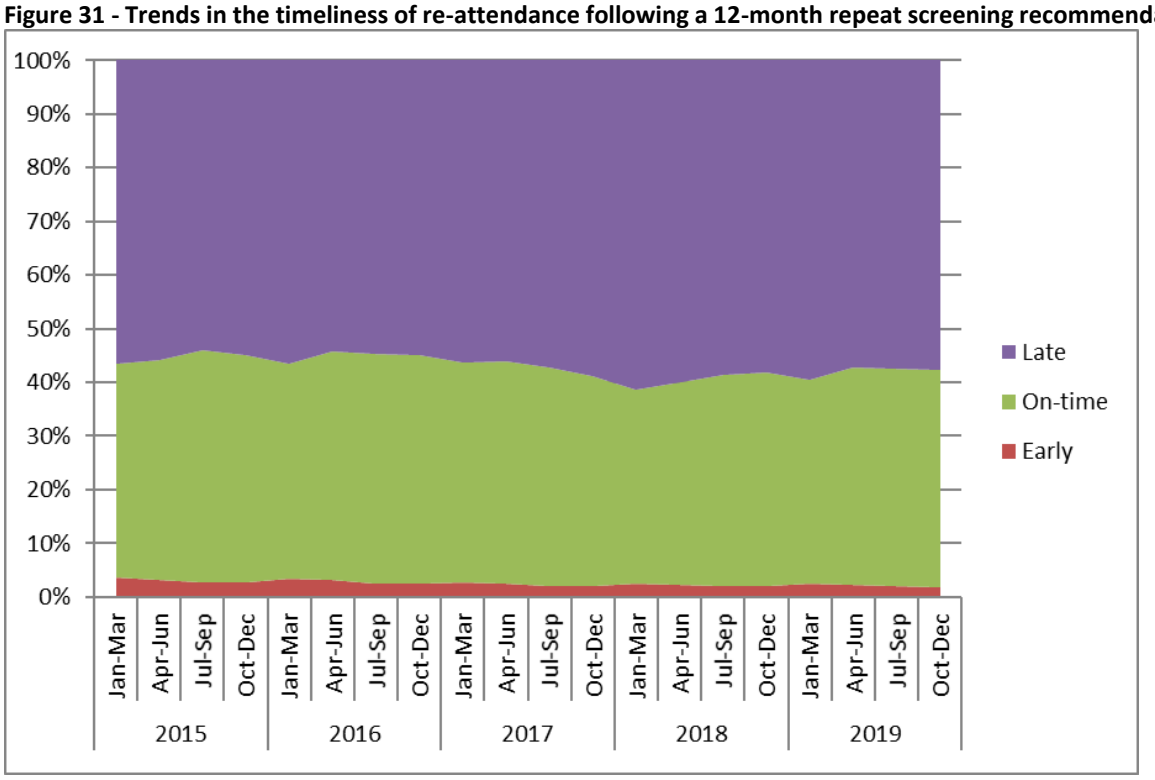


Figure 32 - Timeliness of re-attendance following a 12-month repeat screening recommendation (percent), 2015-2019, by ethnicity

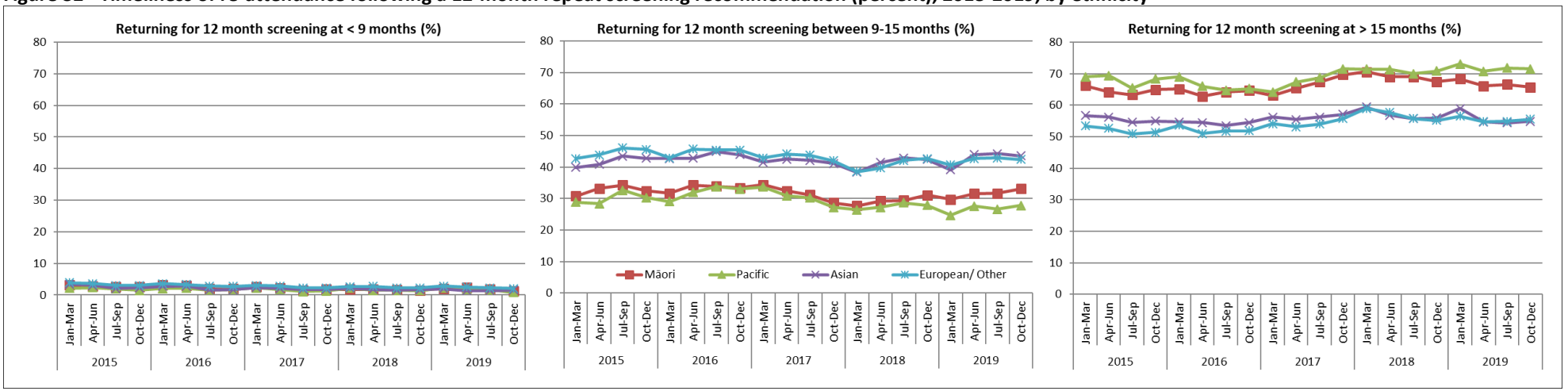
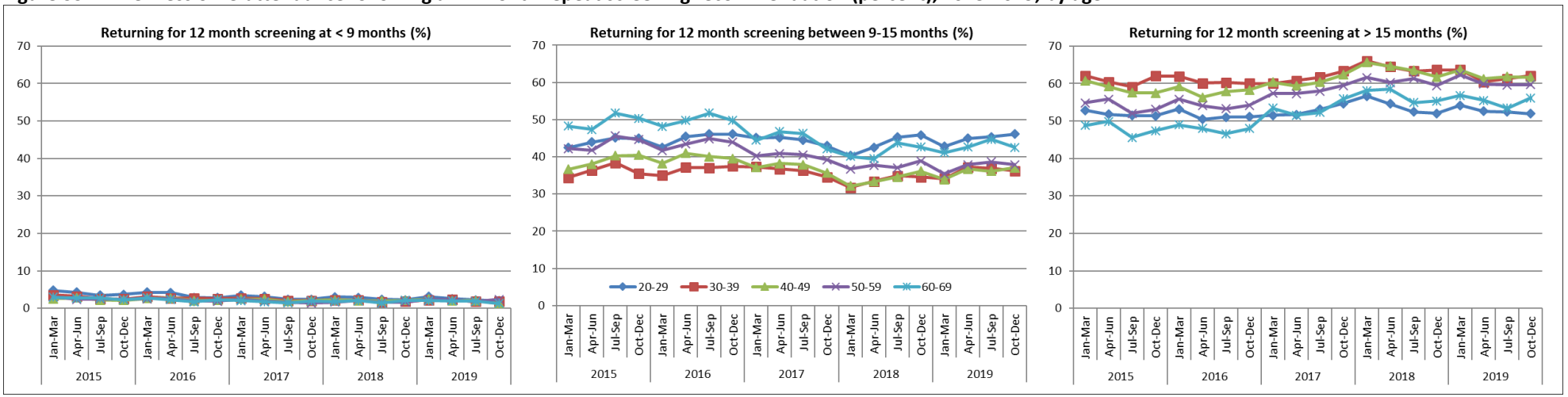


Figure 33 - Timeliness of re-attendance following a 12-month repeat screening recommendation (percent), 2015-2019, by age



Indicator 2 – First screening events

Definition

Women with no cervical samples (cytology, histology, or HPV) taken prior to the current monitoring period, who have had a cervical sample taken during the monitoring period (first event).

A woman's age is defined as her age at the end of the current monitoring period (i.e. the women's age at 31 December 2019).

This indicator is presented as the number of women by age, DHB and ethnicity. It is also presented as a proportion of all women in the eligible population (defined as the hysterectomy-adjusted population, aged 20-69 years), and as a proportion of all women with a cervical sample taken during this monitoring period (screening event), by DHB.

Target

There are no targets for first screening events

Current Situation

There were 21,091 women aged 20-69 years at the end of the period who had their first screening event in the period 1 July - 31 December 2019. This constituted 10.1% of the 208,390 women aged 20-69 years with a cervical sample taken in the period (screening event), and 1.4% of the eligible population. The median age (at the end of the monitoring period) of women with a first event recorded was 28 years. The lower to higher quartile range (25th and 75th percentiles) was 21 to 26 years, 22 to 36 years, 27 to 38 years, 21 to 34 years for Māori, Pacific, Asian and European/ Other women, respectively. The lower to higher quartile range (25th and 75th percentiles) for all women was 22 to 35 years (Table 53).

The age group with the highest number of first screening events was women aged 20-24. 7,004 women aged 20-24 had their first screening event recorded on the register during this monitoring period, accounting for 33.2% of all women aged 20-69 years with first screening events (Figure 34, Table 49). First screening events then tended to decrease with increasing age. Women aged 20-24 years also had the highest proportion of women screened in their age group who were being screened for the first time (37.8%; Figure 35, Table 50), and the highest proportion of the eligible population at that age with a first screening event recorded in the current monitoring period (4.3%; Figure 133).

The DHBs with the highest number of women aged 20-69 years with first screening events were Auckland (3,255) and Waitemata (3,135). The DHBs where women with first screening events, as a proportion of all women with screening events, were the highest in Auckland (13.9%) followed by Counties Manukau (12.1%), Capital & Coast and Waitemata (11.5%). The DHBs where this proportion was lowest was West Coast (4.1%), Taranaki (5.2%) and Wairarapa (6.6%; Figure 36, Table 51).

The ethnic group with the highest number of women with first screening events was European/ Other (10,645 women; Figure 37, Table 52). The group with the highest proportion of their eligible population being screened for the first time was Asian women (2.7%), and the lowest was Māori women (0.9%; Table 52). The proportion

	of women screened who were being screened for the first time was highest for Asian women (22.1%; Figure 37, Table 52). This proportion is likely to be related to the median age of women with a first screening event, which is comparatively high for Asian women (32 years, compared with 22 years for Māori women, 27 years for Pacific women, and 26 years for European/ Other women; Table 53).
Trends	The number of women with a first screening event recorded on the NCSP Register has decreased from 23,374 women in the previous period to 21,091 in the current period. Across the overall eligible population aged 20-69 years, the proportion of women with screening events that are their first screening event being recorded on the NCSP Register is lower in this period (1.4%) than in the previous period (1.6%). Patterns by age, DHB, and ethnicity are broadly similar to those seen in the previous report although first screens in 20-24 year old women decreased by 29% due to the change in starting age in 2019. Trends by age show an increase of first screens in most five-year age groups when compared to the previous report. The number and proportion of women with first screening events decreased in all ethnic groups.
Comments	This indicator can only measure the number of women with their first screening event in New Zealand, recorded on the register since its introduction (1990). It does not capture screening events which occurred outside New Zealand, or among women who are not enrolled on the NCSP Register. Some differences in counts and proportion of women with first screens among screened women between DHBs are to be expected due to differences in population size, immigration and age structure. Proportions have been provided to partially account for this, however they should be interpreted with caution. For example, a relatively low number of women with first screens as a proportion of all women screened could be due to either a lower number of women with first events, or a higher number of women with screening events. For example, the DHB with the highest coverage, Taranaki, does not have a particularly high proportion of women with first events. If coverage remains high, then this proportion will inevitably decrease, as fewer women are available to be screened for the first time. Conversely, a relatively high number of women with first screens as a proportion of all women screened could be due to either a higher number of women with first events (due to increasing coverage), or a lower number of women with screening events (for example due to less frequent screening among women who have been screened at least once since the inception of the NCSP Register).

Figure 34 - Women with first screening events during the monitoring period, by five-year age group (women aged 20-69 years at 31 December 2019)

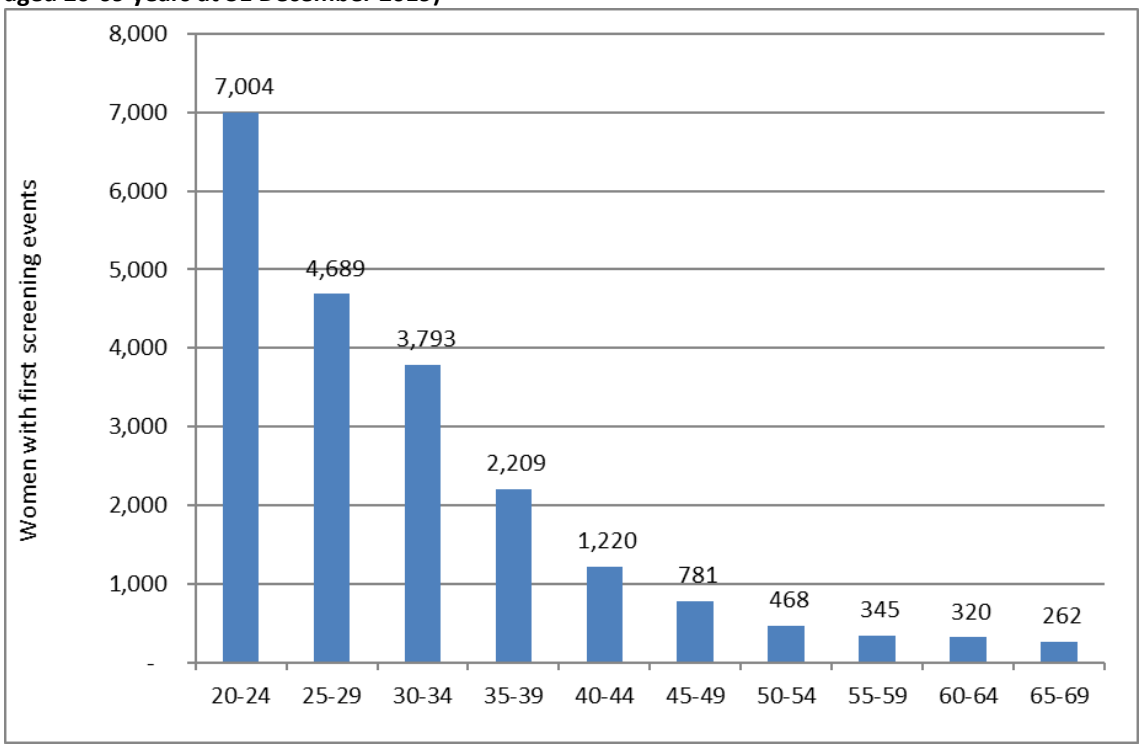


Figure 35 - Women with first screening events as a proportion of all women screened in that age group during the monitoring period, by five-year age group (women aged 20-69 years at 31 December 2019)

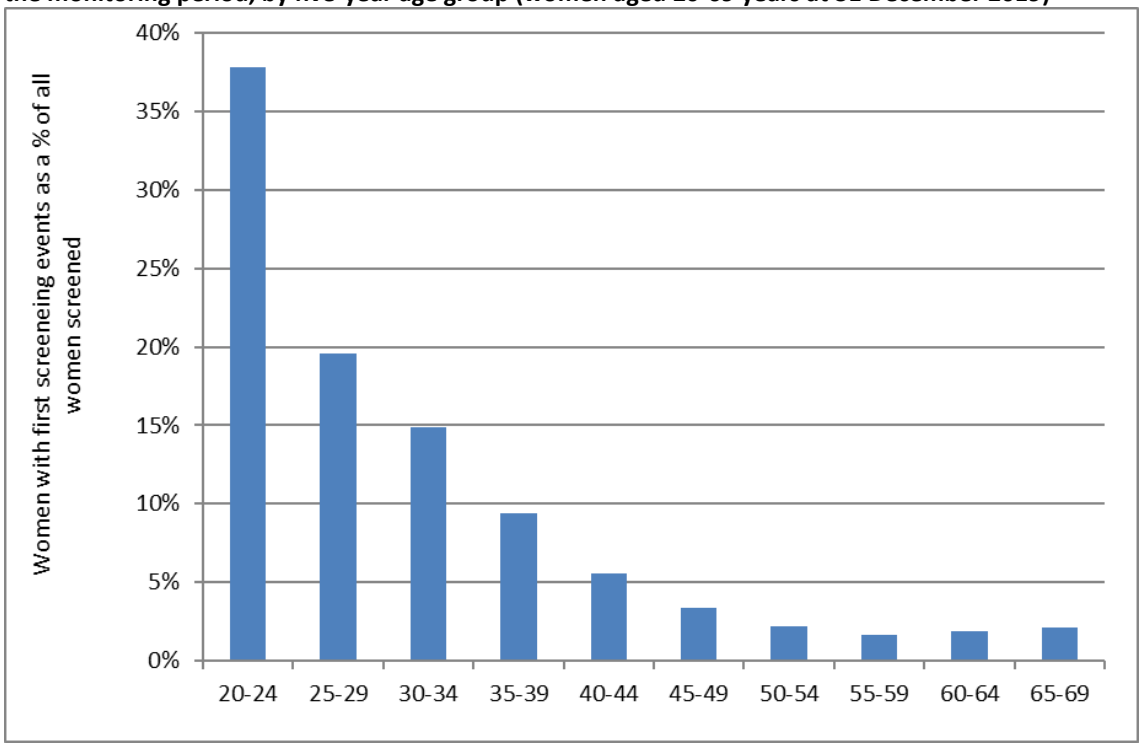


Figure 36 - Women with first screening events as a proportion of all women screened during the monitoring period, by DHB (women aged 20-69 years at 31 December 2019)

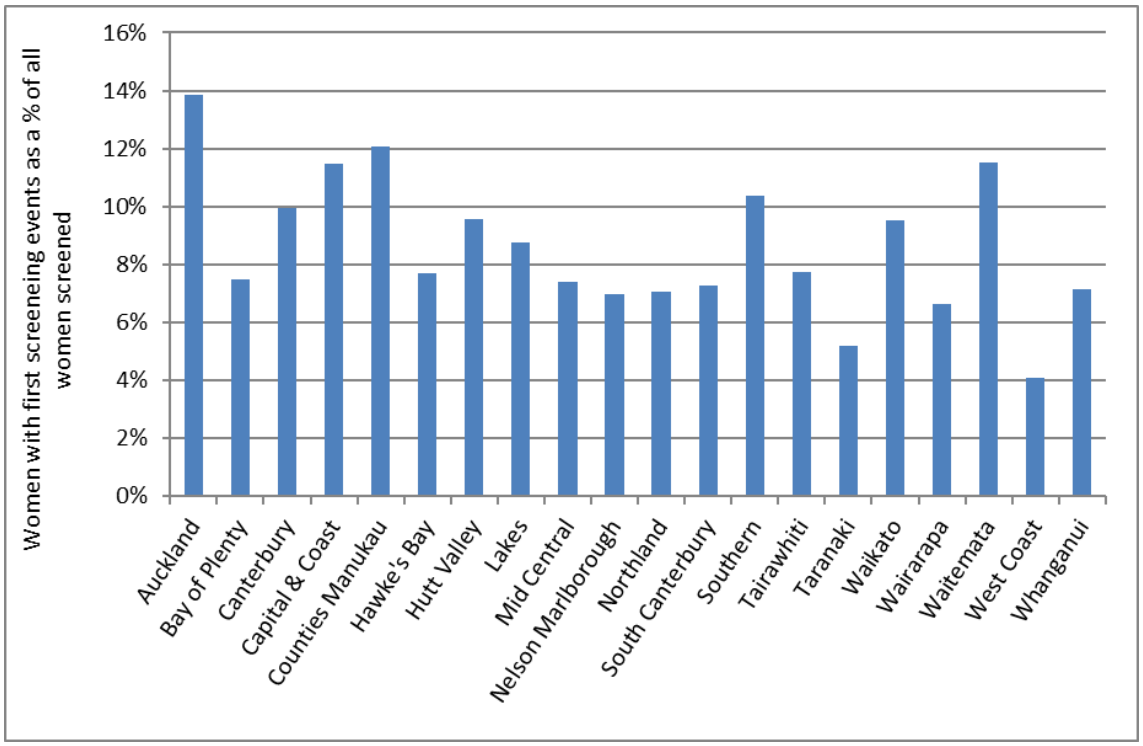


Figure 37 - Women with first screening events as a proportion of all women screened during the monitoring period, by ethnicity (women aged 20-69 years at 31 December 2019)

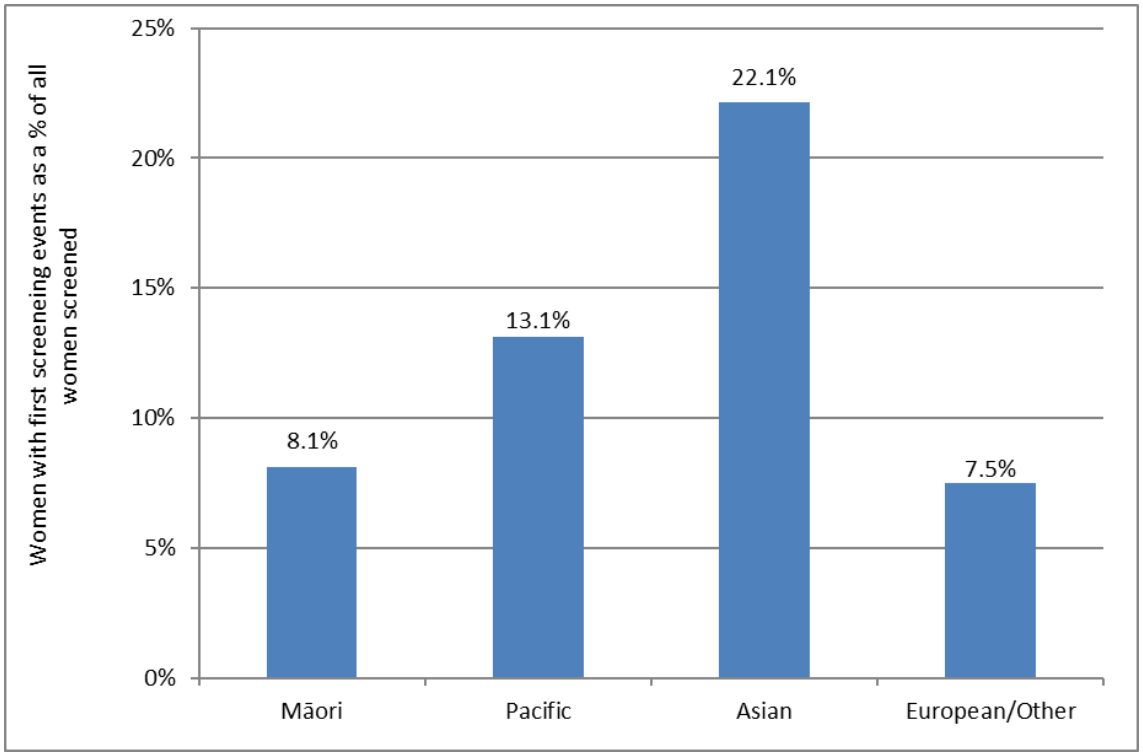


Figure 38 - Trends in the number of women with a first screening event, by age

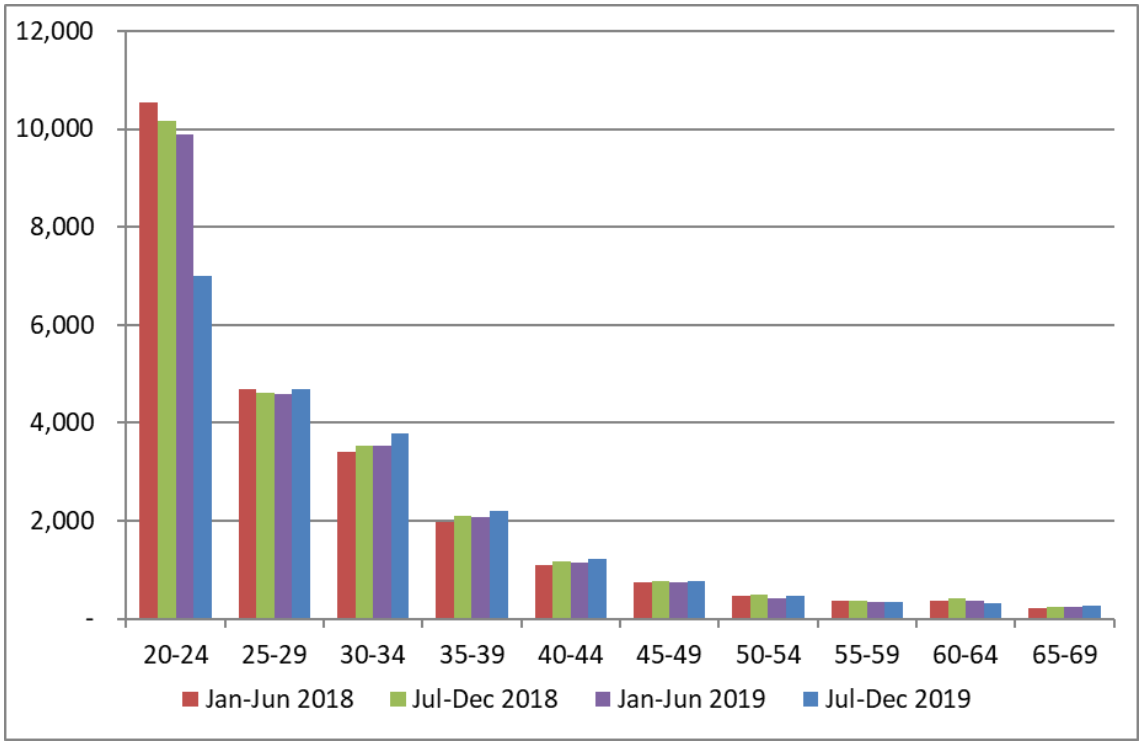


Figure 39 - Trends in the number of women with a first screening event, by DHB

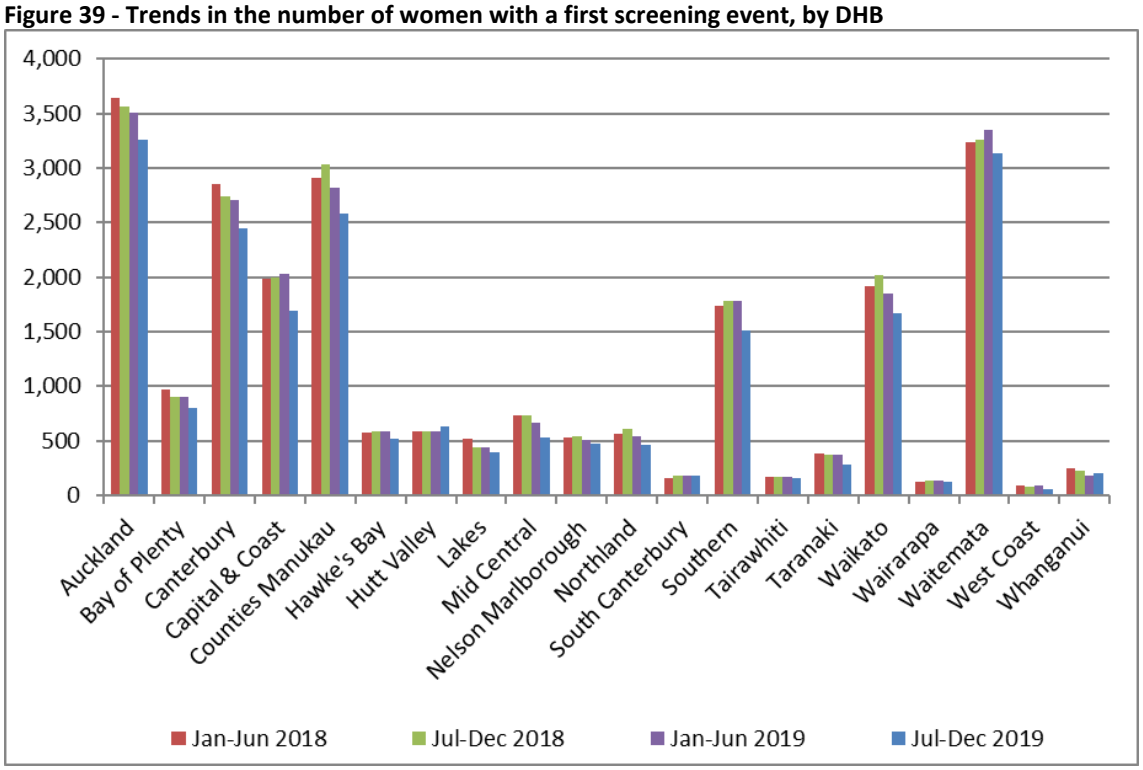
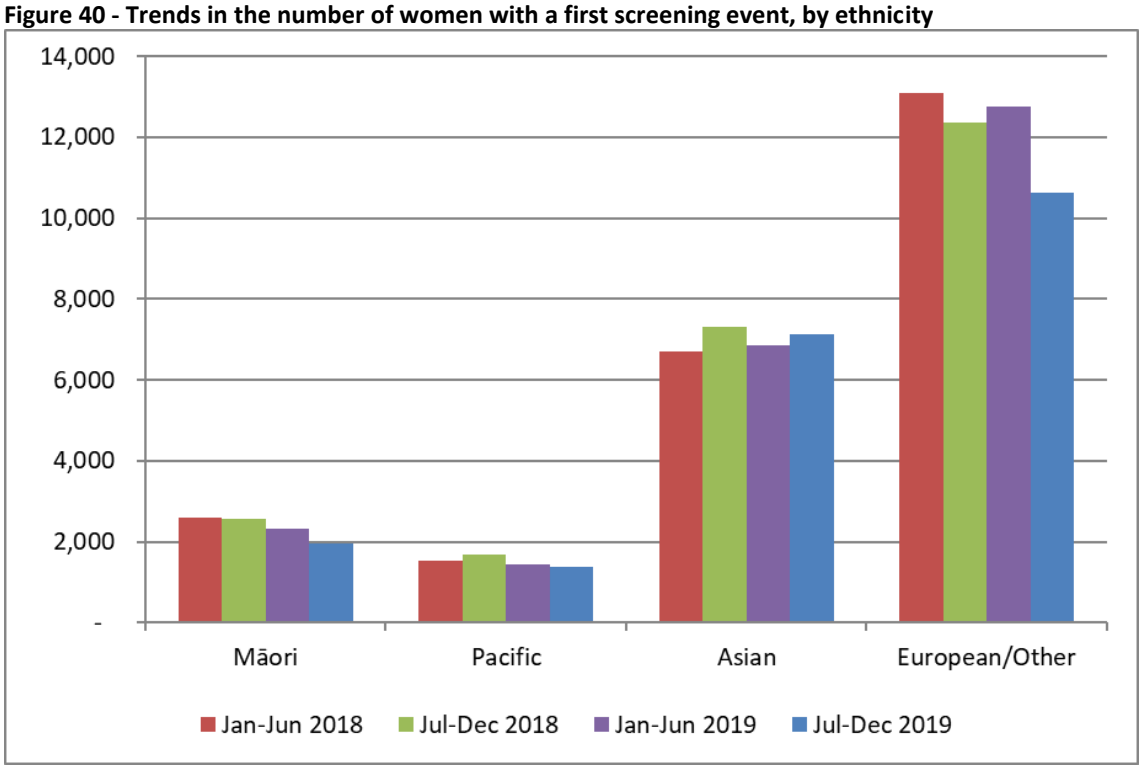


Figure 40 - Trends in the number of women with a first screening event, by ethnicity

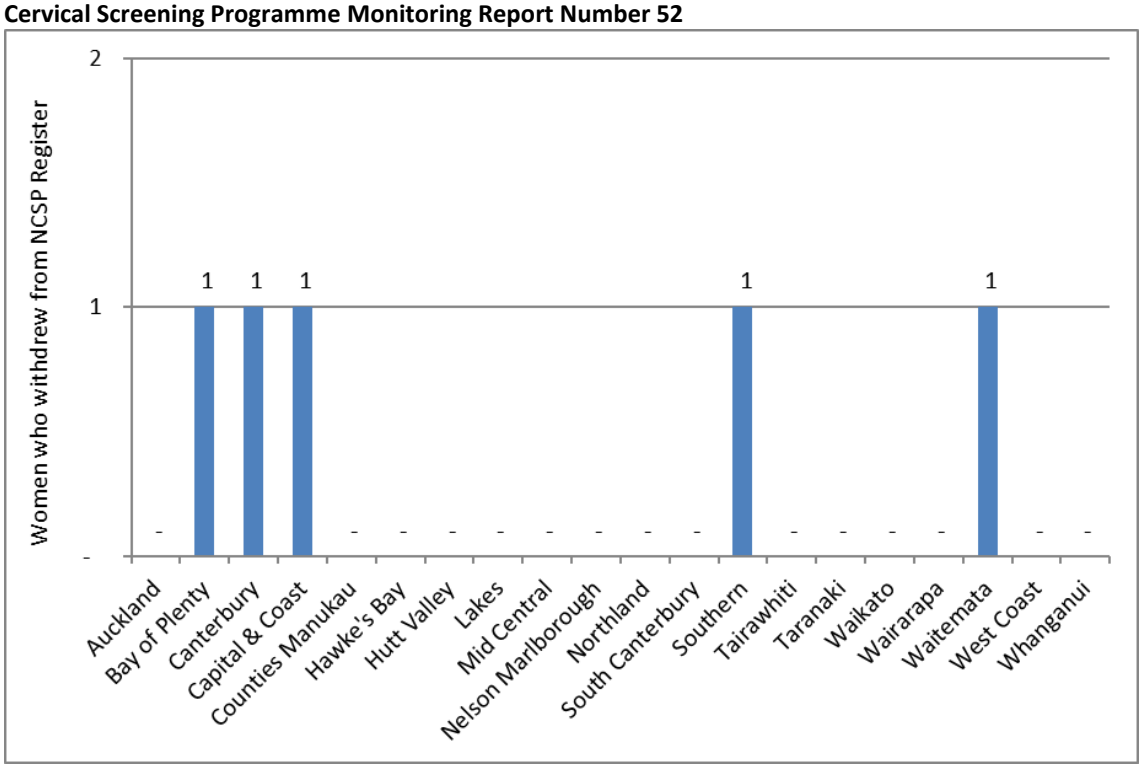


Indicator 3 – Withdrawal rates

Definition	The number of women, by age-group, DHB, and ethnicity not currently enrolled in the NCSP Register and whose enrolment ended during the monitoring period (withdrawals). Withdrawals relate to active withdrawals, where women specifically elect to be removed from the NCSP Register. Withdrawals are also reported as a proportion of women who were enrolled on the NCSP Register at 30 June 2019 (i.e. just prior to the commencement of the current monitoring period). This is also reported by age group, DHB, and ethnicity. Age is defined as a woman's age at the end of the monitoring period (i.e. at 31 December 2019).
Target	Zero for ages 20-69 years.
Current Situation	At the end of the previous monitoring period, 1,640,904 women aged 20-69 years were enrolled on the NCSP Register. During the current monitoring period, 6 of these women (0.0004%) withdrew from the NCSP Register. In all DHBs, the number and proportion of women who withdrew was extremely small (maximum one woman in the Bay of Plenty, Canterbury, Capital & Coast, Southern and Waitemata DHB). No women withdrew in fifteen of the twenty DHB regions (Figure 41). The number and proportion of women withdrawing was extremely small for all age groups, but were largest among women aged 45-49 years (2 women, 0.001% of those enrolled at the end of the previous monitoring period; Figure 42, Table 54). The number and proportion of women withdrawing was extremely small for all ethnic groups. One woman in Māori and 5 women in the European/ Other ethnic groups (0.0005%) withdrew during this monitoring period. No women in the Pacific and Asian ethnic groups withdrew over the same period (Figure 43, Table 55).
Trends	The number of women who withdrew in the current monitoring period (6 women) is lower than in the previous monitoring period (12 women). The overall number of withdrawals and the withdrawals as a proportion of all women enrolled both continue to be extremely small.
Comments	The proportion of women choosing to withdraw from the NCSP Register is extremely small.

Withdrawals relate to active withdrawals, where women specifically elect to be removed from the NCSP Register. It does not include, for example, women who have moved overseas, or who have died during the period, and who therefore are not having tests recorded on the NCSP Register or who ask for no more communications but still participate in the Programme and have their results recorded on the NCSP Register.

Figure 41 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by DHB, National Cervical Screening Programme Monitoring Report Number 52



Excludes 1 women who withdrew whose DHB was not recorded.

Figure 42 - Number of women who withdrew from the NCSP Register by age, National Cervical Screening Programme Monitoring Report Number 52.

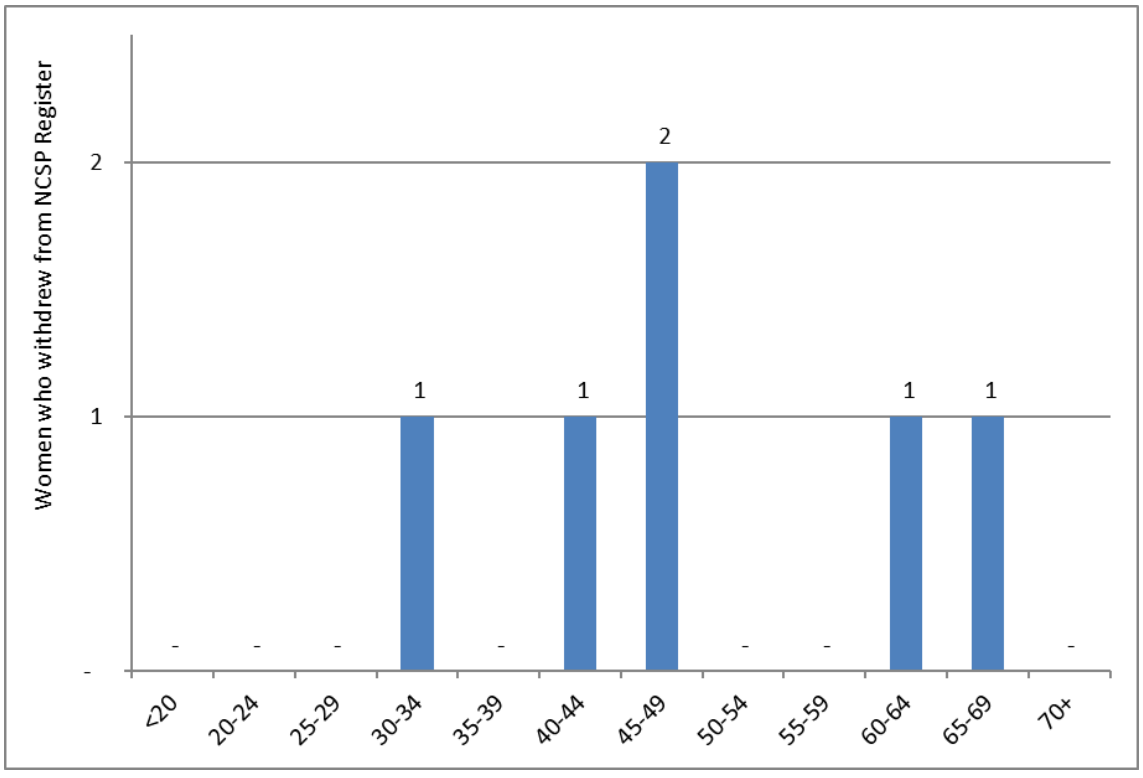
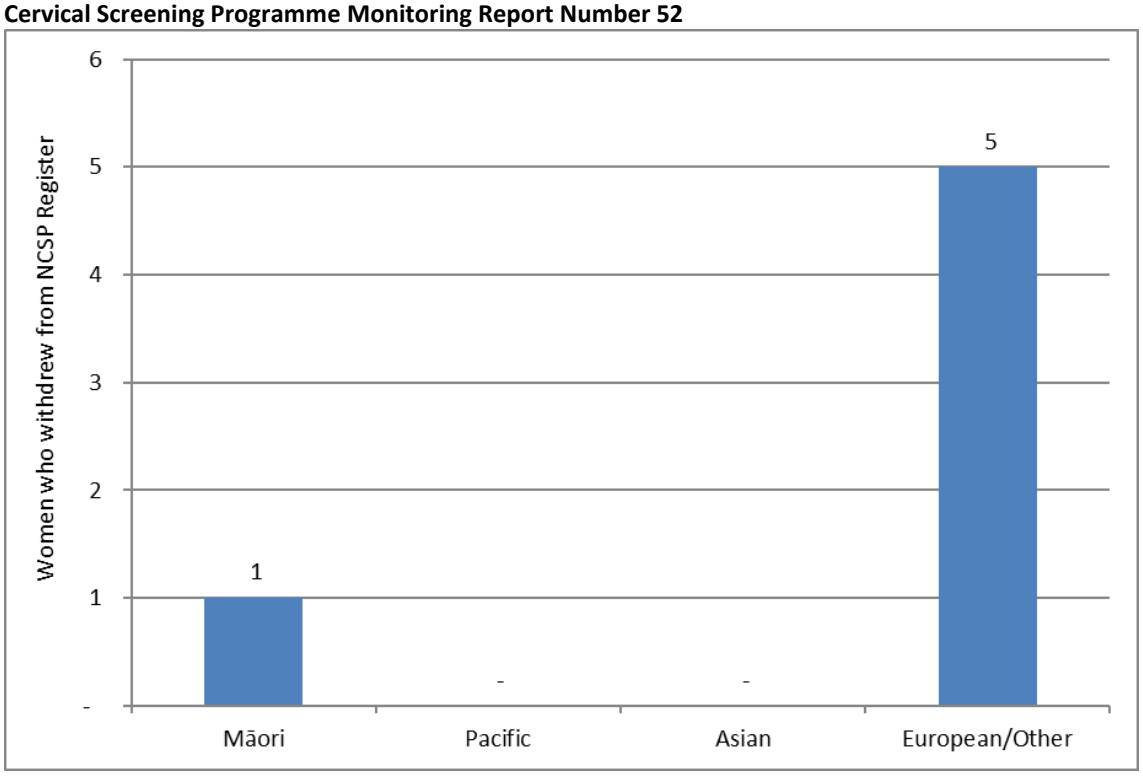


Figure 43 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by ethnicity, National Cervical Screening Programme Monitoring Report Number 52



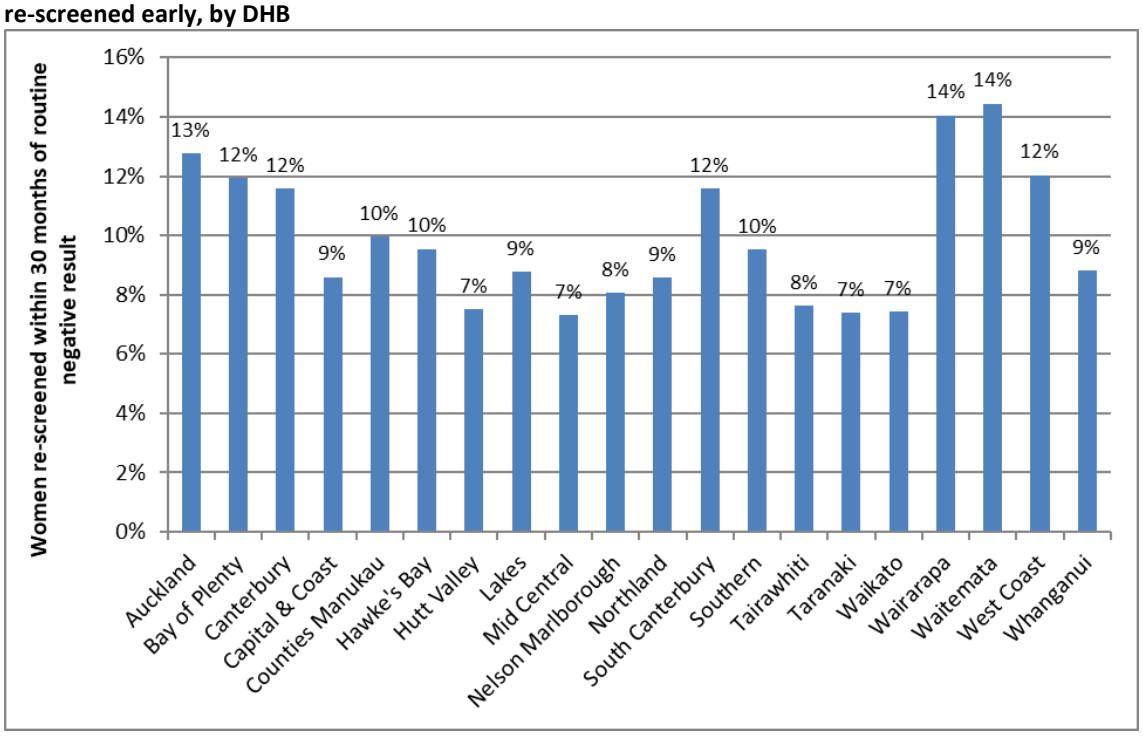
Indicator 4 – Early re-screening

Definition	The proportion of women who returned for a cytology sample within 30 months (2.5 years) of their index cytology sample is calculated for a cohort of women. The cohort comprises of women with an index cytology sample taken between 1 February – 31 March 2017 (inclusive), who i) were aged 20-66 years at the time the cytology sample was taken (and hence remained within the screening target age throughout the period); and ii) were given a recommendation to return at the regular interval of three years as a result of their cytology sample in February/March 2017 (NZ Modified Bethesda code R1). Using this method of calculating the measure allows follow-up to be considered over 30 months for every individual woman. This measure excludes women who return early but are being followed according to *Guidelines for Cervical Screening in New Zealand*, for example, those with a recent report of an abnormality. It also excludes from the count of women screened early those whose "early" cytology sample recommended urgent referral regardless of cytological findings, in view of the abnormal clinical history provided (NZ Modified Bethesda code R14). In some cases, early re-screening may be the result of women being re-screened early in response to clinical symptoms, and this is appropriate. For the purposes of analysis by age group, a woman's age is defined as her age at the end of the current monitoring period (i.e. a women's age at 31 December 2019).
Target	A target has not been set for this cohort-based calculation method.
Current Situation	There were 47,993 women who had a cytology sample taken between 1 February and 31 March 2017, were aged between 20-66 years at the time of their cytology sample, and were given a recommendation to return for their next cytology sample at the routine interval of three years. Among these women, 5,026 (10.5%) had at least one subsequent cytology sample in the following 30 months (6 months earlier than recommended). There was wide variation in early re-screening by DHB. Early re-screening was most common in Waitemata (14.4%) and Wairarapa (14.1%) and was least common in Mid Central (7.3%; Figure 44, Table 57). There was also variability by age. Younger women (aged 20-24 years at the end of the period) were most likely to be re-screened early (14.7%) and older women, aged 60-64 years, were the least likely to be re-screened early (7.4%; Figure 45, Table 56).

	Among the ethnic groups considered, European/ Other were the most likely to be re-screened early (10.8%) followed by Māori (10.2%), while early re-screening was least common among Pacific women (8.1%; Figure 46, Table 58).
Trends	The level of early re-screening (10.5%) is lower to what was reported in the previous monitoring period (11.4%) and has been declining over the last nine years of reporting. The DHB with the highest level of early rescreening in this report was Waitemata (14.4%). In most DHBs, early rescreening is decreasing; however early rescreening increased in the current report in five DHBs (Counties Manukau, Nelson Marlborough, Tairawhiti, West Coast, Whanganui). Trends over the two years ending 31 December 2019 by DHB are shown in Figure 47. A reduction in the level of early re-screening was seen for nine of the ten five-year age groups between 20 and 69 years since the previous report. A small increase was seen in the 65-69 age group (from 7.8% to 7.9%). Trends over the two years ending 31 December 2019 by five-year age group are shown in Figure 48. Small decreases in early re-screening were also seen in most ethnic groups with the greatest drop seen in Asian women (from 10.8% to 9.6%) since the last monitoring period. The only increase in early rescreening was in Pacific women (from 7.6% to 8.1%; Figure 49).
Comments	Early re-screening was assessed based on cytology recommendation codes, in order to exclude from the early re-screening group women with a negative cytology sample for whom an earlier screening visit is appropriate. Thus, only women with a recommendation that their next screening visit be in three years were eligible for inclusion in the early re-screening group (that is, in both the numerator and the denominator). Women excluded from the early re-screening group would include those who just had their first cytology sample or more than five years have elapsed since their previous cytology sample (NCSP policy is to recommend a one-year follow-up), women with atrophic changes for whom a repeat after oestrogen is recommended, women with an abnormal history or clinical symptoms, and those already under specialist care. In some cases, early re-screening may be the result of women being re-screened early in response to clinical symptoms, and this is appropriate. We have used the NZ Modified Bethesda recommendation code for urgent referral regardless of cytological findings (R14) to try and exclude some of these cases from the count of women re-screened early, but this does not exclude all screens performed in response to clinical symptoms. There are some similarities between Indicator 4 and Indicator 1.2, although they examine different groups of women and the proportions reported answer somewhat different questions (as is described in more detail in the *Definition* and Comments section of Indicator 1.2). Indicator 1.2 addresses the question – "*What proportion of women who are re-attending for routine screening in a*

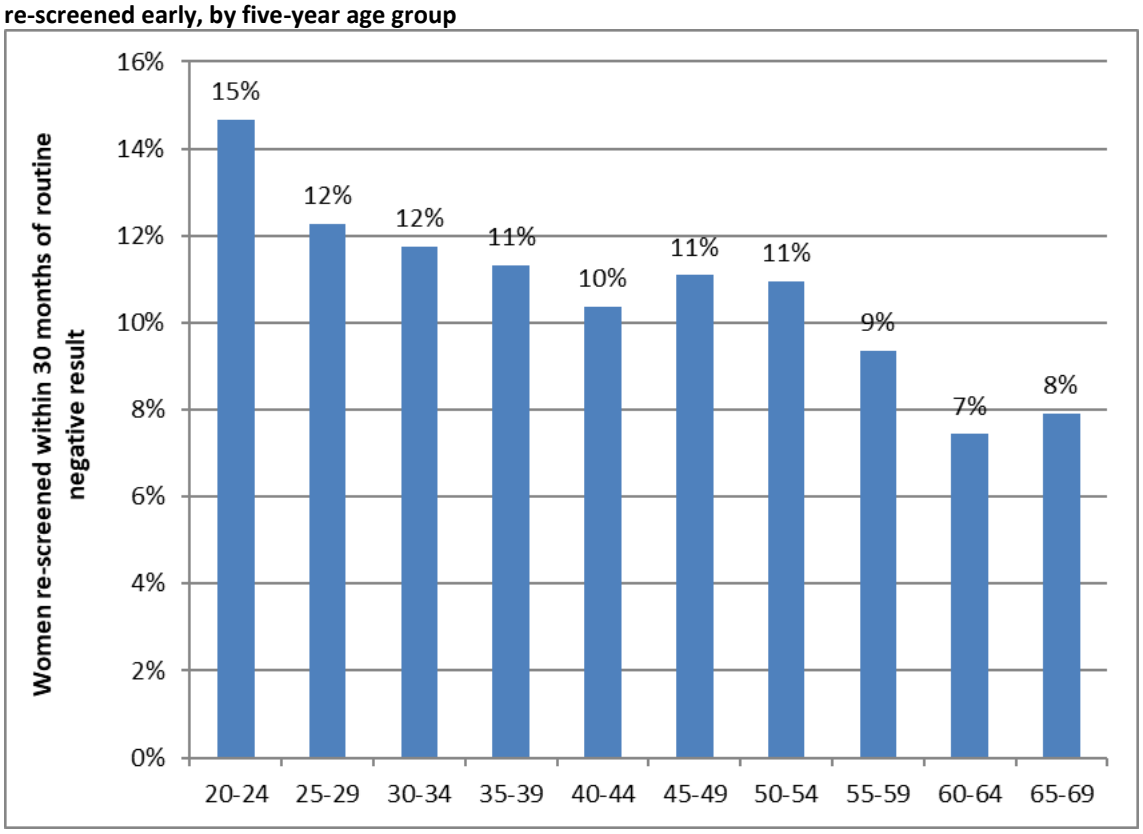
particular time period are returning at least six months early?", and does not take into account women who did not attend for screening; whereas Indicator 4 addresses the question – "*What proportion of women recommended to return in three years for routine screening return at least six months early?*", and takes into account all women given a routine screening recommendation, whether they re-attend or not.

Figure 44 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB



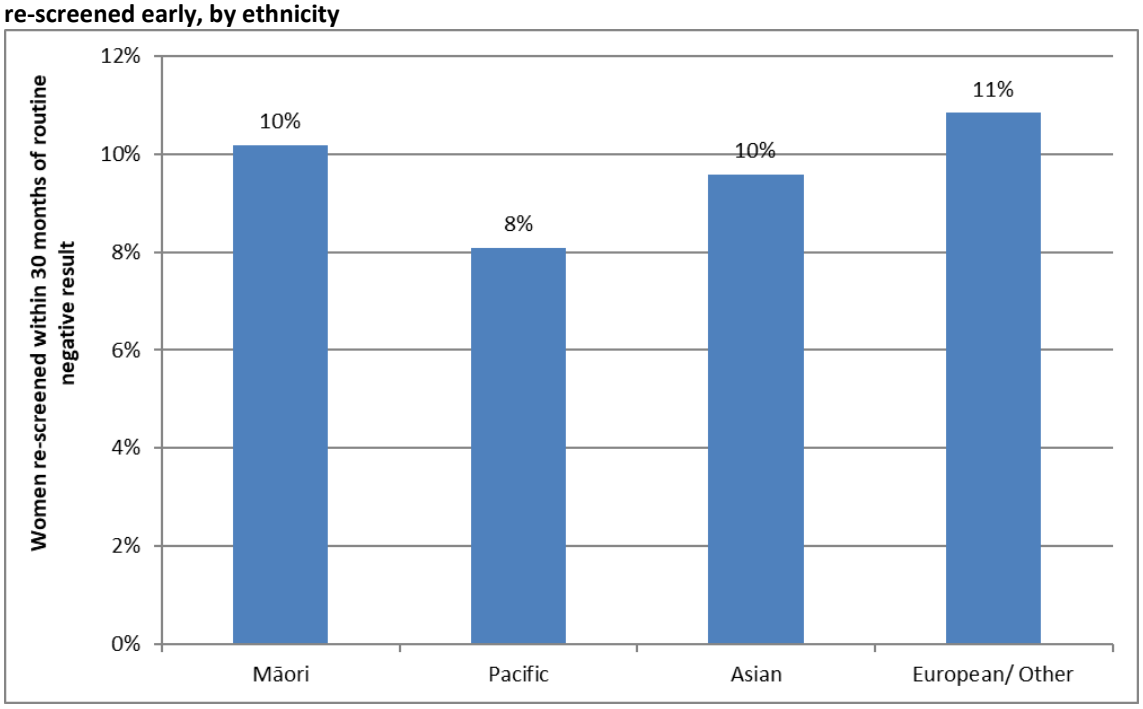
See also Table 57.

Figure 45 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by five-year age group



See also Table 56.

Figure 46 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity



See also Table 58.

Figure 47 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

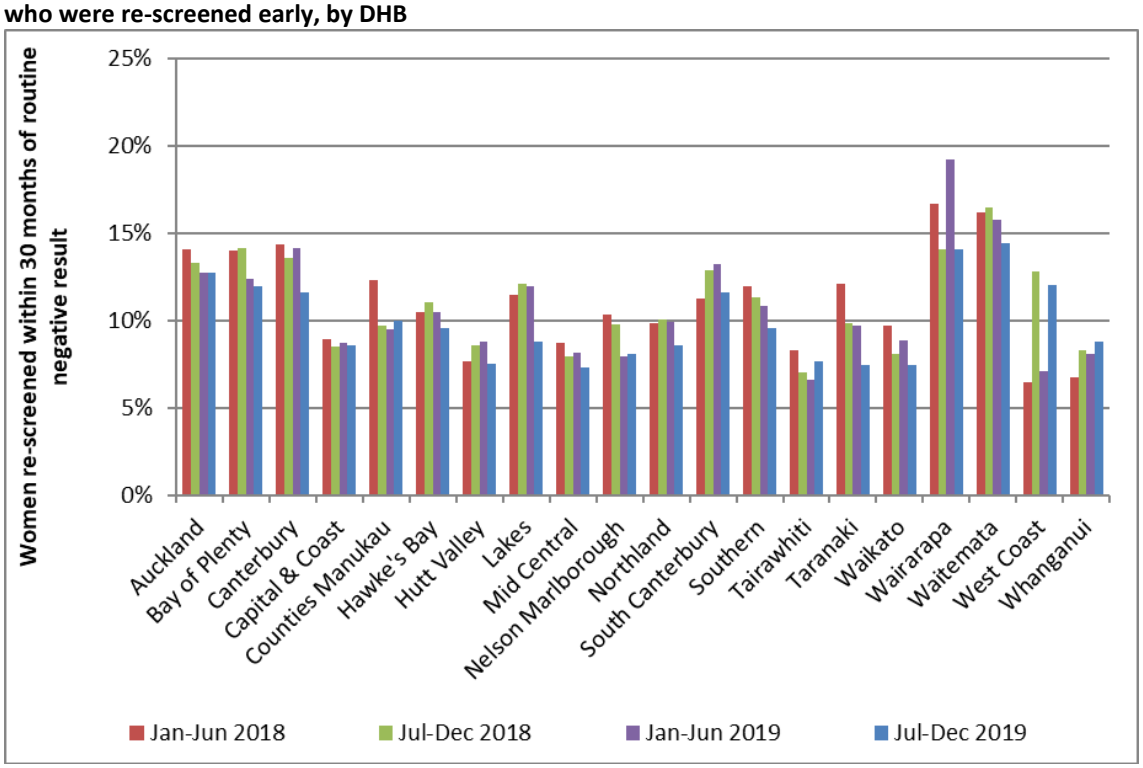


Figure 48 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by age

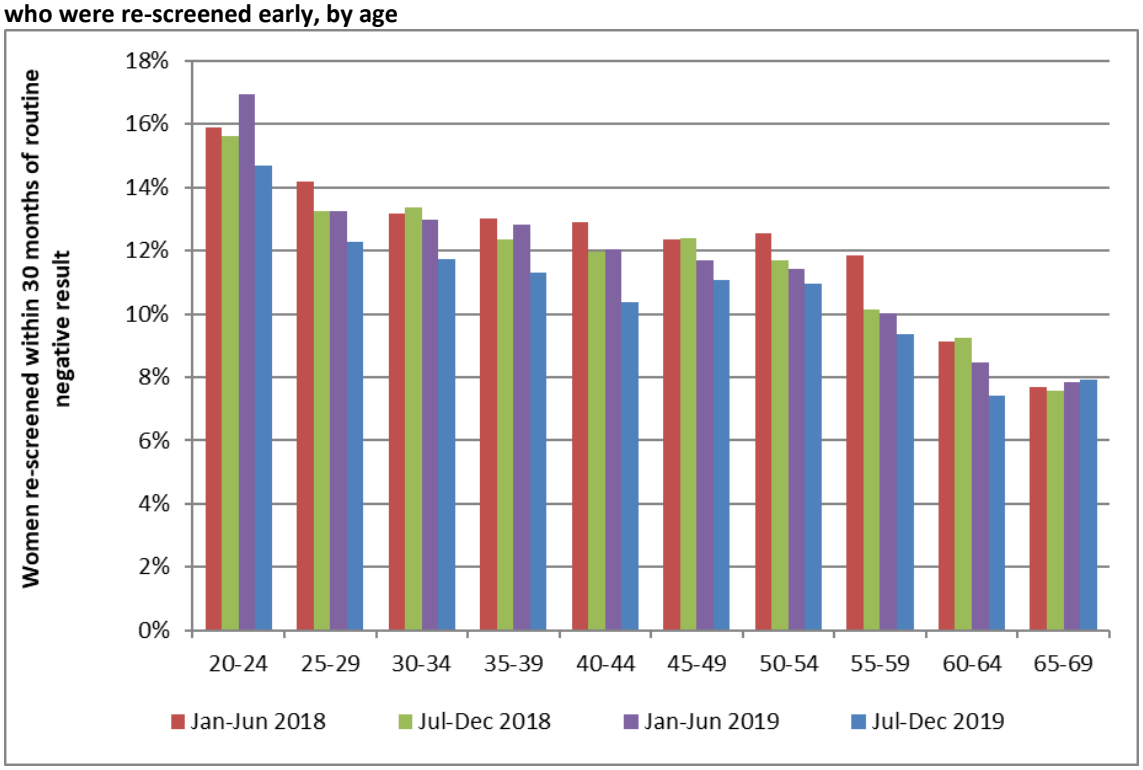
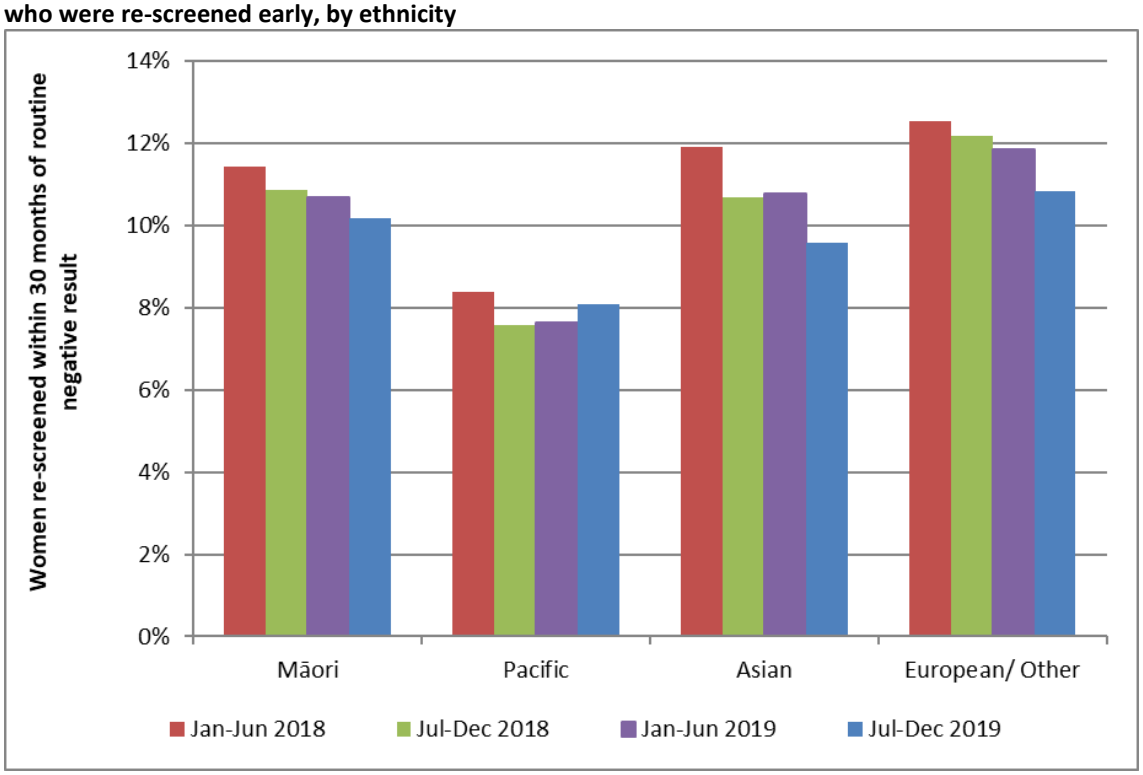


Figure 49 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity



Indicator 5 – Laboratory indicators

The indicators include cytology, histology reports (encompassing cytology and histology reporting rates, positive predictive value of cytology predicting HSIL), laboratory turnaround times, the accuracy of negative cytology reports (future development), and unsatisfactory samples. Volumes of high risk HPV (hrHPV) tests according to NCSP guidelines are included in Indicator 8.

Indicator 5.1 – Laboratory cytology reporting

This includes the breakdown of cytology reporting by category for squamous and glandular abnormalities reported

- Negative
- ASC-US
- LSIL
- ASC-H
- HSIL
- SC
- AGC/AIS
- Adenocarcinoma
- Malignant neoplasm
- Total abnormalities
- Unsatisfactory samples

Definition	Bethesda codes used are provided in Appendix B. The Bethesda reporting system (TBS), introduced in New Zealand on 1 July 2005, is a New Zealand modification of the Bethesda 2001 cytology reporting system. The NCSP Register collects cytology results of samples taken from the cervix and vagina. Total samples include all cytology samples (satisfactory and unsatisfactory) taken during the monitoring period, including conventional, LBC, and combined samples. Reporting rates for negative cytology, total abnormal cytology, and other reporting categories are as a percentage of all satisfactory cytology samples.
Target	0.1% - 3.0% of LBC samples reported as unsatisfactory. No more than 96% of satisfactory samples reported as negative. No more than 10% of satisfactory samples reported as abnormal. No less than 0.5% of satisfactory samples reported as HSIL (Bethesda HS1 or HS2).
Current Situation	Six laboratories reported on cytology taken during the current monitoring period, the same number as in the previous monitoring period. A total of 209,554 cytology samples were taken, almost all of which (>99.99%) were coded as liquid-based cytology (LBC) samples. The other <0.01% of cytology tests were miscoded. ***Unsatisfactory cytology*** 2,622 cytology samples (1.3%) were unsatisfactory. The unsatisfactory rate for LBC is 1.3%, which is within the 0.1% - 3.0% target range for LBC samples. Four of the six laboratories had unsatisfactory rates within the target range; the

other two laboratories had a rate that exceeded the maximum target of 3.0% (LabPLUS and Medlab Central Ltd had unsatisfactory rates of 3.3% and 3.1%, respectively). Canterbury Health Laboratories had the lowest unsatisfactory percentage of 0.4% (Figure 50, Table 1).

Unsatisfactory samples are reported in more detail in Table 1. The remaining satisfactory samples are reported on below and in more detail in Table 2 to Table 6.

Negative cytology reports

93.7% of satisfactory cytology results were negative (Figure 51, Table 2), consistent with the target of no more than 96%. The proportion of samples which were negative varied by laboratory from 76.9% (LabPLUS) to 95.6% (Southern Community Labs; Figure 51, Table 2). All six laboratories met the target of no more than 96%.

Abnormal cytology reports

Nationally, the proportion of satisfactory samples which were abnormal (6.3%) was less than the target of no more than 10% (Figure 52, Table 2). This varied by laboratory, from 4.4% (Southern Community Labs) to 23.1% (LabPLUS; Figure 52). One laboratory (LabPLUS) exceeded the target (23.1%). Abnormal cytology results were most common in younger women and LSIL was the most common abnormal result (Table 5, Table 6).

HSIL cytology reports

Overall, 0.7% of satisfactory cytology samples were HSIL, consistent with the target of at least 0.5% of samples (Table 4). Rates varied by laboratory from 0.4% (Pathlab) to 2.2% (LabPLUS). Five of the six laboratories met the HSIL target (Table 4, Figure 53). Among women aged 20-69 years, the proportion of HSIL or worse in all satisfactory samples was most common in women aged 25-29 years (Table 5, Table 6).

In the current report we additionally examined age-standardised rates of HSIL cytology reports. This was done to partially account for different rates which may arise in different laboratories due to differences in the age of the population whose cytology tests they process. The age-standardised HSIL rates were very similar to the crude rates, both nationally and within each laboratory, but tended to be slightly lower (Table 59).

Trends

Unsatisfactory cytology

Overall, the percentage of unsatisfactory LBC samples for the current monitoring period 1.3% is lower than that seen in the previous monitoring period (1.4% in the previous monitoring period). Two laboratories have exceeded the target for the past two monitoring periods (LabPlus and Medlab Central Ltd) but the percentages are lower in this report.

Negative vs abnormal cytology reports

The proportion of satisfactory cytology samples which are negative for intraepithelial lesion or malignancy (93.7%) is higher than the previous

monitoring period (93.0%), and correspondingly the proportion of cytology samples reported as abnormal (6.3%) is lower than in the previous monitoring period (7.0%). All six laboratories continued to meet the target for negative cytology. LabPLUS had abnormal cytology rates again, as in previous reports, but Canterbury Health Laboratories was below the target as opposed to previous reports.

HSIL cytology reports

The proportion of satisfactory cytology samples reported as HSIL (0.7%) is lower than that reported in the previous monitoring report (0.8%). Five of the six laboratories met the target, which is less than the previous report (six).

Longer term trends in the proportion of satisfactory cytology samples reported as HSIL are shown in Figure 54, Figure 55 (trends by age) and Figure 57 (trends by laboratory). Figure 54 and Figure 57 show trends over the last four monitoring report periods (two years), consistent with other trends presented in this report. Figure 55 shows longer term trends (1 July 2008 to 31 December 2019) in rates of HSIL cytology by age. The younger age groups in this figure would be the first to be potentially affected by HPV vaccination (the oldest birth cohorts eligible for vaccination through the publicly funded programme would be aged up to 29 years at the time of the current monitoring period). HSIL rates in women aged less than 20 years are quite variable; this is likely to be because far fewer women of this age group attend for screening, since routine screening was not recommended for women aged less than 20 years (this changed to 25 years in 2019). HSIL reporting rates in women aged 20-24 years had been increasing prior to 2013 and reached a high of 2.2% for the July-December 2012 period (Report 38). HSIL rates then fell for four monitoring periods between January 2013 and December 2014. However, in the July-December 2015 monitoring period (Report 44) an increase was seen in virtually all age groups, including women aged 20-24 years (from 1.6% in January to June 2015, Report 43, to 2.0% in July to December 2015, Report 44). There has been a plateau or small decline in HSIL rates observed over the last five monitoring reports up to 31 December 2019, with rates being below or very similar to what they were prior to the increase in the latter half of 2015 especially for women 20-24 years and 25-29 years. For women aged 20-24 years HSIL reporting rates remain lower than the latter half of 2008 (around the time that the HPV vaccination programme began). In this report HSIL reporting rates declined or remained similar to the previous report.

Comments

High rates of abnormal samples from LabPLUS are consistent with previous reports, and as discussed in previous monitoring reports, investigation into this has shown that the case-mix of this laboratory (i.e. a significant proportion of samples received from colposcopy clinics compared to other laboratories) is an underlying factor.

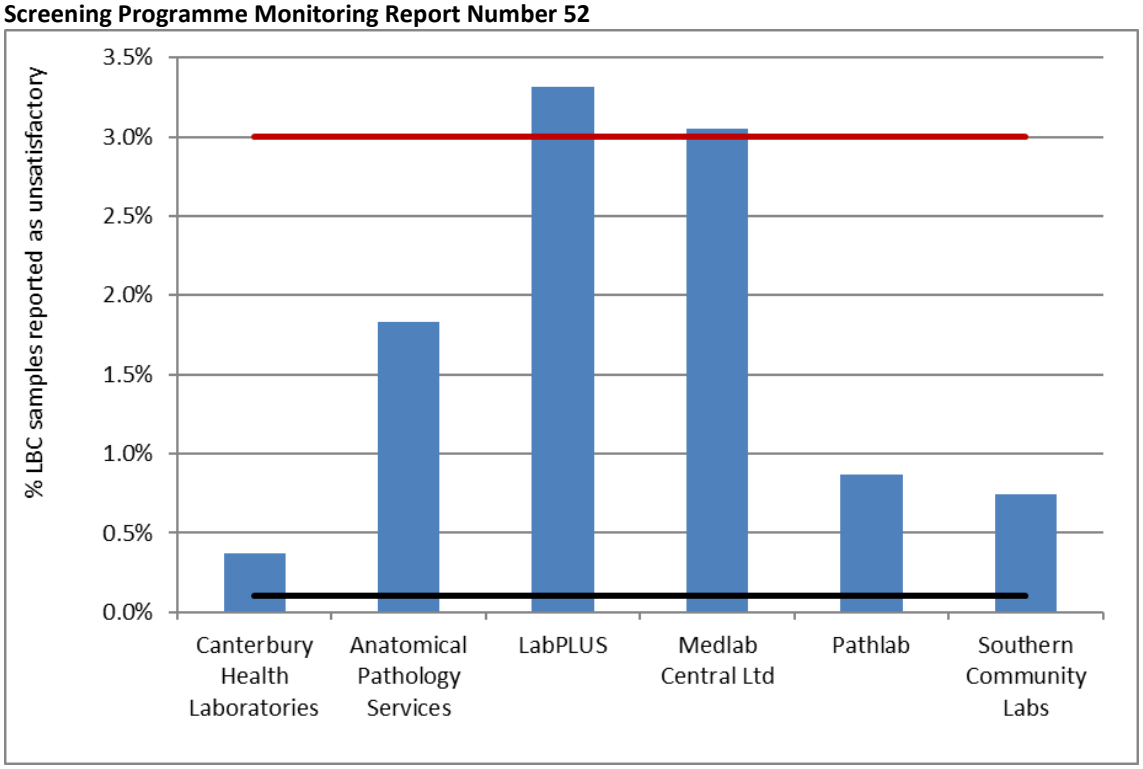
Workload catchments for laboratories may be regional or nationwide and may change because of laboratory service restructuring. As a result, it is not always straightforward to determine the catchment population for a laboratory. Rates of negative and abnormal results for individual laboratories therefore need to

be interpreted with some care, to allow for this difference in workloads and case-mix.

The national Human Papillomavirus (HPV) Immunisation Programme was introduced in New Zealand in September 2008 and involves routine vaccination of girls 12-13 years and catch-up vaccination has previously been offered to young women born in 1990 or later. International and New Zealand data indicate that most high-grade squamous cytology reports are associated with HPV types which are potentially preventable by vaccination (approximately 53% by first generation vaccines against HPV16/18; >70% with 9-valent vaccines),[5-8] and that this is particularly true for younger women.[5,9-11] It is anticipated that data will also soon be available from New Zealand to further quantify the potential impact of the Human Papillomavirus Immunisation Programme in New Zealand. As vaccinated cohorts enter the screening programme, it is anticipated that the proportion of satisfactory cytology samples reported as HSIL will gradually reduce, and that this will occur in younger age groups first (the oldest birth cohorts eligible for vaccination through the publicly funded programme would be aged up to 29 years at the time of the current monitoring period, while the oldest birth cohorts offered vaccination at the target age of 12-13 years would be aged up to 23 years). Therefore, trends in the proportion of satisfactory cytology samples reported as HSIL by age are included in these monitoring reports, in order to monitor the impact of HPV vaccination over time. This proportion of satisfactory cytology samples reported as HSIL in the 20-24 years age group, in the current report, is the lowest it has been since the latter half of 2008 (around the time that the HPV vaccination programme began), and is consistent with an HPV vaccine effect. At the current time, it is not possible to present HSIL rates separately for vaccinated and unvaccinated women, because information relating to whether or not individual women have been vaccinated is not available on the NCSP Register. This data therefore needs to be interpreted with some care, as they include results in all women, both vaccinated and unvaccinated.

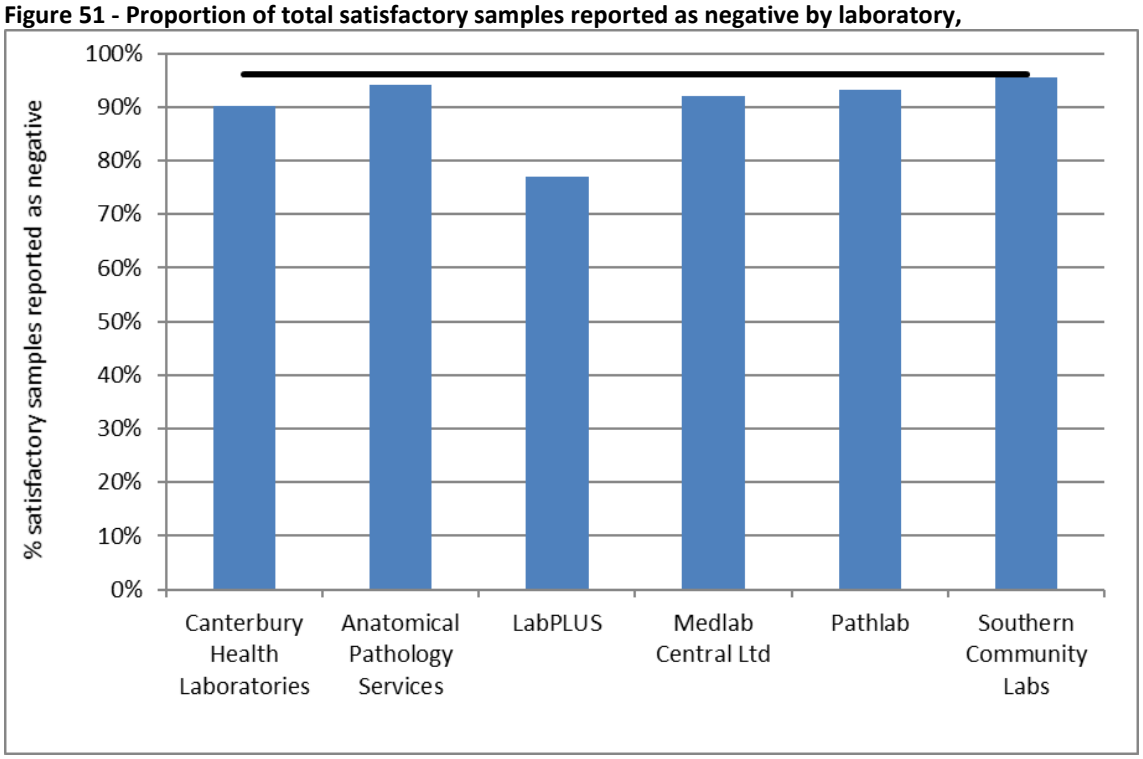
In the current report we additionally examined age-standardised rates of HSIL cytology reports, in order to partially account for differences in the age of the population whose cytology tests each laboratory processes. This could be an additional factor in some laboratories having higher or lower HSIL reporting rates. As the target does not specifically relate to age-standardised rates, these results cannot be directly compared to the target; however, as the target was set in 2013, standardising was done using the 2013 Census population (females). As the age-standardised HSIL rates were very similar to the crude rates within each laboratory, differences in age distribution of cytology tests reported do not appear to be a factor in differences between laboratories in HSIL reporting rates, or in why some laboratories are outside the target range.

Figure 50 - Proportion of total LBC samples reported as unsatisfactory by laboratory, National Cervical Screening Programme Monitoring Report Number 52



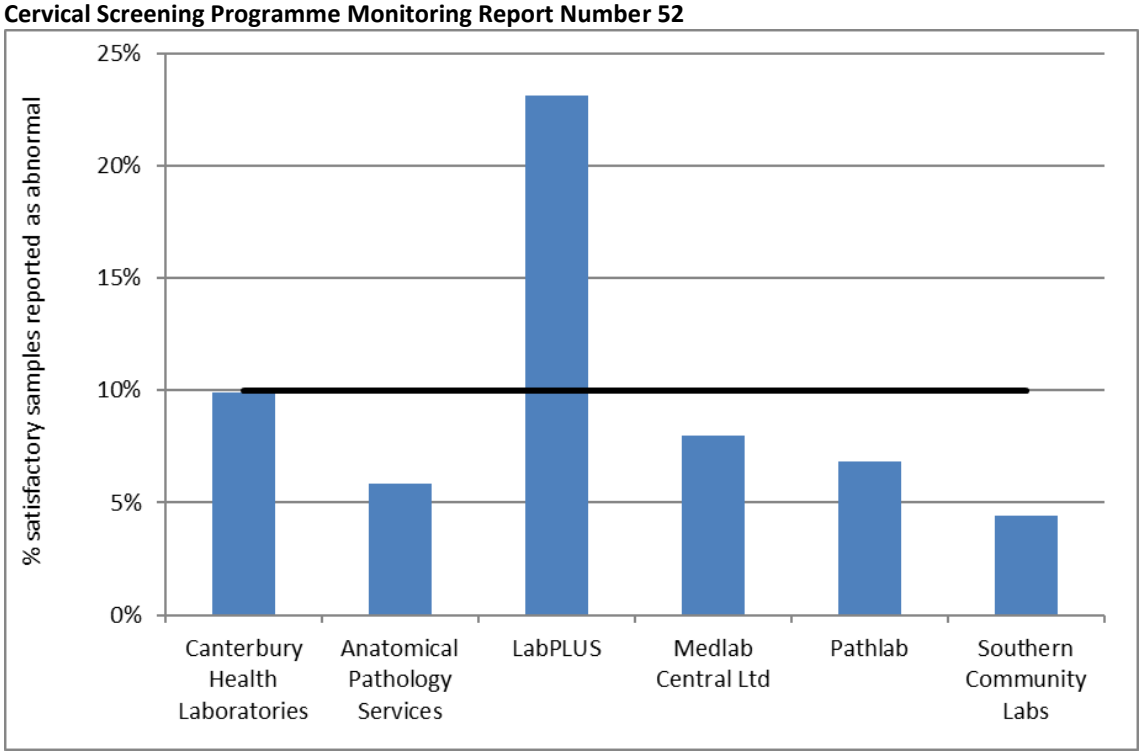
Target for LBC: 0.1-3.0% (Red line-upper target limit; black line-lower target limit).

Figure 51 - Proportion of total satisfactory samples reported as negative by laboratory,



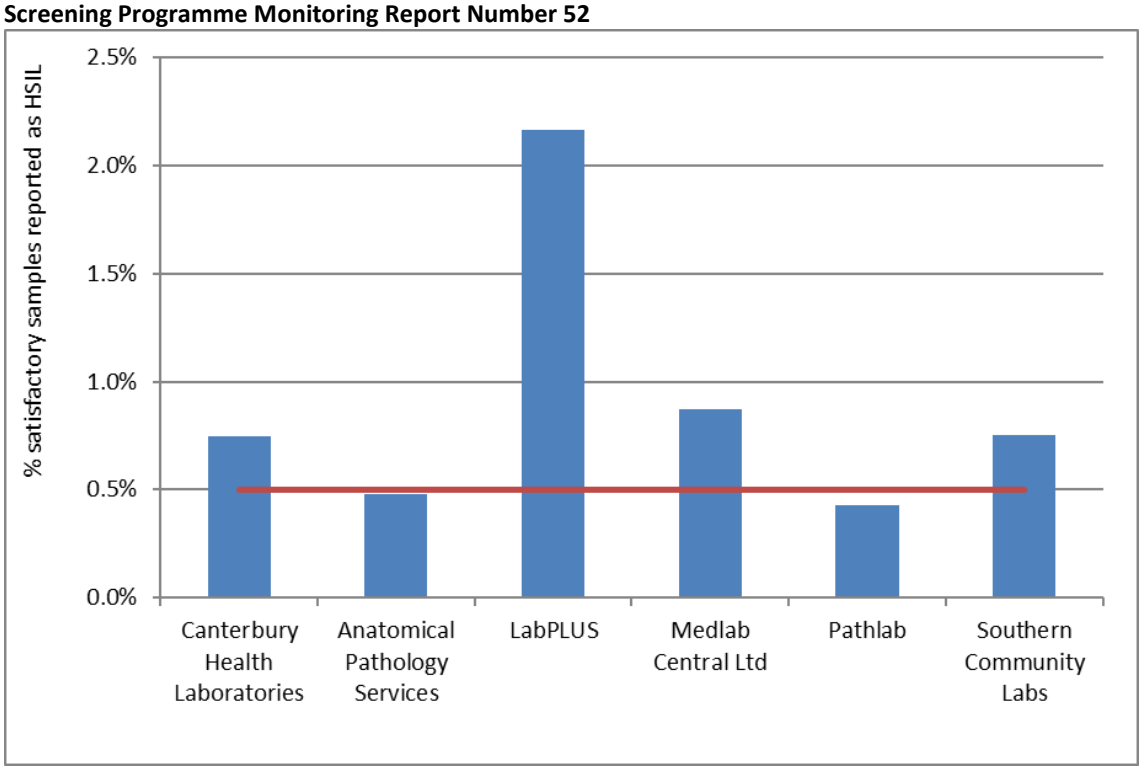
Note: Line shows negative target of no more than 96%.

Figure 52 - Proportion of total satisfactory samples reported as abnormalities by laboratory, National Cervical Screening Programme Monitoring Report Number 52



Note: Line shows abnormal target of no more than 10%.

Figure 53 - Proportion of total satisfactory samples reported as HSIL by laboratory, National Cervical Screening Programme Monitoring Report Number 52



Note: Line shows HSIL target of no less than 0.5%.

Table 1 - Satisfactory and unsatisfactory cytology reporting by laboratory (National Cervical Screening Programme Monitoring Report Number 52)

Laboratory	All samples	Satisfactory		Unsatisfactory	
	N	N	%	N	%
Canterbury Health Laboratories	9,784	9,748	99.6	36	0.4
Anatomical Pathology Services	41,849	41,084	98.2	765	1.8
LabPLUS	8,409	8,130	96.7	279	3.3
Medlab Central Ltd	17,188	16,663	96.9	525	3.1
Pathlab	27,211	26,974	99.1	237	0.9
Southern Community Labs	105,113	104,333	99.3	780	0.7
Total	**209,554**	**206,932**	**98.7**	**2,622**	**1.3**

Target total unsatisfactory: 0.1%-3.0% reported as unsatisfactory.

Table 2 - Laboratory cytology reporting by general result (National Cervical Screening Programme Monitoring Report Number 52) – percentage of satisfactory samples

Laboratory	Negative		Abnormal	
	N	%	N	%
Canterbury Health Laboratories	8,784	90.1	964	9.9
Anatomical Pathology Services	38,686	94.2	2,398	5.8
LabPLUS	6,252	76.9	1,878	23.1
Medlab Central Ltd	15,335	92.0	1,328	8.0
Pathlab	25,125	93.1	1,849	6.9
Southern Community Labs	99,722	95.6	4,611	4.4
Total	**193,904**	**93.7**	**13,028**	**6.3**

Target total negative: ≤ 96% reported as negative.
Target total abnormal: ≤ 10% reported as abnormal.

Table 3 - Laboratory cytology reporting by type of cytological category (National Cervical Screening Programme Monitoring Report Number 52) – counts of all satisfactory samples

Laboratory	Result									
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	Total
Canterbury Health Laboratories	8,784	330	449	97	73	1	9	4	1	9,748
Anatomical Pathology Services	38,686	685	1,343	130	197	2	30	9	2	41,084
LabPLUS	6,252	612	775	283	176	-	23	9	-	8,130
Medlab Central Ltd	15,335	498	515	148	145	1	19	2	-	16,663
Pathlab	25,125	623	951	127	115	5	23	5	-	26,974
Southern Community Labs	99,722	918	2,437	304	784	4	135	29	-	104,333
Total	**193,904**	**3,666**	**6,470**	**1,089**	**1,490**	**13**	**239**	**58**	**3**	**206,932**

Table 4 - Laboratory cytology reporting by cytological category (National Cervical Screening Programme Monitoring Report Number 52) – percentage of all satisfactory samples

Laboratory	Result								
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm
Canterbury Health Laboratories	90.1	3.4	4.6	1.0	0.7	0.01	0.09	0.04	0.0
Anatomical Pathology Services	94.2	1.7	3.3	0.3	0.5	<0.005	0.07	0.02	<0.005
LabPLUS	76.9	7.5	9.5	3.5	2.2	-	0.28	0.11	-
Medlab Central Ltd	92.0	3.0	3.1	0.9	0.9	0.01	0.11	0.01	-
Pathlab	93.1	2.3	3.5	0.5	0.4	0.02	0.09	0.02	-
Southern Community Labs	95.6	0.9	2.3	0.3	0.8	<0.005	0.13	0.03	-
Total	**93.7**	**1.8**	**3.1**	**0.5**	**0.7**	**0.01**	**0.12**	**0.03**	**<0.005**

Target: HSIL ≥ 0.5% reported as HSIL.

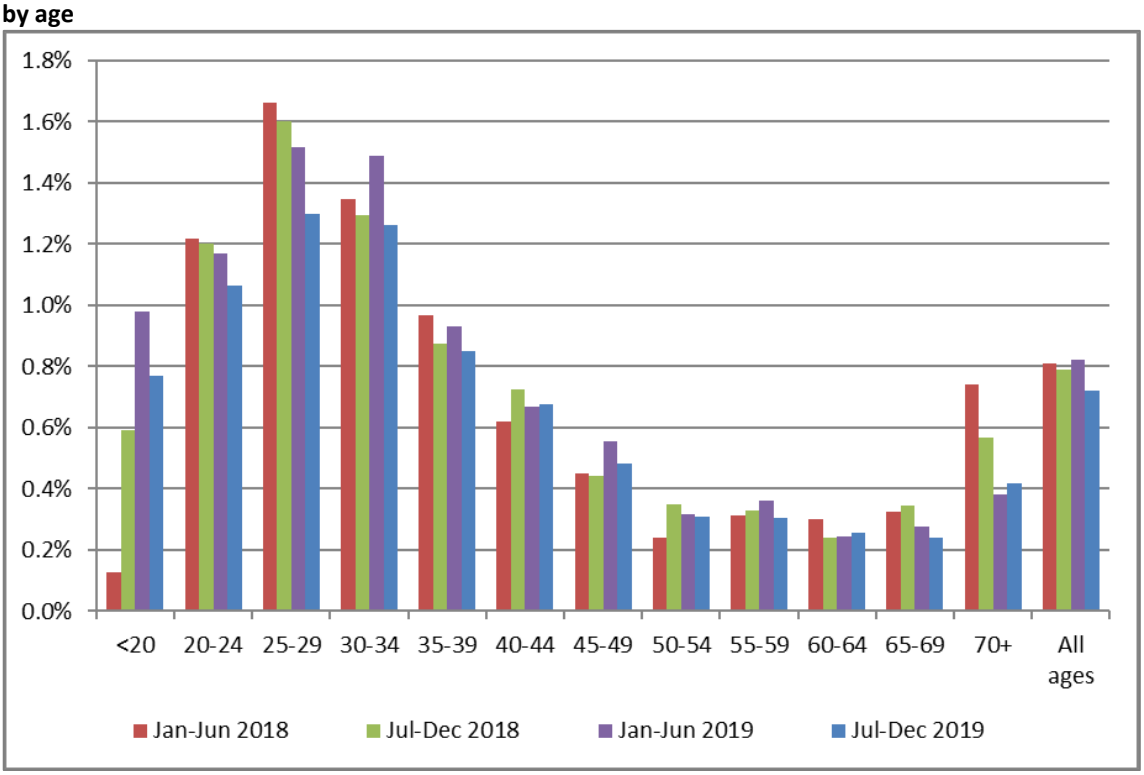
Table 5 - Laboratory reporting of cytological category by five-year age group (National Cervical Screening Programme Monitoring Report Number 52) – counts of all satisfactory samples

Age Group	Cytology Result									
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	Total
<20	444	15	53	4	4	-	-	-	-	520
20-24	16,578	590	1,854	188	207	-	2	-	-	19,419
25-29	21,604	529	1,193	196	310	-	23	-	-	23,855
30-34	23,289	483	832	174	317	-	12	1	-	25,108
35-39	21,746	367	505	114	195	1	21	1	-	22,950
40-44	20,308	315	431	74	144	-	17	3	2	21,294
45-49	21,458	381	430	74	108	2	19	6	-	22,478
50-54	20,147	341	354	80	65	-	38	2	-	21,027
55-59	19,233	275	313	72	61	1	34	10	-	19,999
60-64	15,538	182	258	49	41	4	31	9	-	16,112
65-69	11,600	137	174	41	29	3	18	6	-	12,008
70+	1,959	51	73	23	9	2	24	20	1	2,162
Total	**193,904**	**3,666**	**6,470**	**1,089**	**1,490**	**13**	**239**	**58**	**3**	**206,932**

Table 6 - Laboratory reporting of cytological category by five-year age group (National Cervical Screening Programme Monitoring Report Number 52) – percentage of all satisfactory samples in women of that age group

Age Group	Cytology Result								
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm
<20	85.4	2.9	10.2	0.8	0.8	-	-	-	-
20-24	85.4	3.0	9.5	1.0	1.1	-	0.01	-	-
25-29	90.6	2.2	5.0	0.8	1.3	-	0.10	-	-
30-34	92.8	1.9	3.3	0.7	1.3	-	0.05	<0.005	-
35-39	94.8	1.6	2.2	0.5	0.8	<0.005	0.09	<0.005	-
40-44	95.4	1.5	2.0	0.3	0.7	-	0.08	0.01	0.01
45-49	95.5	1.7	1.9	0.3	0.5	0.01	0.08	0.03	-
50-54	95.8	1.6	1.7	0.4	0.3	-	0.18	0.01	-
55-59	96.2	1.4	1.6	0.4	0.3	0.01	0.17	0.05	-
60-64	96.4	1.1	1.6	0.3	0.3	0.02	0.19	0.06	-
65-69	96.6	1.1	1.4	0.3	0.2	0.02	0.15	0.05	-
70+	90.6	2.4	3.4	1.1	0.4	0.09	1.11	0.93	0.05
Total	**93.7**	**1.8**	**3.1**	**0.5**	**0.7**	**0.01**	**0.12**	**0.03**	**<0.005**

Figure 54 - Trends in the proportion of total satisfactory samples reported as HSIL (last four monitoring periods), by age



Note: women aged less than 20 years are not routinely screened.

Figure 55 - Longer term trends in the proportion of total satisfactory samples reported as ASC-H or HSIL (to National Cervical Screening Programme Monitoring Report Number 52)

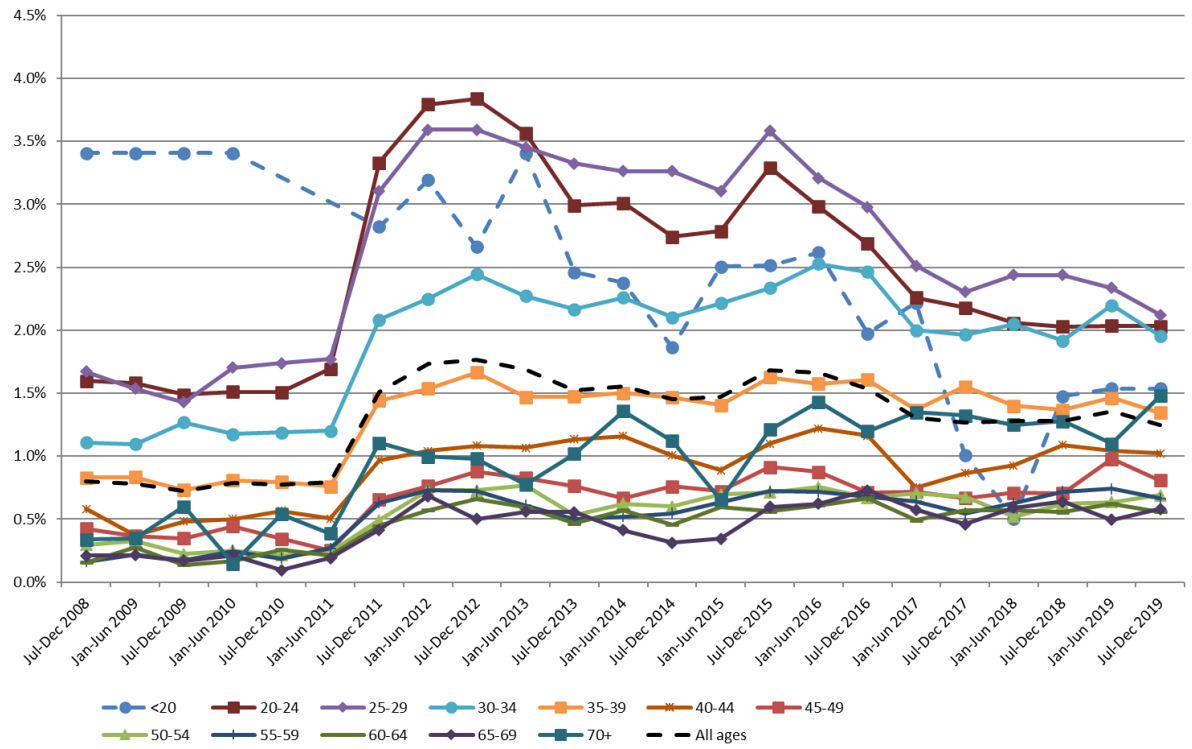
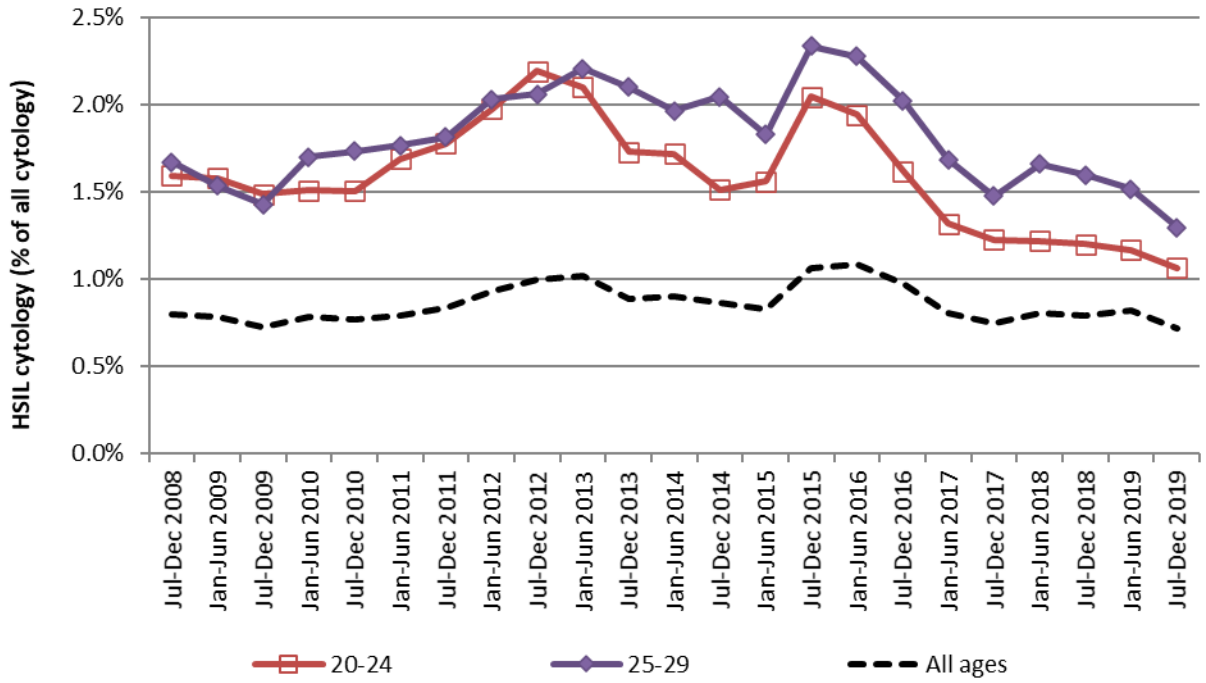
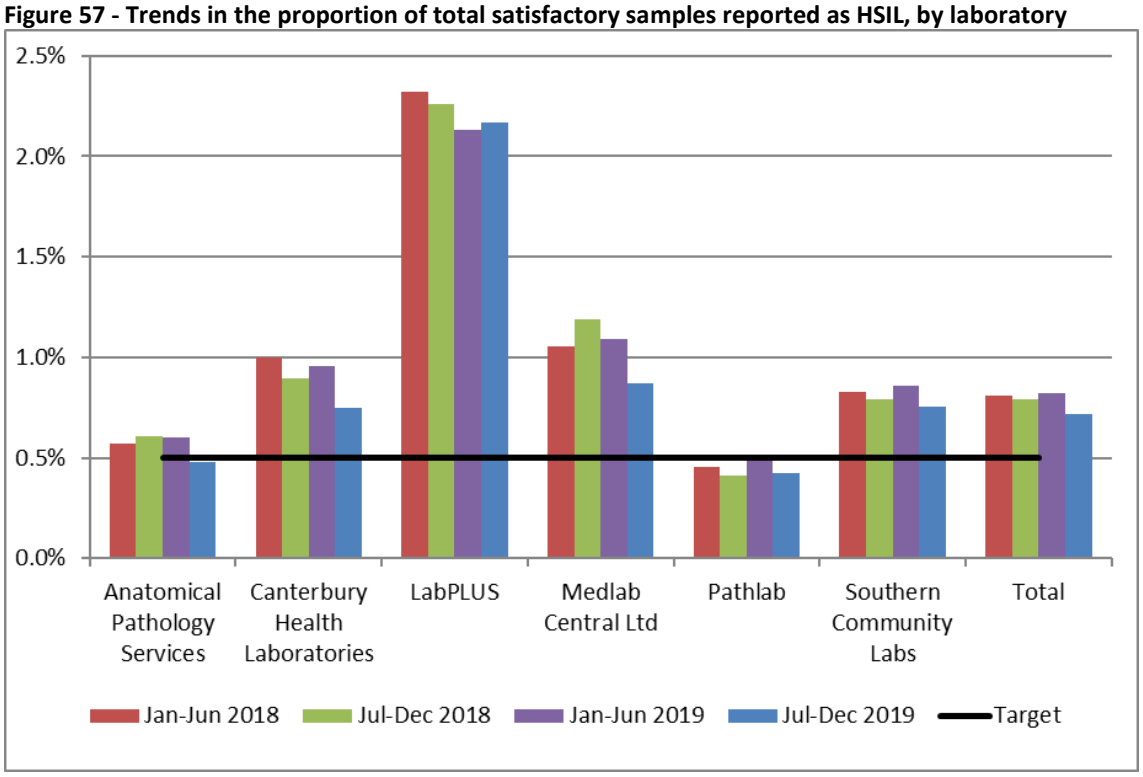


Figure 56- Longer term trends in the proportion of total satisfactory samples reported as HSIL (to National Cervical Screening Programme Monitoring Report Number 52), selected age groups



Note: women aged less than 20 years are not routinely screened.

Figure 57 - Trends in the proportion of total satisfactory samples reported as HSIL, by laboratory



Note: Line shows HSIL target of no less than 0.5%.

Indicator 5.2 – Accuracy of cytology predicting HSIL

Definition	The accuracy of cytology predicting HSIL/SC (positive predictive value – PPV) is defined as the probability of a high-grade histological report (CIN 2/3 or higher) given an HSIL/invasive squamous carcinoma cytology report. Refer to Appendix D for detailed definitions of histological confirmation. All satisfactory cytology samples collected in the six months prior to the current monitoring period (i.e. collected from 1 January – 30 June 2019 inclusive) were identified. Where a woman had multiple samples, or a report had multiple interpretation codes, the most serious cytology result category reported was used. If there were two cytology test results for a woman of the same grade, the earliest one was used. Histology samples taken up to six months after the cytology sample (but not on the same day) were included. Where there were multiple histology reports for a woman in the period, the most serious abnormality category was used.
Target	Not less than 65% and not greater than 85% for cytology reported as HSIL or SC.
Current Situation	***HSIL + SC*** 1,107 women with HSIL or SC cytology reports were identified. 88 of these women (7.9%) had no histology taken in the six months after the cytology sample was taken. Among the remaining 1,019 for whom there was histology, 815 (80.0%) had their HSIL or SC cytology report confirmed as high-grade by histology (Figure 58, Table 60). By laboratory, the proportion of HSIL + SC being confirmed as high-grade by histology ranged from 77.6% for Anatomical Pathology Services to 91.7% for LabPLUS. All six laboratories achieved the minimum target of at least 65% of cytological HSIL + SC being confirmed by histology. Four of the six laboratories met the 85% upper target margin of HSIL + SC being histologically confirmed (Figure 58, Table 60). ***Other cytological abnormalities*** Similar calculations for positive predictive value were performed for ASC-H; glandular abnormalities (AG1-AG5, AIS, AC1-AC4); and the combination of ASC-H, HSIL and SC. There are no targets for these measures. ***ASC-H*** 684 women with a cytology report of ASC-H were identified. 121 (17.7%) had no histology taken in the six months after the cytology sample. Among the remaining 563 women, 283 (50.3%) were histologically confirmed as high-grade.

This proportion varied by laboratory, from 36.1% (LabPLUS) to 69.7% (Medlab Central Ltd; Figure 59, Table 61).

ASC-H + HSIL + SC

A total of 1,791 women had a cytology report of ASC-H, HSIL or SC. 209 (11.7%) had no histology taken in the six months after the cytology sample. Among the remaining 1,582 women, 1,098 (69.4%) were histologically confirmed as high-grade. This proportion varied by laboratory, from 51.8% (LabPLUS) to 79.9% (Medlab Central Ltd; Figure 59, Table 62).

Glandular abnormalities

There were 205 women with a glandular abnormality (AG1-AG5, AIS, AC1-AC4) identified. 66 women (32.2%) had no histology taken in the six months after the cytology sample. Among the remaining 139 women, 53 (38.1%) were identified as having high-grade histology. This was not analysed by laboratory, as the number of samples reported on by some laboratories were small.

Trends

HSIL + SC

Positive predictive value for HSIL and SC cytology is higher than in the previous monitoring report (76.1% in the previous period; 80.0% in the current period). In both the previous and current monitoring periods, all six laboratories had greater than 65% of their HSIL + SC cytology results confirmed by histology. The number of laboratories with PPVs above the upper target of 85% is lower in this report (four laboratories compared to five in the previous report). The proportion of cytology reports with histology available following HSIL or SC results is similar to previously reported (92.1% in the current report; 92.2% in the previous report). Trends in the positive predictive value for HSIL and SC cytology by laboratory are shown in Figure 60 and Figure 61. Decreases in the positive predictive value for HSIL and SC cytology were evident for two laboratories (Anatomical Pathology Services and Canterbury Health Laboratories).

ASC-H

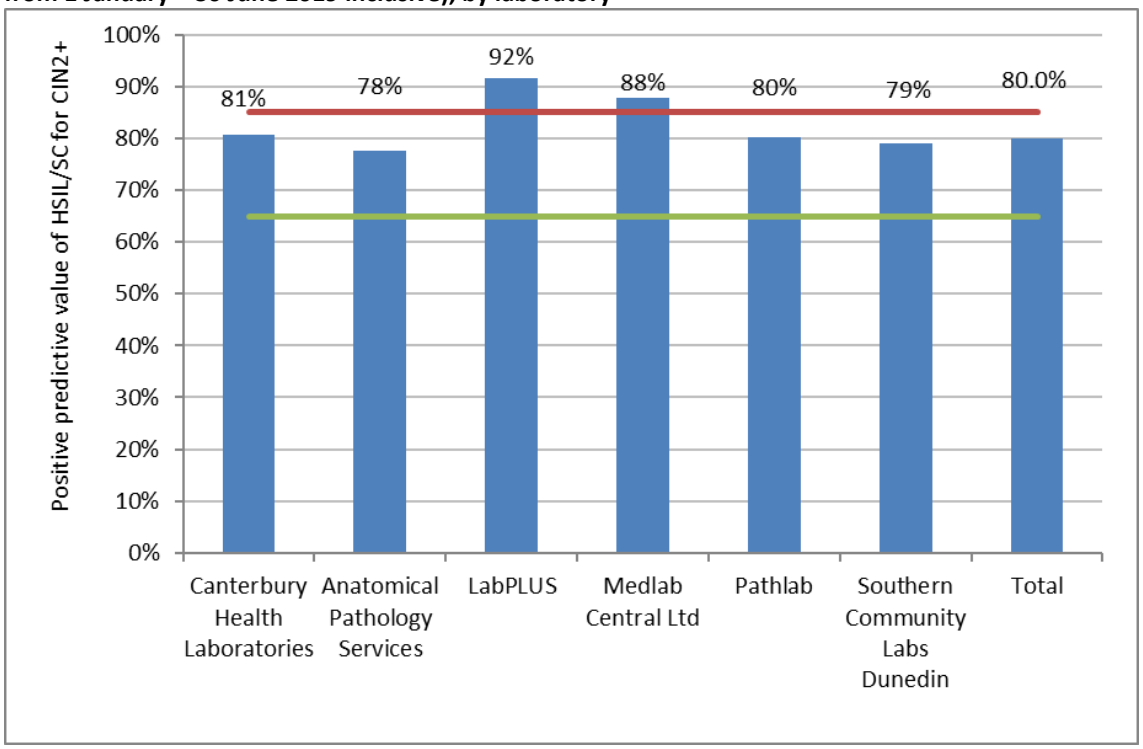
Positive predictive value for ASC-H cytology is higher, from 48.0% to 50.3%, however there is no target for this measure. The proportion of ASC-H cytology reports with histology available is higher in the current report compared to the previous monitoring report (81.2% in previous report; 82.3% in the current report; Figure 61). Decreases in the positive predictive value for ASC-H cytology were evident in three laboratories of the six.

ASC-H + HSIL + SC

The positive predictive value for the combined group ASC-H, HSIL and SC is higher in the current report (69.4%, compared to 66.6% in the previous report). Note that there is no target for the positive predictive value of this combined group. Trends in the positive predictive value for the combined group ASC-H, HSIL and SC cytology by laboratory are shown in Figure 62. Decreases in the positive predictive value for the combined group of ASC-H, HSIL and SC cytology were evident for two of six laboratories.

	Glandular abnormalities The positive predictive value of glandular abnormalities is lower (from 39.9% in the previous report to 38.1% in the current report). Compared to both ASC-H cytology, and the combined group of HSIL and SC cytology, there are far fewer glandular abnormalities, and an even smaller number with histology available. The proportion of glandular abnormalities with histology available (67.8%) is lower than in the previous monitoring period (72.4%) and remains less than ASC-H (82.3%) and HSIL + SC (92.1%). As a result, the positive predictive value of glandular abnormalities is more prone to fluctuations than positive predictive values for other high-grade abnormalities. Due to the small number of samples involved, glandular abnormalities were not analysed in further detail by laboratory.
Comments	This estimate does not take into account cytology predicting HSIL for which there is no histology available. Histology may be unavailable because the woman does not attend for follow-up colposcopy, or a biopsy may not be taken if the colposcopic impression is normal. When the monitoring period for this indicator is after all DHBs have started reporting in accordance the 2013 Colposcopy Standards (September 2017), it should be possible to better distinguish between these two possibilities. This can also be examined by calculating the probability of a high-grade histological report (CIN 2/3 or higher) among all women attending colposcopy after a high-grade cytology report (rather than only among the subset of women where a biopsy is taken). These results are presented in and compared with those for women with low-grade cytology results with a positive HPV triage test. Commencing from Report 49, cytology samples were excluded from this measure if they were collected at a colposcopy visit (assessed by excluding cytology samples collected at the same facility and on the same date as either a colposcopy or a histology sample in the same woman; “excluding samples from colposcopy”). Prior to Report 49, this restriction had not been applied (“original method”). Additionally, reports prior to Report 49 included histology collected on the same day or up to five days prior to the cytology report. For this reason, results in the current report are not comparable to those in Report 48 or earlier, and so comparisons are restricted to Reports 49 and onwards.

Figure 58 - Positive predictive value for CIN 2+ in women with HSIL or SC cytology reports (i.e. collected from 1 January – 30 June 2019 inclusive), by laboratory



Target: 65% - 85%.

Figure 59 - Positive predictive value for CIN 2+ in women with other high-grade cytology results (i.e. collected from 1 January – 30 June 2019 inclusive), by laboratory

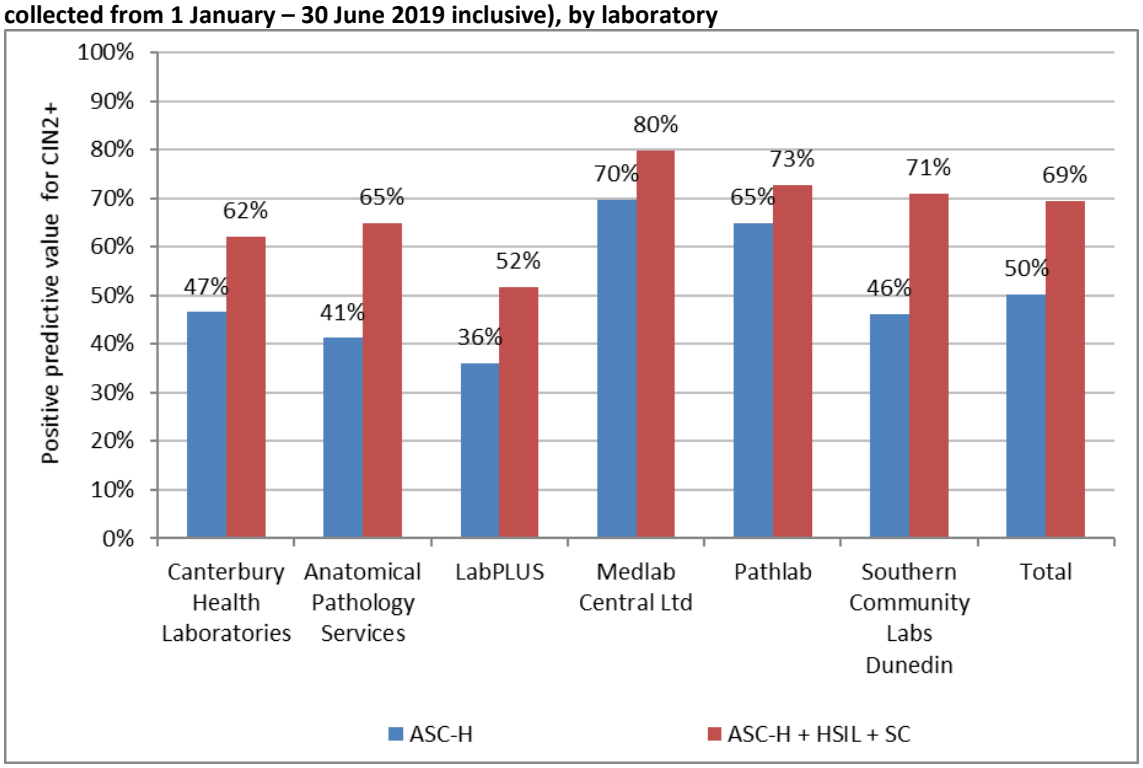
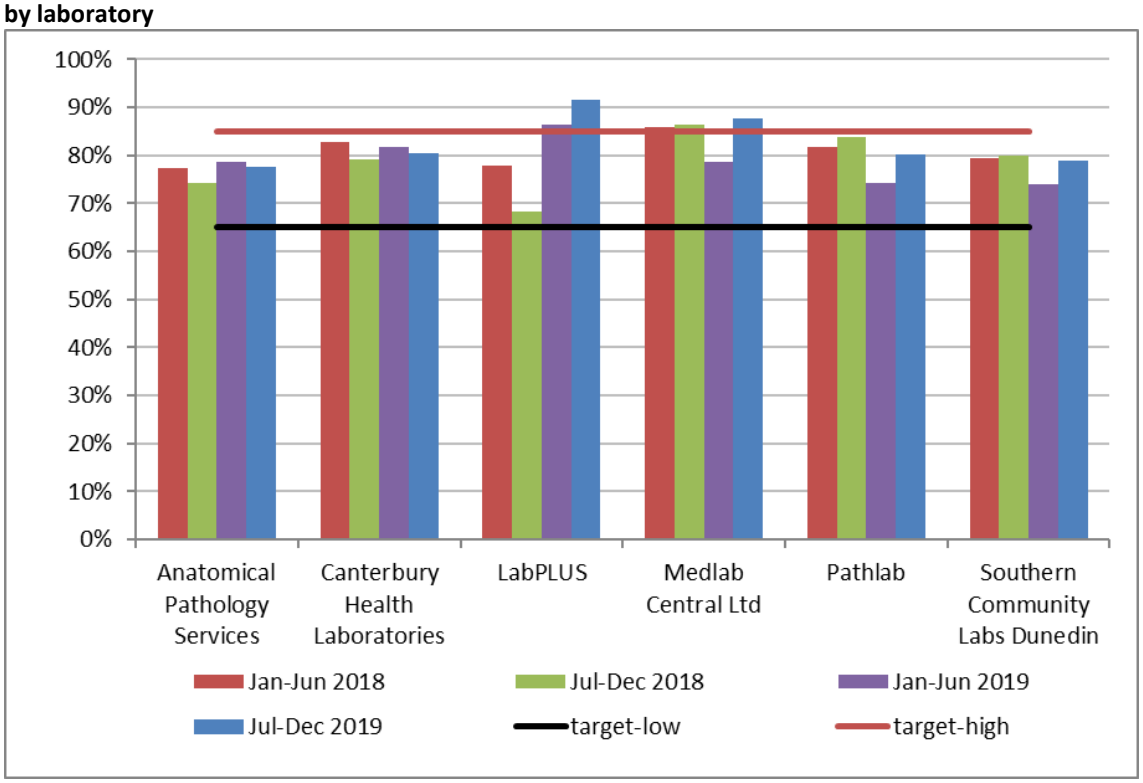
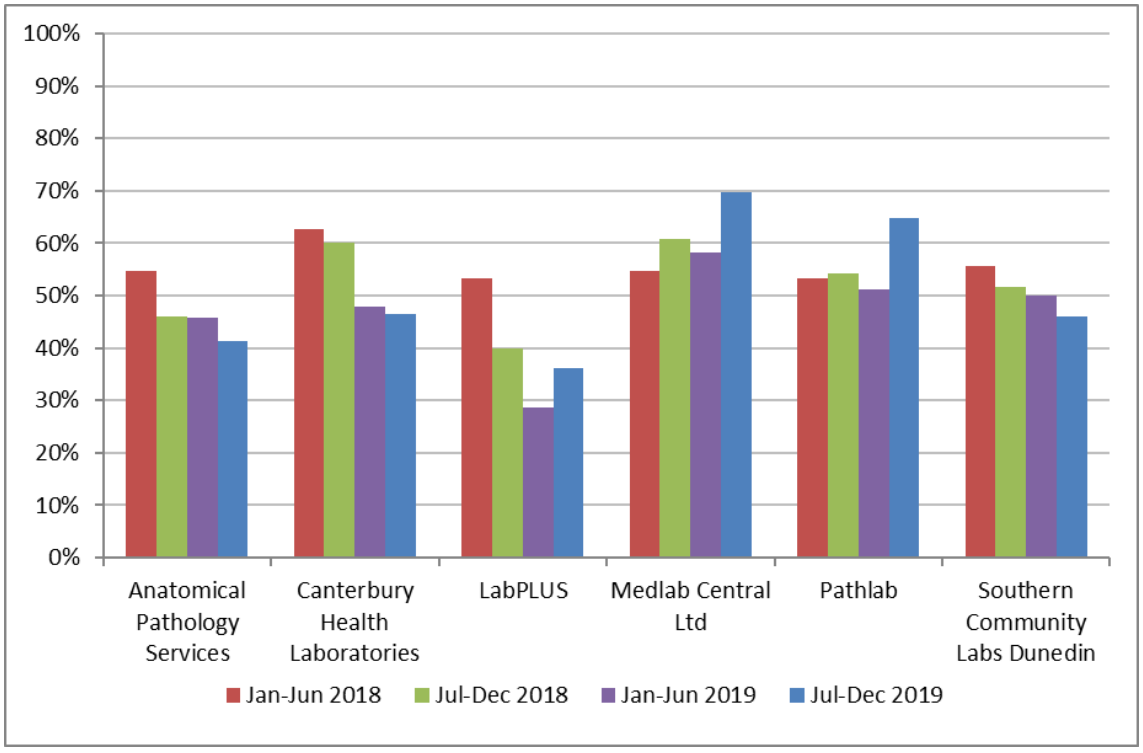


Figure 60 - Trends in the positive predictive value for CIN 2+ in women with HSIL or SC cytology results, by laboratory



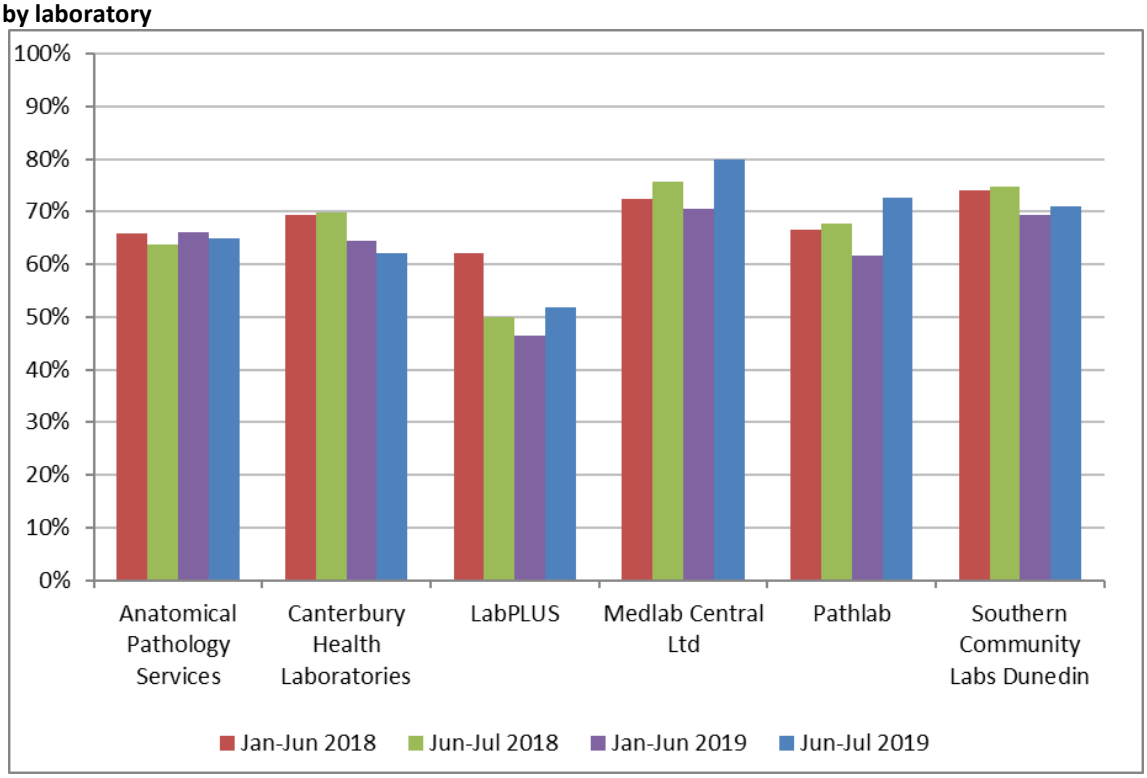
Time period relates to monitoring report period; cytology samples were collected in the period six months prior.

Figure 61 - Trends in the positive predictive value for CIN 2+ in women with ASC-H cytology results, by laboratory



Time period relates to monitoring report period; cytology samples were collected in the period six months prior.

Figure 62 - Trends in the positive predictive value for CIN 2+ in women with ASC-H, HSIL or SC cytology results, by laboratory



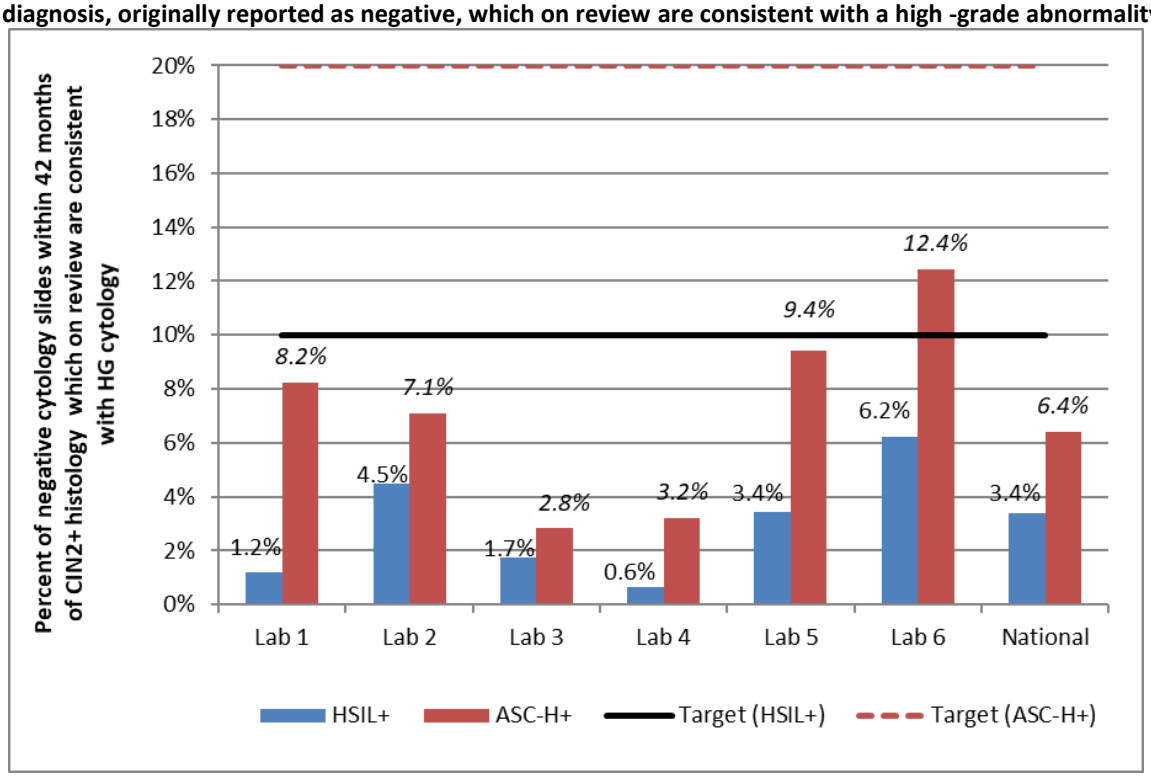
Time period relates to monitoring report period; cytology samples were collected in the period six months prior.

Indicator 5.3 – Accuracy of negative cytology reports

Definition	This indicator currently has two parts to its definition. 1. For women with a histological diagnosis of CIN 2, CIN 3, invasive SCC, AIS or invasive endocervical adenocarcinoma, the proportion of cytology slides originally reported within the preceding 42 months as negative, benign/reactive or unsatisfactory which on review are consistent with high -grade or worse category (Standard 522). 2. The ability of a laboratory to correctly identify a negative sample. All cases with a high -grade or invasive diagnosis on histology (CIN 2, CIN 3, invasive SCC, AIS or invasive endocervical adenocarcinoma) must have a review of any cytology slides that have been reported as negative, benign/reactive or unsatisfactory in the previous 42 months. Any abnormality identified as high -grade or worse on review of a previously reported negative or unsatisfactory cytology slide must be documented by the laboratory. Cumulative data must be forwarded to the National Screening Unit to help ensure the accuracy of submitted negative cytology reports.
Target	No more than 10% of cytology originally identified as negative is identified as consistent with a cytological interpretation of HS1, HS2, SC, AIS or AC1-AC5 (HSIL+) on review. Aim for less than 15%, but not more than 20% of cytology originally identified as negative is identified as consistent with a cytological interpretation of ASC-H, HS1, HS2, SC, AG4-AG5, AIS or AC1-AC5 (ASC-H +) on review.
Current Situation	Data required for this measure were not available directly from the NCSP Register for the current reporting period, but were provided by the National Screening Unit in a way that did not identify laboratories. Data were provided for women with a histological diagnosis of high -grade/ invasive disease in the period 1 January – 31 December 2019, for whom the previous cervical smear, within the 42 months prior, was negative. Nationally, 3.4% of these previous negative smears were consistent with HSIL+ on review, and 6.4% were consistent with ASC-H+ on review (Figure 63). These results varied by laboratory, from 0.6% to 6.2% for HSIL+ and from 2.8% to 12.4% for ASC-H+ (Figure 63). No laboratory exceeded the targets, and all achieved the additional aim of less than 15% for ASC-H+.
Trends	Overall, the proportion of slides that were consistent with a high -grade or worse abnormality is lower in 2019 compared to 2018. Between this report and monitoring report 50, the proportion of negative slides which on review were

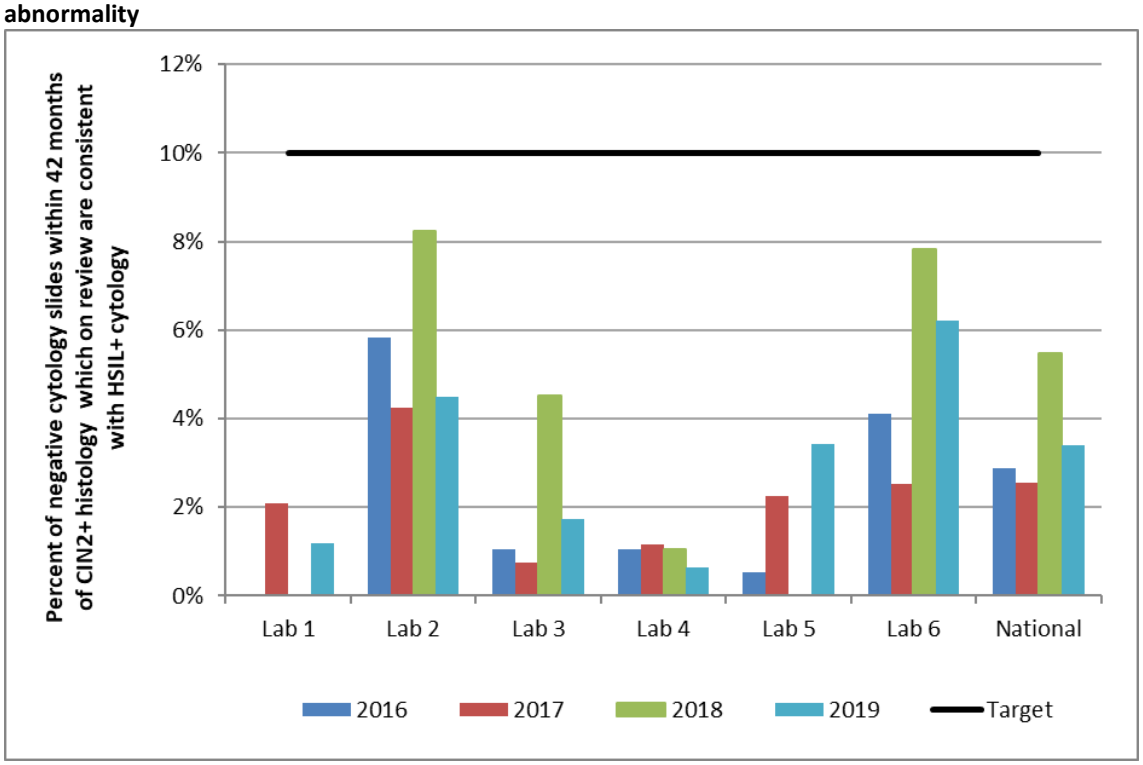
	consistent with HSIL+ decreased from 5.5% to 3.4%, and from 10.0% to 6.4% for ASC-H+. Trends by laboratory are shown in Figure 64 (HSIL+) and Figure 65 (ASC-H+).
Comments	Laboratories are not identified for this indicator.

Figure 63 - Proportion of cytology slides within the 42 months preceding a high -grade/ invasive histological diagnosis, originally reported as negative, which on review are consistent with a high -grade abnormality



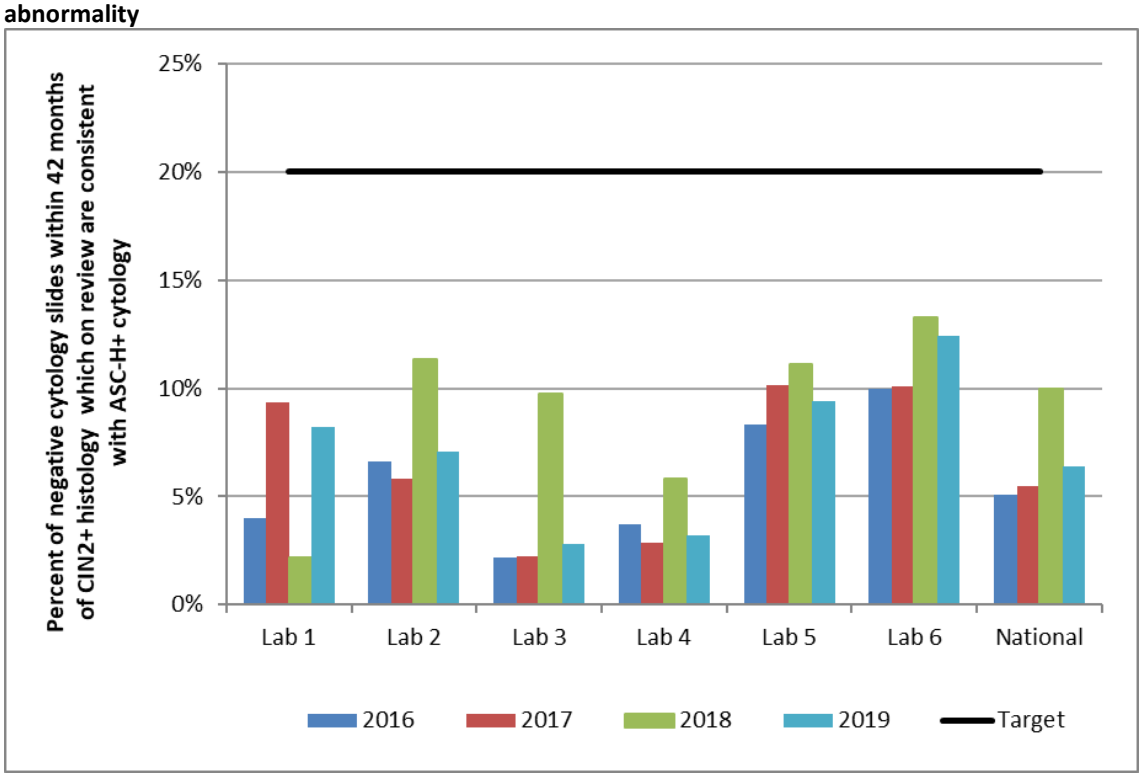
HSIL+ includes cytology interpretation codes HS1, HS2, SC, AIS or AC1-5; ASC-H+ includes cytology interpretation codes ASH, HS1, HS2, SC, AIS, AC1-5 or AG4-5 (see Appendix B – Bethesda 2001 New Zealand Modified).

Figure 64 – Trends in the proportion of cytology slides within the 42 months preceding a high -grade/ invasive histological diagnosis, originally reported as negative, which on review are consistent with HSIL or worse abnormality



HSIL+ includes cytology interpretation codes HS1, HS2, SC, AIS or AC1-5; (see Appendix B – Bethesda 2001 New Zealand Modified).

Figure 65 – Trends in the proportion of cytology slides within the 42 months preceding a high -grade/ invasive histological diagnosis, originally reported as negative, which on review are consistent with ASC-H or worse abnormality



ASC-H+ includes cytology interpretation codes ASH, HS1, HS2, SC, AIS AC1-5 or AG4-5 (see Appendix B – Bethesda 2001 New Zealand Modified).

Indicator 5.4 – Histology Reporting

Definition	The NCSP Register collects histology results of samples taken from the cervix and vagina. Histology samples include diagnostic biopsies, treatment biopsies, cervical polyps and the cervical tissue of total hysterectomy specimens. All histology samples taken during the current monitoring period were retrieved. Where a histology sample had more than one SNOMED code, or a woman had more than one histology result, the most serious (highest) ranked code was used (see Appendix C). Results are presented both according to the detailed SNOMED category, and by broader histology diagnostic category. The mapping between SNOMED codes and diagnostic category is detailed in Appendix C. Two versions of SNOMED are used by laboratories (1986 and 1993) depending on the laboratory software. The NCSP Register accepts both versions and for statistical purposes maps the 1986 codes to the 1993 codes. A woman's age is defined as her age at the end of the monitoring period (i.e. a woman's age at 31 December 2019). Where trends are shown, a woman's age is her age at the end of the 6-month period in which the result was reported.
Target	None
Current Situation	There were 12,636 histology samples taken during the current monitoring period. Of these, 478 (3.8%) were insufficient for diagnosis. These samples were taken from 474 women, 74 (15.6%) of whom have a record of a subsequent sufficient histology test. The remaining 12,158 samples were taken from 10,851 women. Results for these women are reported on in Table 7 to Table 10. Table 7 shows histology results by SNOMED category, based on the most serious (highest) ranked result for each woman in the monitoring period. Table 8 to Table 11 show histology results by broader histology diagnostic category. Among women with histology tests, 57.9% had negative or benign histology results (Table 8), 18.8% had high-grade squamous (CIN 2/3) histology results, and 73 women (0.67%) had adenocarcinoma in situ. There were 70 women (0.65%) with invasive squamous cell carcinoma (ISCC) histology, 5 (<0.05%) with microinvasive squamous cell carcinoma (SCC) histology and 50 (0.46%) with invasive adenocarcinoma; 18 (0.17%) were adenocarcinomas arising from the endocervix and 32 (0.29%) were adenocarcinomas not arising from the endocervix. There was one woman with adenosquamous carcinoma (<0.05%) as their most serious histology result.

	The age group with the largest number of women with histology samples was women aged 45-49 years (1,494 women, Table 9). Among women aged 20-69 years, the age group with the lowest rate of women with results which were negative was women aged 20-24 years (25.3%; Table 10). Histology samples were additionally analysed after excluding 2,267 women whose only histology result(s) originated from a hysterectomy (partial with cervical component or total hysterectomy) and were negative/ benign (non-neoplastic; Table 11). This represented approximately 36.1% of the women with negative/ benign histology. This reduced the proportion with a histology result being negative/ benign from 57.9% to 46.7% of all women with a histology sample. If negative/ benign histology is removed from the hysterectomy samples, the new proportion of HSIL or worse histological abnormalities becomes: 23.3% for CIN2/3, 0.82% for invasive squamous cell carcinoma (ISCC), 0.06% for microinvasive SCC, 0.85% for adenocarcinoma in situ and <0.05% for adenosquamous carcinoma (Table 11). The number of women with CIN 2/3 histology within the monitoring period was further explored as a rate per 1,000 women screened within the period (where a screening event included a cytology, histology or HPV event). There were 2,035 women with CIN 2/3 histology, corresponding to a rate of 10.6 women with CIN 2/3 histology per 1,000 women screened (age-standardised to the WHO population aged 20-69 years[12]). Among women aged 20-69, the rate of women with CIN 2/3 histology samples taken per 1,000 women screened was highest in women aged 30-34 (18.3 per 1,000 women screened) and lowest in women aged 65-69 years (2.3 per 1,000 women screened; Figure 66). By ethnicity, Māori women had the highest rates of CIN2/3 per 1,000 women screened (13.4 per 1,000 women screened) and Pacific women the lowest (7.1 per 1,000 women screened; age-standardised to WHO population aged 20-69 years; Table 63, Table 64). The differences in the rates of CIN2/3 per 1,000 women screened by ethnicity were greatest in younger women, with Māori and European/Other women aged 20-34 years tending to have higher rates than Pacific and Asian women that age (Figure 66).
Trends	The proportion of women with negative or benign histology (57.9%; or 46.7% if benign hysterectomy samples are excluded; Table 8, Table 11) is higher than in the previous period (55.5%; 45.2% if benign hysterectomy samples are excluded). The proportion of women with HSIL histology (18.8%) is lower than in the previous monitoring period (18.9 %). Excluding women whose only histology result(s) originated from a hysterectomy and were negative/ benign (non-neoplastic) the proportion of women with histological results of HSIL or worse were generally higher in the current monitoring period: invasive adenocarcinoma not arising from the endocervix is higher in the current monitoring period (0.35% to 0.37% in the current period), adenocarcinoma arising from the endocervix is higher (0.12% to 0.21% in the current period), adenocarcinoma in situ is higher (0.75% in the previous period and 0.85% in the current period), and the proportion of women with ISCC increased since the previous period (0.68% in the previous period and 0.82% in the current period) however, adenosqamous carcinoma is similar (<0.05%).

Longer term trends in detection of CIN 2/3 per 1,000 women screened are shown by ethnicity in Figure 67, and by age in Figure 68. Over this longer term, rates of CIN2/3 per 1,000 women screened have been decreasing in women aged 20-24 and 25-29, from the latter half of 2012 and early 2016, respectively (Figure 68). However there has been an increase in the detection of CIN 2/3 per 1,000 women screened in 20-24 year olds since the previous report. This may be a reflection of routine screening no longer being recommended for women aged less than 25 from November 2019.

Longer term trends by ethnicity are shown in Figure 69 for selected age groups (20-24 and 25-29), based on those ages which would include a proportion of women who have been vaccinated against HPV (cohorts offered vaccination would have been aged up to 29 in the current monitoring period). As for the results across all women aged 20-24 years, rates of CIN2/3 detection per 1,000 women screened increased in Māori, Asian, and European/Other women aged 20-24 years in the latter half of 2019 compared to the first half of 2019 (following a period of decreases in Māori and European/Other women this age since around Jul-Dec 2012). In women aged 25-29 years, there appears to have been a decline in detection of CIN2/3 per 1,000 women screened between Jul-Dec 2013 and the current monitoring period for Māori women, between Jul-Dec 2014 and the current monitoring period for Pacific women, and between Jul-Dec 2014 and the current monitoring period for European/ Other women. There is no clear trend for Asian women aged 25-29 years.

Comments

Histology samples include diagnostic biopsies, treatment biopsies, cervical polyps and the cervical tissue of total hysterectomy specimens. Histology samples may also include samples from non-cervical sites, where there is also a cervical component in the sample, for example endometrial samples. Also, pathologists are not always able to determine the site of origin particularly in small biopsies. “Adenocarcinoma not endocervical type” is the code that pathologists use for adenocarcinomas involving the cervix, but not primarily arising from the cervix. This means that the code category of “Adenocarcinoma endocervical type” should equate much more closely with data held on the Cancer Registry. In addition, it has been identified that the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, “invasive adenocarcinoma not endocervical type” may be over reported and “invasive adenocarcinoma endocervical type” under-reported in these laboratories. This is in the process of being corrected.

In the current report, an additional analysis was undertaken which excluded any samples which originated from a hysterectomy sample (partial with cervical component or total) which were negative/ benign. These supplementary results may more closely reflect the results of histology which were collected in relation to the NCSP.

Prior to Report 49, biannual monitoring reports examined trends in high grade abnormalities by looking at the rate of women with CIN 2/3 histology, as a

proportion of all women with histology; while trends in the more widely-used standard measure of CIN 2/3 histology per 1,000 women screened was included in Annual Reports (up to 2013). Since Report 49, this latter measure of examining trends in high-grade histological abnormalities has been brought across from the NCSP Annual Reports into the biannual monitoring reports. The previous measure has been included in this report in Figure 134, to allow comparison with earlier reports.

Earlier declines in CIN 2/3 histology per 1,000 women screened among women aged 20-24 and 25-29 years are consistent with the anticipated effect of HPV vaccination. In the current report, rates of CIN2/3 per 1,000 women aged 20-24 years have increased. Potentially this is a result of the increase in the recommended starting for routine screening from 20 to 25 years from November 2019, which would have affected two of the six months reported on here. There would likely be a bias to higher CIN2/3 detection rates in women aged 20-24 who continued to attend after the change, since women with a previous abnormality were generally recommended to continue to attend (for example, if they were under surveillance), whereas lower risk women in routine screening were no longer recommended to attend. This effect of women aged 20-24 years who are being screened tending to be a subgroup at higher risk of disease is likely to increase over time. As a result, while CIN2/3 detection rates per 1,000 women screened is still an important indicator that can be monitored regularly to look for the impact of HPV vaccination (and supplements proxy measures such as trends in genital warts, reported elsewhere[13]), the results in women aged 20-24 years will be a less useful going forward. Ecological measures such as this have played an important role in many countries in documenting the impact of HPV vaccination,[14] but have well-known limitations. Individual vaccination status is not available on the NCSP Register.

Table 7 - Histology results reporting by SNOMED category

SNOMED category	Women with that diagnosis	
	N	%
Negative/normal	3,436	31.7
Inflammation	773	7.1
Microglandular hyperplasia	17	0.16
Squamous metaplasia	300	2.8
Polyp	1,420	13.1
Other*	332	3.1
Atypia	53	0.49
Benign glandular atypia	-	-
HPV	599	5.5
Condyloma acuminatum	2	<0.05
CIN 1 (LSIL) or VAIN 1	1,602	14.8
Dysplasia/CIN NOS	32	0.29
Glandular dysplasia	2	<0.05
CIN 2 (HSIL) or VAIN 2	798	7.4
HSIL not otherwise specified	37	0.34
CIN 3 (HSIL) or VAIN 3	1,200	11.1
Adenocarcinoma in situ	73	0.67
Microinvasive squamous cell carcinoma	5	<0.05
Invasive squamous cell carcinoma	70	0.65
Adenocarcinoma endocervical type	18	0.17
Invasive adenocarcinoma (not endocervical type)	32	0.29
Adenosquamous carcinoma	1	<0.05
Undifferentiated carcinoma	2	<0.05
Sarcoma	-	-
Carcinosarcoma	4	<0.05
Choriocarcinoma	-	-
Miscellaneous primary tumour	3	<0.05
Metastatic tumour	25	0.23
Small cell carcinoma	-	-
Malignant tumour, small cell type	-	-
Melanoma	-	-
Other primary epithelial malignancy	15	0.14
Total	**10,851**	**100**

NOS = not otherwise specified; HSIL not otherwise specified = high-grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C)

** Other morphologic abnormality, not dysplastic or malignant.*

Note: the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, "invasive adenocarcinoma not endocervical type" may be over reported and "invasive adenocarcinoma endocervical type" under-reported in these laboratories.

Table 8 - Histology results reporting by diagnostic category

Histology category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	6,278	57.9
HPV	601	5.5
CIN1	1,687	15.5
Glandular dysplasia	2	<0.05
CIN2	798	7.4
HSIL not otherwise specified	37	0.34
CIN3	1,200	11.1
Adenocarcinoma in situ	73	0.67
Microinvasive	5	<0.05
Invasive squamous cell carcinoma	70	0.65
Adenocarcinoma endocervical type	18	0.17
Invasive adenocarcinoma (not endocervical type)	32	0.29
Adenosquamous carcinoma	1	<0.05
Other cancer	49	0.45
Total	**10,851**	**100.0**

Details of mapping between SNOMED category and diagnostic category are included in Appendix C. HSIL not otherwise specified = high-grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C). Note: the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, "invasive adenocarcinoma not endocervical type" may be over reported and "invasive adenocarcinoma endocervical type" under-reported in these laboratories.

Table 9 - Histology results by age – counts

Histology Diagnostic Category	Age group												
	<20	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**	**65-69**	**70+**	**Total**
Negative/benign (non-neoplastic)	17	250	419	516	615	829	1,138	839	620	444	282	309	6,278
HPV	1	97	106	85	74	50	51	43	42	22	23	7	601
CIN1	4	338	333	273	182	149	138	104	69	55	26	16	1,687
Glandular dysplasia	-	-	-	-	-	-	2	-	-	-	-	-	2
CIN2	3	168	165	157	89	75	47	31	31	15	10	7	798
HSIL not otherwise specified	-	6	12	10	6	1	-	-	-	1	1	-	37
CIN3	-	129	235	300	182	118	95	37	48	28	18	10	1,200
Adenocarcinoma in situ	-	1	8	25	17	6	10	1	3	1	-	1	73
Microinvasive	-	-	2	-	1	1	-	-	-	1	-	-	5
Invasive squamous cell carcinoma	-	1	4	10	14	9	7	3	5	7	3	7	70
Adenocarcinoma endocervical type	-	-	1	1	5	2	1	1	1	1	2	3	18
Invasive adenocarcinoma (not endocervical type)	-	-	-	2	2	2	2	3	5	2	2	12	32
Adenosquamous carcinoma	-	-	1	-	-	-	-	-	-	-	-	-	1
Other cancer	-	-	-	1	1	3	3	2	8	4	7	20	49
Total	**25**	**990**	**1,286**	**1,380**	**1,188**	**1,245**	**1,494**	**1,064**	**832**	**581**	**374**	**392**	**10,851**

HSIL not otherwise specified = high-grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C).
Note: the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, "invasive adenocarcinoma not endocervical type" may be over reported and "invasive adenocarcinoma endocervical type" under-reported in these laboratories.

Table 10 - Histology results by age – percentages

Histology Diagnostic Category	Age group											
	<20	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**	**65-69**	**70+**
Negative/benign (non-neoplastic)	68.0	25.3	32.6	37.4	51.8	66.6	76.2	78.9	74.5	76.4	75.4	78.8
HPV	4.0	9.8	8.2	6.2	6.2	4.0	3.4	4.0	5.0	3.8	6.1	1.8
CIN1	16.0	34.1	25.9	19.8	15.3	12.0	9.2	9.8	8.3	9.5	7.0	4.1
Glandular dysplasia	-	-	-	-	-	-	0.13	-	-	-	-	-
CIN2	12.0	17.0	12.8	11.4	7.5	6.0	3.1	2.9	3.7	2.6	2.7	1.8
HSIL not otherwise specified	-	0.61	0.93	0.72	0.51	0.08	-	-	-	0.17	0.27	-
CIN3	-	13.0	18.3	21.7	15.3	9.5	6.4	3.5	5.8	4.8	4.8	2.6
Adenocarcinoma in situ	-	0.10	0.6	1.8	1.43	0.48	0.67	0.09	0.36	0.17	-	0.26
Microinvasive	-	-	0.16	-	0.08	0.08	-	-	-	0.17	-	-
Invasive squamous cell carcinoma	-	0.10	0.31	0.72	1.18	0.72	0.47	0.28	0.60	1.20	0.8	1.8
Adenocarcinoma endocervical type	-	-	-	0.14	0.17	0.16	0.13	0.28	0.60	0.34	0.5	3.06
Invasive adenocarcinoma (not endocervical type)	-	-	0.08	0.07	0.42	0.16	0.07	0.09	0.12	0.2	0.53	0.8
Adenosquamous carcinoma	-	-	0.08	-	-	-	-	-	-	-	-	-
Other cancer	-	-	-	0.07	0.08	0.24	0.20	0.19	0.96	0.69	1.9	5.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

HSIL not otherwise specified = high-grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C).
Note: the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, "invasive adenocarcinoma not endocervical type" may be over reported and "invasive adenocarcinoma endocervical type" under-reported in these laboratories.

Table 11 - Histology results reporting by diagnostic category excluding samples from partial* or total hysterectomy specimens and where the result was negative/ benign.

Histology category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	4,011	46.7
HPV	601	7.0
CIN1	1,687	19.7
Glandular dysplasia	2	<0.05
CIN2	798	9.3
HSIL not otherwise specified	-	-
CIN3	1,200	14.0
Adenocarcinoma in situ	73	0.85
Microinvasive	5	0.06
Invasive squamous cell carcinoma	70	0.82
Adenocarcinoma endocervical type	18	0.21
Invasive adenocarcinoma (not endocervical type)	32	0.37
Adenosquamous carcinoma	1	<0.05
Other cancer	49	0.57
Total	**8,584**	**100.0**

**Partial with cervical component. Details of mapping between SNOMED category and diagnostic category are included in Appendix C. HSIL not otherwise specified = high-grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C). Results differ from those in Table 8 due to the exclusion of negative/ benign results from partial/ total hysterectomy samples.*

Note: the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, "invasive adenocarcinoma not endocervical type" may be over reported and "invasive adenocarcinoma endocervical type" under-reported in these laboratories.

Figure 66 - Rate of women with CIN 2/3 per 1,000 women screened, by age and ethnicity for the period National Cervical Screening Programme Monitoring Report Number 52

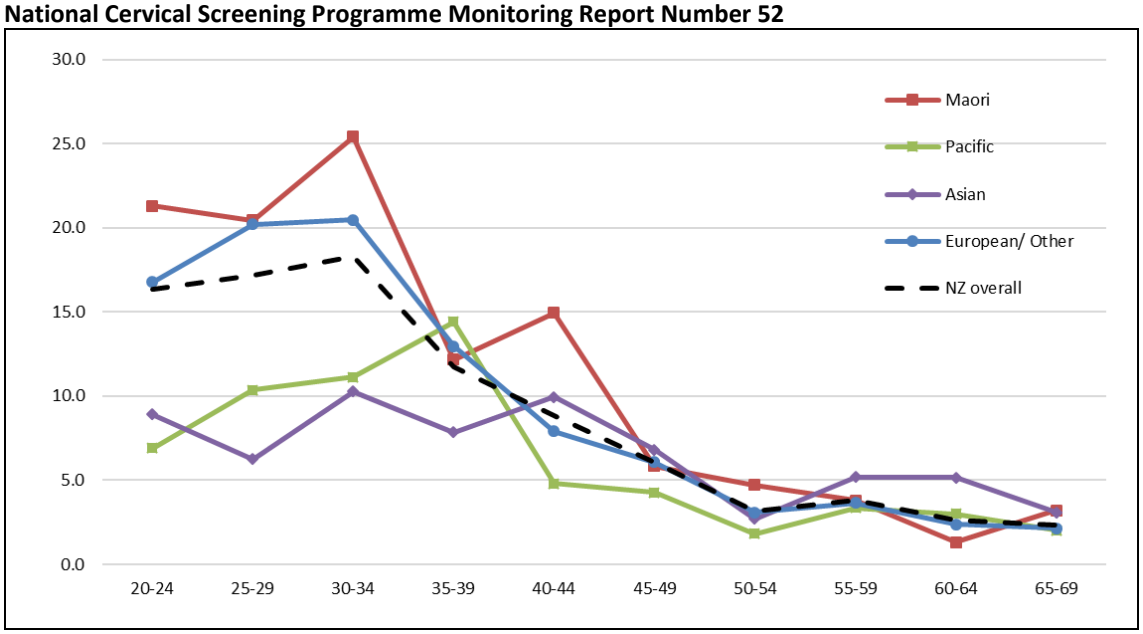
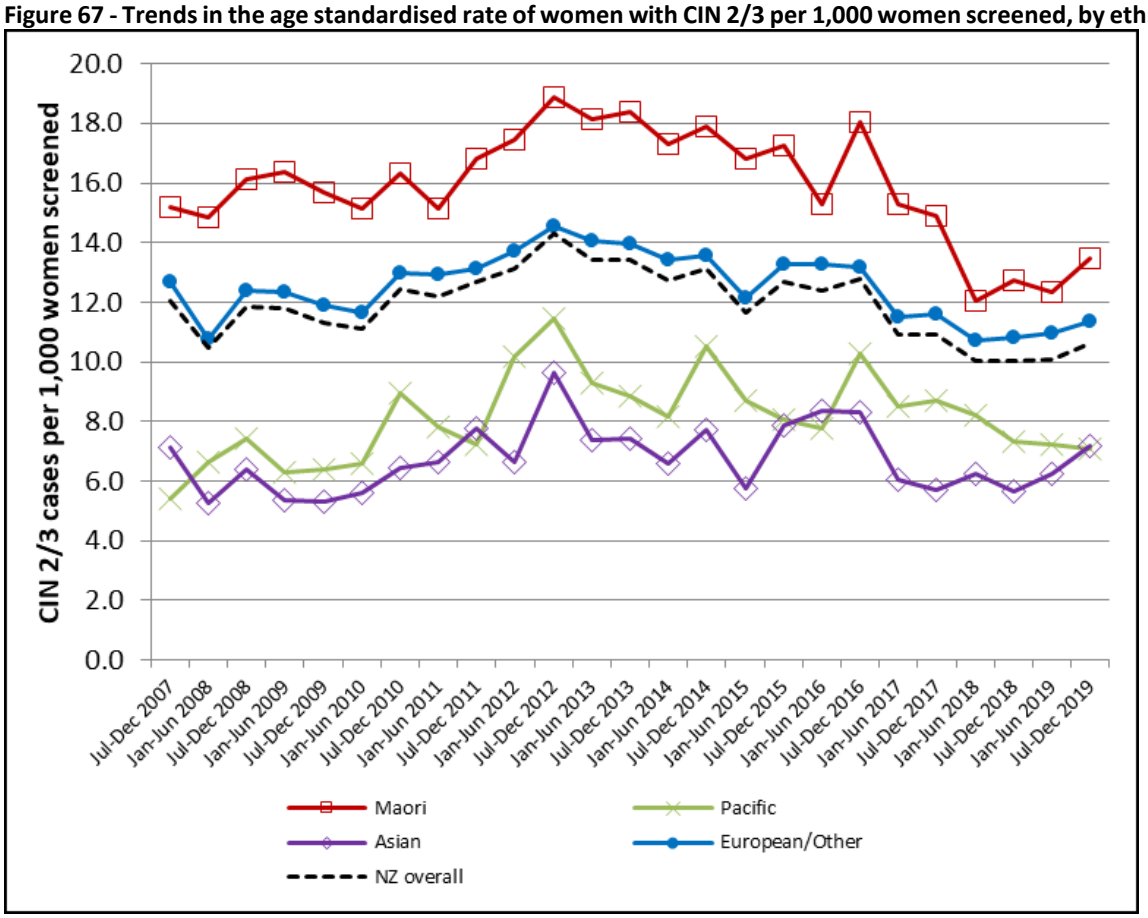


Figure 67 - Trends in the age standardised rate of women with CIN 2/3 per 1,000 women screened, by ethnicity



Age-standardised rate, standardised to the WHO population (ages 20-69 years)[12].

Figure 68 - Longer term trends in the rate of women with CIN 2/3 per 1,000 women screened, by age

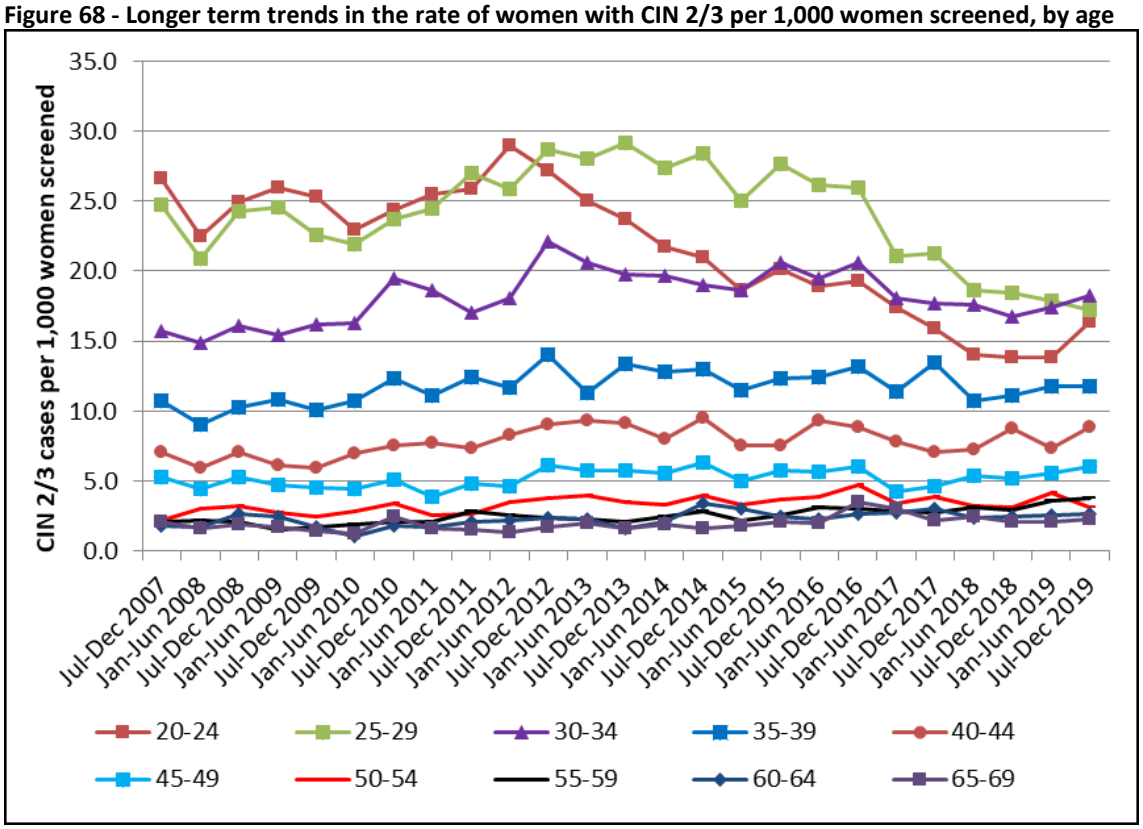
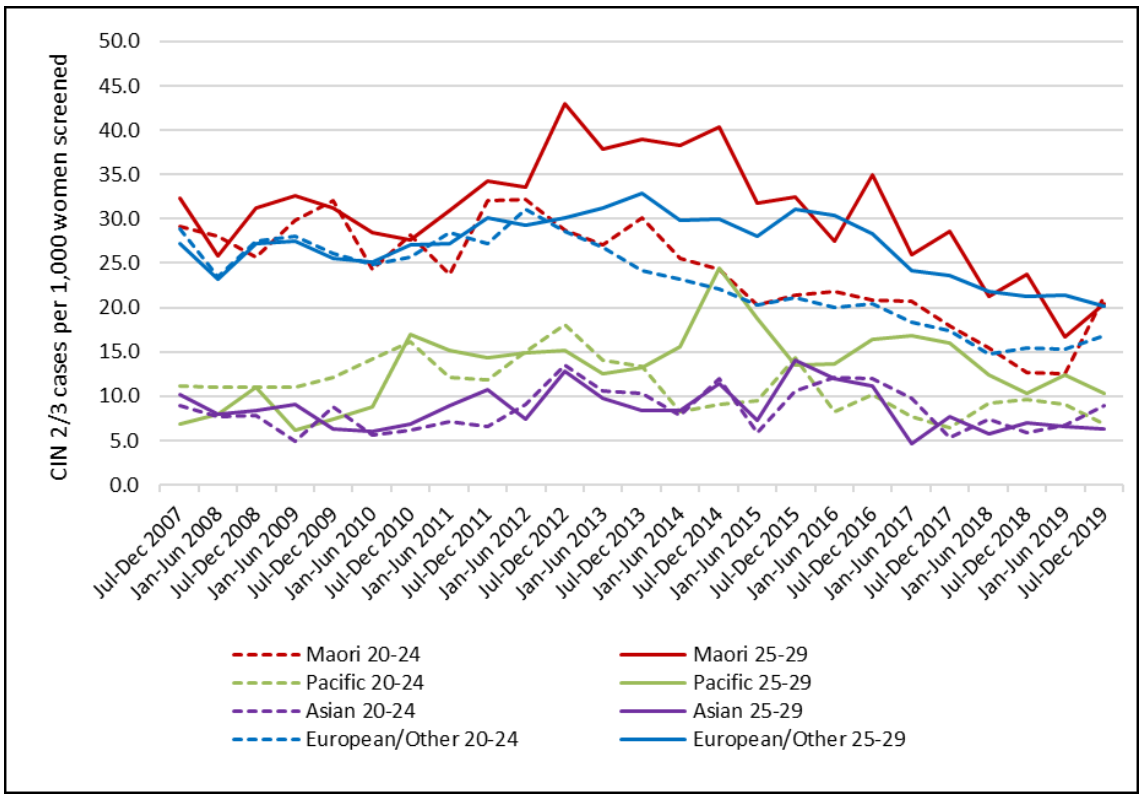


Figure 69 – Longer term trends in the rate of women with CIN 2/3 per 1,000 women screened, by ethnicity and selected ages



Indicator 5.5 - Laboratory turnaround times

Definition	Turnaround time is defined as the number of working days from the date a sample is received by a laboratory, and the date which it is reported to the sample taker (for cytology and hrHPV samples) or referring colposcopist (for histology samples). For the purposes of this measure, samples received and reported on the same day are defined as having a turnaround time of one day.
Target	***Cytology*** Laboratories are required to report 90% of final gynaecological cytology results to sample takers within seven working days of receipt of the sample and 98% within 15 working days (Standard 513[15]). ***Histology*** Laboratories are required to report 90% of final histology results to referring colposcopists within ten working days of receipt of the sample and 98% of final histology results within 15 working days of receiving the sample (Standard 516[15]). ***Cytology with associated hrHPV testing*** Laboratories are required to report 98% of final cytology test results (including those associated with HPV test) within 15 working days of receiving the sample. Here, the turnaround time is measured specifically for cytology where HPV testing is performed for low-grade triage. Low-grade triage is defined further in Indicator 8; here it relates to cytology samples *received at the laboratory* in the monitoring period (as opposed to *samples collected* in the period, in Indicator 8). It is restricted to triage testing of women aged 30 years or more. These samples form a subset of those considered in the overall measure of turnaround time for cytology. Note that since reporting of cytology with adjunctive hrHPV testing requires that both test results be reported together (hrHPV test results must not be issued independently when adjunct to a cytology request), the turnaround time of the hrHPV test should not exceed that of the accompanying cytology, except where the HPV test was added after cytology was already reported.
Current Situation	***Cytology*** Six laboratories received 210,149 cytology samples during the current monitoring period. Overall, 96.2% of cytology samples were reported on within seven working days, which is above the target of 90% (Table 66). Nationally, 99.3% were reported on within 15 working days, which meets the target of 98%. All six laboratories met the target for 90% of cytology samples to be reported to sample takers in seven working days or less (Figure 70, Table 66). All six laboratories also met the target of 98% of samples reported within 15 working days (Figure 71, Table 66).

Histology

Fourteen laboratories received 12,649 histology samples in the current monitoring period. Overall, 89.9% of samples were reported on within ten working days, which is below the target of 90%. Nationally 95.9% were reported on in 15 working days or less, which is below the target of 98% (Figure 70, Table 67). Five of the fourteen laboratories met the target of 90% of final histology results to referring colposcopists within ten working days of receipt of the sample (Medlab Central Ltd, Nelson Hospital Laboratory, Southern Community Labs Dunedin, Southern Community Labs Wellington, Taranaki Medlab; Figure 72). Six laboratories met the target of 98% of final histology results reported to the requestor within 15 working days of receiving the sample (Figure 73, Table 67). Seven of the remaining laboratories had reported on at least 95% of samples within 15 days (Figure 73, Table 67). The proportion of histology samples reported on within 15 days ranged from 81.0% (Northland DHB Laboratory) to 100.0% (Nelson Hospital Laboratory and Taranaki Medlab).

Low-grade cytology with associated HPV triage testing

Six laboratories received 2,990 cytology samples during the current monitoring period which were associated with HPV testing for the purpose of triage of low-grade abnormalities. Overall, 99.0% of these cytology samples were reported on within 15 working days, which meets the target of 98%. The proportion of cytology samples with HPV triage tests reported on within 15 days ranged from 94.4% (Canterbury Health Laboratories) to 99.6% (Pathlab; Figure 74, Table 68).

The target of 98% of tests reported within 15 working days was met by five of the six laboratories. Nationally, the proportion of cytology reported within 15 days for cytology associated with low-grade triage HPV testing (99.0%) was similar to the cytology reported overall (99.3%). At most laboratories, the proportion of cytology tests reported within 15 working days was similar regardless of whether there is an associated HPV triage test (Figure 74).

Trends

Cytology

The overall proportion of samples reported on within seven working days in the current report (96.2%) is higher than the proportion reported in the previous monitoring period (95.8%). All six laboratories met the target in this monitoring period which is higher than in the previous reporting period (five). The proportion of samples reported on within 15 working days was higher than in the previous monitoring period (99.3% compared to 98.8% in the previous monitoring period). All six laboratories met the target of reporting 98% of samples within 15 working days, which is two more than the previous report.

Histology

The proportion of histology samples reported on within ten working days is lower than in the previous report (from 91.0% to 89.9%). Five laboratories achieved the ten-working-days target in this monitoring period compared to nine in the last period. The proportion of histology samples reported on within 15 working days is lower than in the previous report (95.9%, compared to 96.2% in the previous report). Six laboratories met the target in this period compared to five in the previous report. In the current period, seven of the

fourteen laboratories had reported on at least 95% of samples within 15 days, compared to ten in the previous period.

Cytology with associated HPV triage testing
The proportion of cytology samples with an associated HPV triage test reported within 15 working days is higher than the previous report: from 98.9% to 99.0%.

Comments

Note that the total number of cytology samples reported on in this Indicator is different from that reported in Indicator 5.1, as the inclusion criteria for the current indicator was all cytology samples *received by laboratories* within the monitoring period, rather than cytology samples where the *specimen was collected* during the monitoring period, which is the criteria for Indicator 5.1.

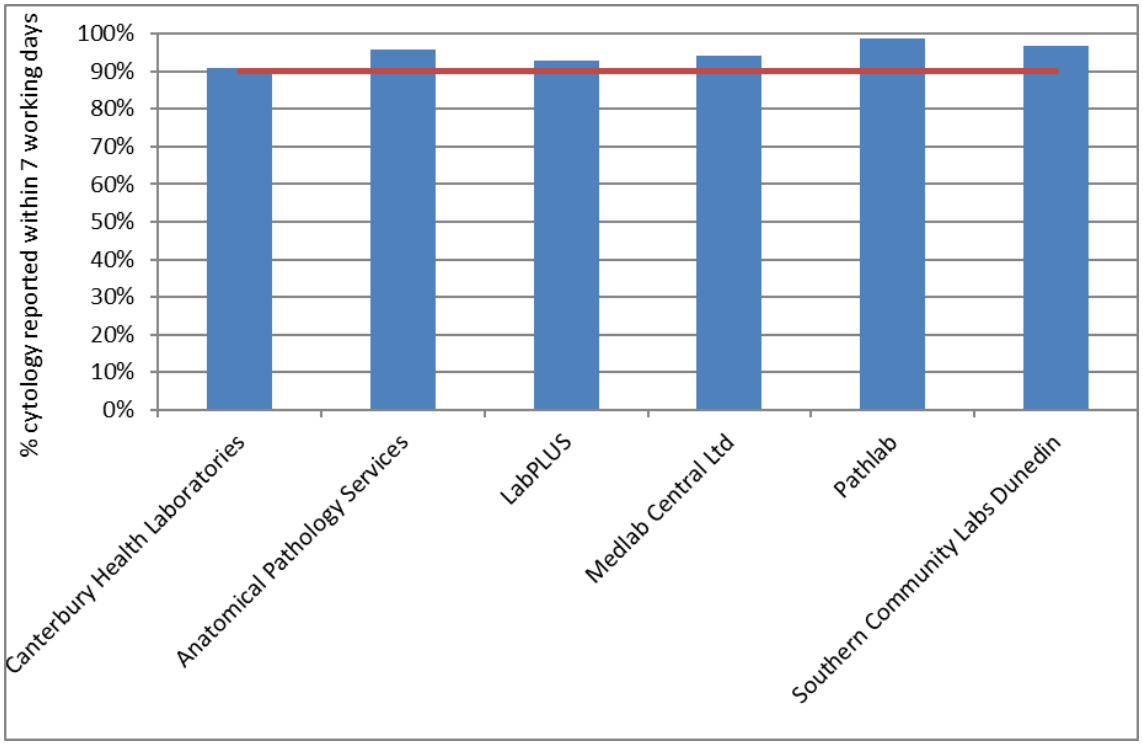
The definition used by individual laboratories for turnaround time differs. For example, depending on the definition used by the laboratory, a turnaround time of one day can mean the results are reported within 24 hours, on the same day the sample is received, or on the day after the sample is received. Therefore, we have applied the same definition to all laboratories in these calculations, but because of the variation between laboratories in their internal definition, it has not been possible in this report to use a definition here which is consistent with what each individual laboratory uses.

Turnaround time performance may be underestimated due to limitations in the report date recorded on the NCSP Register. When amended reports are sent to the NCSP Register, the report date in the NCSP Register is updated to reflect the date on which the report was re-transmitted after the amendments are made. The occurrence of these amended reports can therefore distort (and lengthen) turnaround time, as in these cases the report date recorded in the NCSP Register does not reflect the date on which results were first communicated to the sample taker or colposcopist. The extent of this cannot be directly determined from the NCSP Register, however audit results (which invariably find better turnaround time performance) suggest that it is a factor which should be considered in interpretation of these results.

There are some possible explanations why in some laboratories the turnaround time for cytology with associated HPV triage testing is longer than for other cytology. As the HPV triage test is performed in response to low-grade cytology results in a subset of women (those aged 30 years or more without a recent cytological abnormality), the need for the HPV test is only apparent after the cytology result is available. Additionally, as HPV tests are generally performed in batches, laboratories with smaller HPV test volumes may take longer to accrue the required batch sizes, and therefore perform HPV tests less frequently.

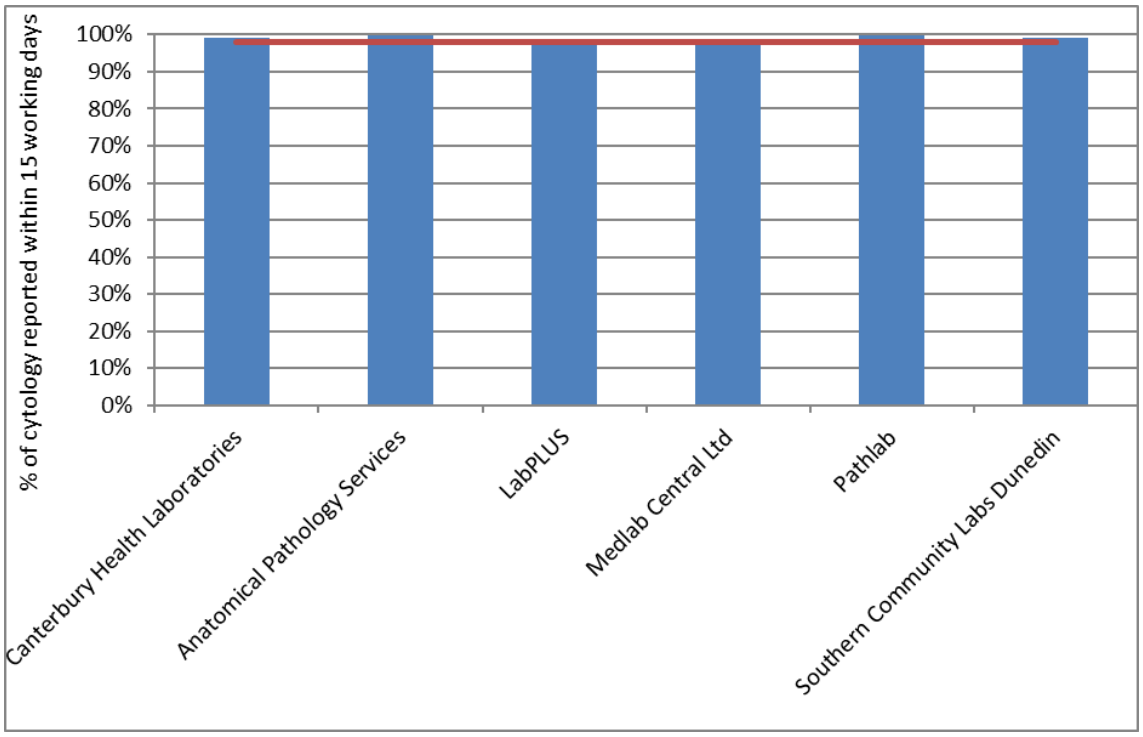
Caution must be taken when comparing percentages of reporting from this monitoring period to previous monitoring periods due to changes in the number of reporting laboratories. Differences in percentages from this and previous monitoring reports may be due to differences in caseloads.

Figure 70 - Proportion of cytology samples reported within seven working days by laboratory, Cancer Council NSW



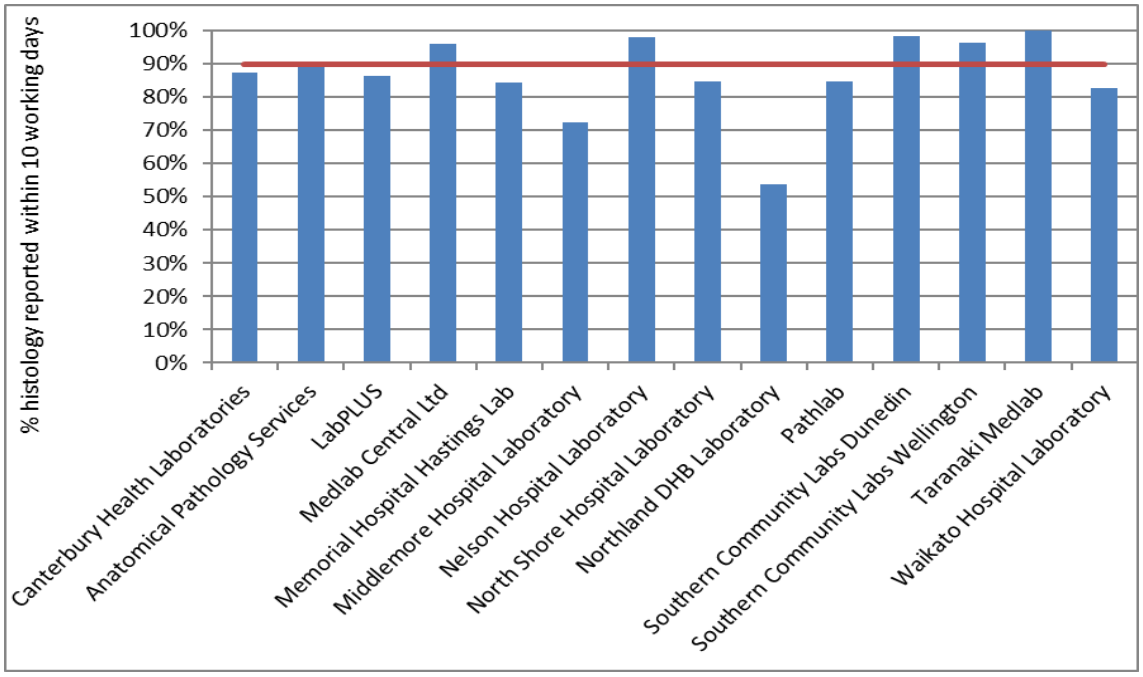
Target: 90% within seven working days (red line).

Figure 71 - Proportion of cytology samples reported within 15 working days by laboratory, Cancer Council NSW



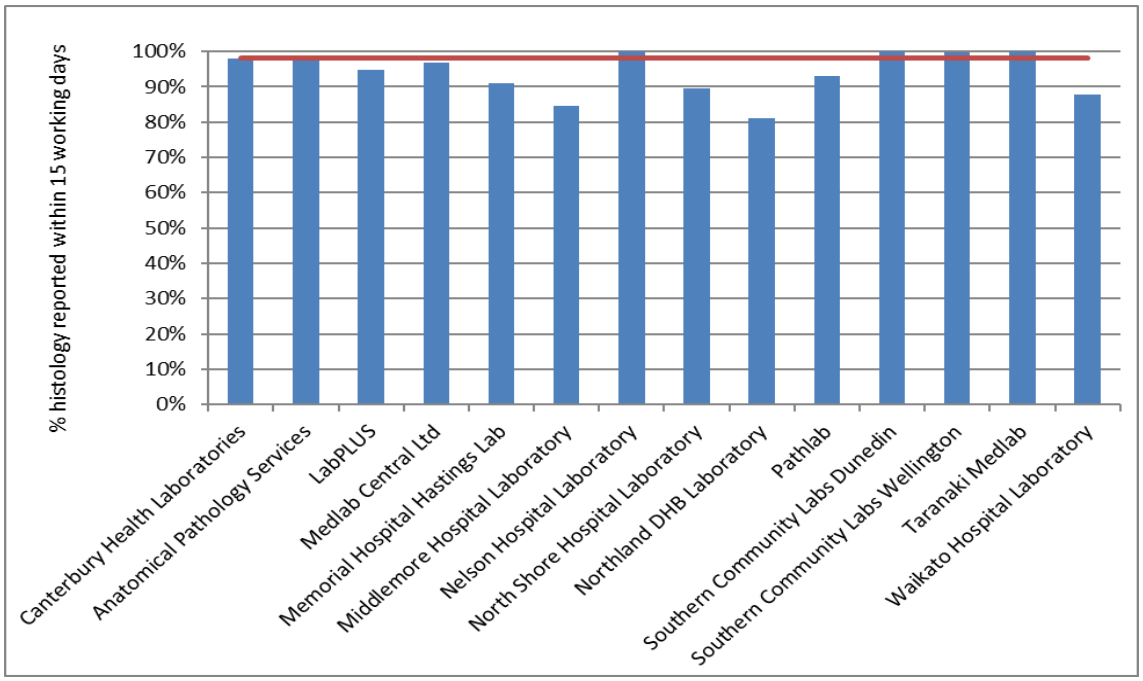
Target: 98% within 15 working days (red line).

Figure 72 - Proportion of histology samples reported within ten working days by laboratory, Cancer Council NSW



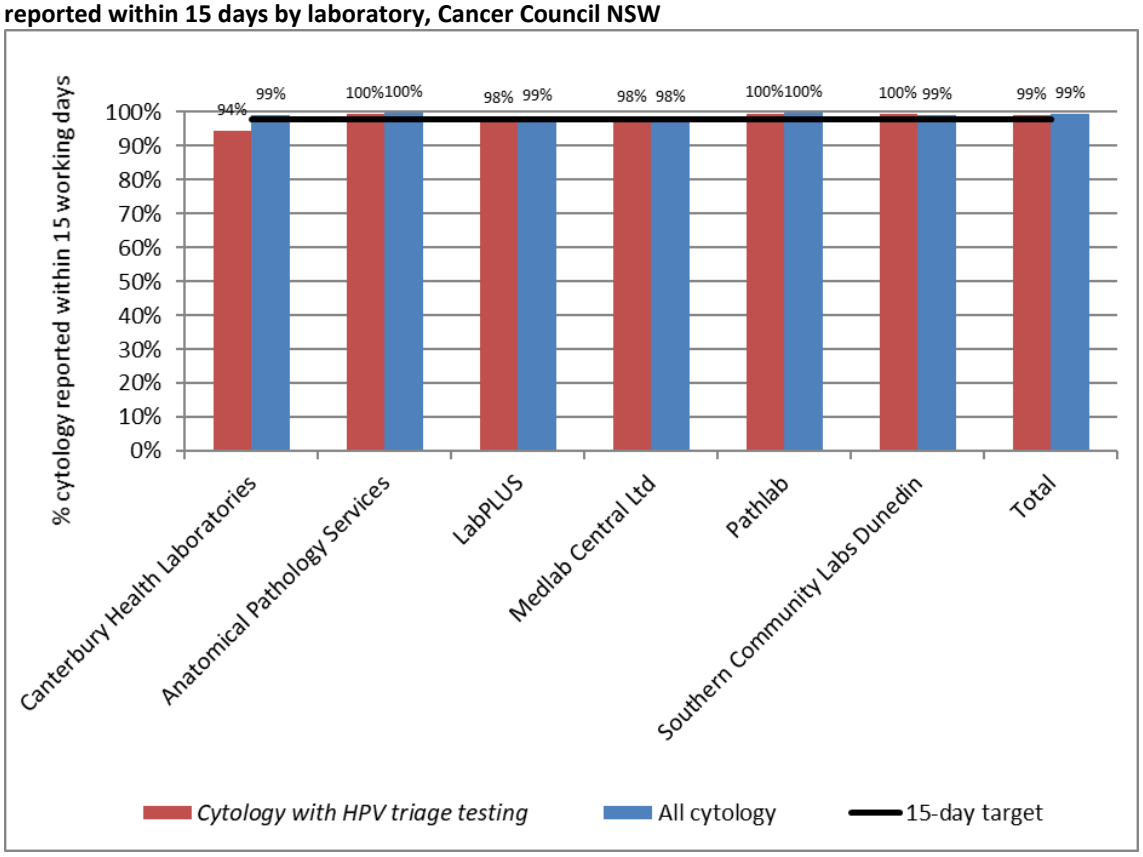
Target: 90% within ten working days (red line).

Figure 73 - Proportion of histology samples reported within 15 working days by laboratory, Cancer Council NSW



Target: 98% within 15 working days (red line).

Figure 74 - Proportion of cytology samples with associated HPV triage testing and of all cytology samples reported within 15 days by laboratory, Cancer Council NSW



Target: 98% within 15 working days (black line).

Indicator 6 – Follow-up women high-grade cytology, no histology

Definition

The proportion of women who have had a cervical sample showing a high-grade cytology result for whom a histological report has been received by the NCSP Register. This proportion is a measure of the completeness of follow-up of women with high-grade cytology.

Each woman with a high-grade cytology result, relating to a cytology sample taken in the six months preceding the current monitoring period (i.e. sample taken in the period of 1 January - 30 June 2019), is followed for any histology samples taken on or after the date of the cytology sample. The period of time between the cytology and histology reports relating to these samples is calculated. The proportion of women with a histology report up to and including 90 days after their cytology report is calculated. Histology reports which occur prior to the cytology report are included, as long as the histology sample was not taken before the cytology sample, to allow for differences in turnaround times between cytology and histology.

Analyses were also performed which calculated the proportion of women with a high-grade cytology result who have a histology report within 180 days of their cytology report.

For the purposes of this indicator, the following Bethesda 2001 (New Zealand modified; TBS 2001 NZ modified)[16] interpretation codes are included as high-grade cytology: ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5. Within this group, women are considered as having an urgent referral, due to suspicion of invasive disease if they have an interpretation code of HS2, SC, or AC1-AC5 and/or a recommendation code of R10 or R14.

High-grade cytology reports that indicated women were already under specialist management (TBS 2001 NZ modified recommendation code R13) are excluded. After these are excluded, follow-up of women who have more than one high-grade cytology sample is based on the first cytology sample collected in the period.

Note that some women may be assessed at colposcopy but have no biopsy taken. The colposcopy visit data for this group of women (Indicator 7.1) will supplement this indicator. An exploratory analysis was also performed here which calculated the proportion of women with high-grade cytology who had no follow-up test of any kind (including colposcopy, histology sample, HPV sample, or subsequent cytology sample) within 180 days.

Note that the Programme also attempts to facilitate the follow-up of all women with absent histology so that they may receive appropriate care where possible.

A woman's age is defined as her age at the end of the current monitoring period (i.e. A woman's age at 31 December 2019).

Target	90% of women should have a histology report within 90 days of their cytology report date. 99% of women should have a histology report within 180 days of their cytology report.
Current Situation	There were 3,105 high-grade cytology results relating to samples collected in the period 1 January - 30 June 2019; 1,166 of these cytology samples were collected at a colposcopy visit or the results indicated that a woman was already under specialist management. It was assumed that these results were already being followed up in the course of this management, and so the cytology tests were excluded from this measure. This left 1,939 cytology results, which related to 1,933 women. Histological follow-up for these 1,933 women is considered in this indicator. Where women had more than one high-grade cytology result relating to a sample taken in the period, histological follow-up of the earliest cytology sample taken in the period was assessed. ***Histological follow-up*** Nationally, 1,538 women (79.6%) had a histology report within 90 days of their cytology report, and 1,695 (87.7%) had a histology report within 180 days. These were below the targets of 90% within 90 days and 99% within 180 days. The proportion of women with a histology report varied by DHB from 43.8% (Counties Manukau) to 95.2% (Lakes) within 90 days of their cytology report, and from 77.3% (Counties Manukau) to 96.8% (Tairawhiti) within 180 days of their cytology report (Figure 75, Table 12). Three DHBs met the target for the proportion of women with histology within 90 days (Lakes, Tairawhiti, Whanganui). However, no DHBs met the target for 180 days. As shown in Table 12, some DHBs had a relatively small number of women with a high-grade cytology result recorded in the period (including West Coast with 9 women with a high-grade result), and this should be taken into account when interpreting these results. The proportion of women with a histology report also varied by age. Among women aged 20-69 years, the proportion varied from 45.7% (ages 60-64) to 90.7% (ages 30-34 years) within 90 days, with the target met for one age group (30-34 years). The target was not met in any age group for 180 days and ranged from 70.2% (ages 60-64 years) to 95.3% (ages 30-34 years) within 180 days (Table 13). There was some variation by ethnicity in the proportion of women with histological follow-up, however the targets were not met by any group of women. At 90 days, the proportion of women with histological follow-up ranged from 51.5% (Pacific women) to 82.3% (European/ Other women; Table 14). By 180 days, however, the difference had narrowed, and the proportion with histology reports ranged from 71.8% (Pacific women) to 89.1% (European/ Other women; Table 15). Further breakdown by DHB and ethnicity is also shown in

Table 14 and Table 15, and breakdown by DHB and age is shown in Table 69 and Table 70.

Among women with an urgent referral, due to a suspicion of invasive disease, (N=70), a histology report was available within 90 days for 68.6% of women and within 180 days for 81.4% of women (Table 16). Among the remaining women where there was no suspicion of invasive disease (TBS 2001 NZ modified Bethesda codes ASH, HS1, AG1-AG5, AIS), 80.0% had a histology report available within 90 days and 87.9% within 180 days.

Women with no follow-up tests

When follow-up tests of any kind (colposcopy, histology, HPV test, or subsequent cytology test) were considered, there were 223 women (11.5%) who had no record of any subsequent follow-up within 90 days and 121 women (6.3%) who had no record of any subsequent follow-up within 180 days on the NCSP Register (Table 17).

This varied by DHB, from no women without follow-up (Wairarapa and West Coast) to 45.4% (Counties Manukau) of women without a record of follow-up of some kind by 90 days, and from no women (Wairarapa and West Coast) to 17.3% (Counties Manukau) of women without a record of follow-up of some kind by 180 days (Figure 76, Table 17). Among the DHBs where there remained women without a record of follow-up at 90 days, the number remaining was generally small (ten or fewer women in 15 DHBs) but was larger in one DHB (Counties Manukau; 84 women, 45.4%). At 180 days, the number remaining without a record of follow-up was ten or fewer in 17 DHBs, with a maximum of 32 women (17.3%) without a record of follow-up, also in Counties Manukau.

The proportion of women who had no record of any subsequent follow-up also varied by ethnicity, from 8.3% (European/ Other women) to 40.8% (Pacific women) at 90 days and from 4.7% (European/ Other women) to 24.3% (Pacific women) at 180 days (Table 18, Figure 77).

Among women with an urgent referral, due to a suspicion of invasive disease, a follow-up test of some kind was available within 90 days for 72.9% of women and 78.6% within 180 days (Table 16). At 180 days, there remained fifteen women (21.4%) for whom no follow-up tests were recorded. Among women where there was no suspicion of invasive disease, 89.0% had a follow-up test report available within 90 days and 94.3% within 180 days (Table 16). At 180 days, there remained 106 women (5.7%) for whom no follow-up tests were recorded.

Trends

Histological follow-up

The proportion of women with a histology report within 90 days is lower than the previous monitoring period (from 81.2% to 79.6% in the current period). However, the proportion of women with a histology report within 180 days is similar (from 87.8% in the previous period to 87.7% in the current period).

While the proportion of women with histological follow-up at 90 days is lower overall and follow-up at 180 days is similar, this varies for individual DHBs (Figure 78, Figure 79). In eight DHBs the proportion of women with histological follow-up is higher at 90 days (Auckland, Canterbury, Hutt Valley, Lakes, Southern, Tairawhiti, Taranaki, Wairarapa) and in twelve it is lower. The proportion with histological follow-up is particularly low and has decreased noticeably in the current report for Counties Manukau. Consistent decreases have also been seen in at least two recent reports for Bay of Plenty and Hawkes Bay. At 180 days, the proportion of women with histological follow-up is higher in seven DHBs (Bay of Plenty, Hawke's Bay, Northland, Southern, Tairawhiti, Taranaki, Wairarapa), the same in one DHB (West Coast) and lower in the remaining DHBs.

The proportion of women with follow-up histology at 90 days in the current monitoring period is lower than the previous report for all four groups of women, but the difference is most marked for Pacific women (from 60.2% to 51.5%), compared to Māori women (from 82.1% to 80.4%), Asian women (from 77.3% to 74.9%) and European/ Other women (from 83.4% to 82.3%; Figure 80). The proportion of women with follow-up histology at 180 days is higher for Māori women (from 87.3% to 89.1%), lower for Pacific women (from 75.7% to 71.8%), higher for Asian women (from 84.4% to 84.9%), and lower for European/ Other women (from 89.5% to 89.1%; Figure 81). The proportions of women with follow-up histology are quite variable within individual DHBs when broken down by DHB and ethnicity, as the number of women with high-grade cytology generally becomes comparatively small when broken down in those categories (except in some cases such as for European/ Other women, and Māori women in a few DHBs).

As in previous reports, the proportion of women with histological follow-up varied substantially by age and is generally lower in women aged 50 years or more than in women younger than 50 years. Increases in the proportion of women with histological follow-up were seen in four of the ten age groups at 90 days follow-up, and in four age groups at 180 days (Figure 82, Figure 83). Decreases were seen in the five-year age groups 20-24, 30-34, 50-54 and 55-59 years at 90 days, and 20-24, 30-34, 40-44 and 50-54 years at 180 days. Follow-up at 90 days was substantially lower for women aged 60-64 years in this report, compared to the previous report (70.2% in the previous report; 45.7% in the current report).

Women with no follow-up tests

The proportion of women with no record of a follow-up test is higher than in the previous report at 90 days (from 10.9% to 11.5% in the current report), but the same at 180 days (6.3% in both reports).

Trends by DHB were complex (Figure 84, Figure 85), but the proportion of women with no follow-up test recorded at 180 days reduced in eleven of the twenty DHBs.

In the current monitoring period, the proportion of women for whom there was no follow-up test recorded is higher for Pacific women at 90 days (from

28.2% to 40.8%) and at 180 days (from 16.5% to 24.3%). For Māori women, it was higher, from 11.7% to 13.6% at 90 days, but lower at 180 days from 7.2% to 6.4%. For Asian women, it was higher, from 13.3% to 15.1% at 90 days, but lower at 180 days from 8.1% to 7.3%. For European/ Other women, it was lower, from 8.9% to 8.3% at 90 days, and at 180 days from 5.0% to 4.7%.

Comments

The proportion of women with a follow-up test of any kind provides useful additional information. While 20.4% of women with high-grade cytology reports had no record of a histology report within 90 days, the proportion without a record of a follow-up test of any kind was much lower (11.5%). The same was also true at 180 days, where 12.3% of women with high-grade cytology reports had no record of a histology report within 180 days, but the proportion without a record of a follow-up test of any kind was much lower (6.3%). Consistent with previous monitoring reports, many of the women with no follow-up histology recorded do have a record of some follow-up test. This provides reassurance that many women without histology have not been lost to follow-up.

The measure of whether or not there has been a follow-up test of any sort considers cytology, colposcopy, histology and HPV tests. Therefore, changes in women with a follow-up test of any kind may also reflect changes in the completeness of reporting colposcopy data to the NCSP Register. This is expected to be stable now that the time period of the data used to report on this indicator is after all DHBs began electronically reporting 2013 Colposcopy Standards data to the Register for the full reporting period.

Note that some women presenting with high grade glandular cytology or cancer may be referred directly to gynae-oncology and therefore follow-up not be recorded on the NCSP Register. Analyses undertaken for the related performance measure, Indicator 7.1, show that women with abnormal glandular results consistent with adenocarcinoma (Bethesda codes AC1-5) were less likely to have a colposcopy referral recorded than other women with cytological suspicion of invasive disease (Table 74). While these represent a small number of women in absolute terms, they are potentially a noticeable proportion of the women with an urgent referral (for example, the six women with no follow-up within 180 days). This may have contributed to the lower rates of follow-up recorded for women with an urgent referral due to a suspicion of invasive disease.

Note that while all *cytology results* which indicated that a woman was under specialist management were excluded from the measure of follow-up, not all *women* who had these cytology results were. If all cytology results for a woman indicated that she was under specialist management, she was excluded. However, any woman with at least one high-grade cytology result which did *not* indicate that she was under specialist management was included in the group in whom histological follow-up was measured. It was assumed that any high-grade cytology result without this indication should have been followed up in some way, regardless of other cytology results in the period. All of the

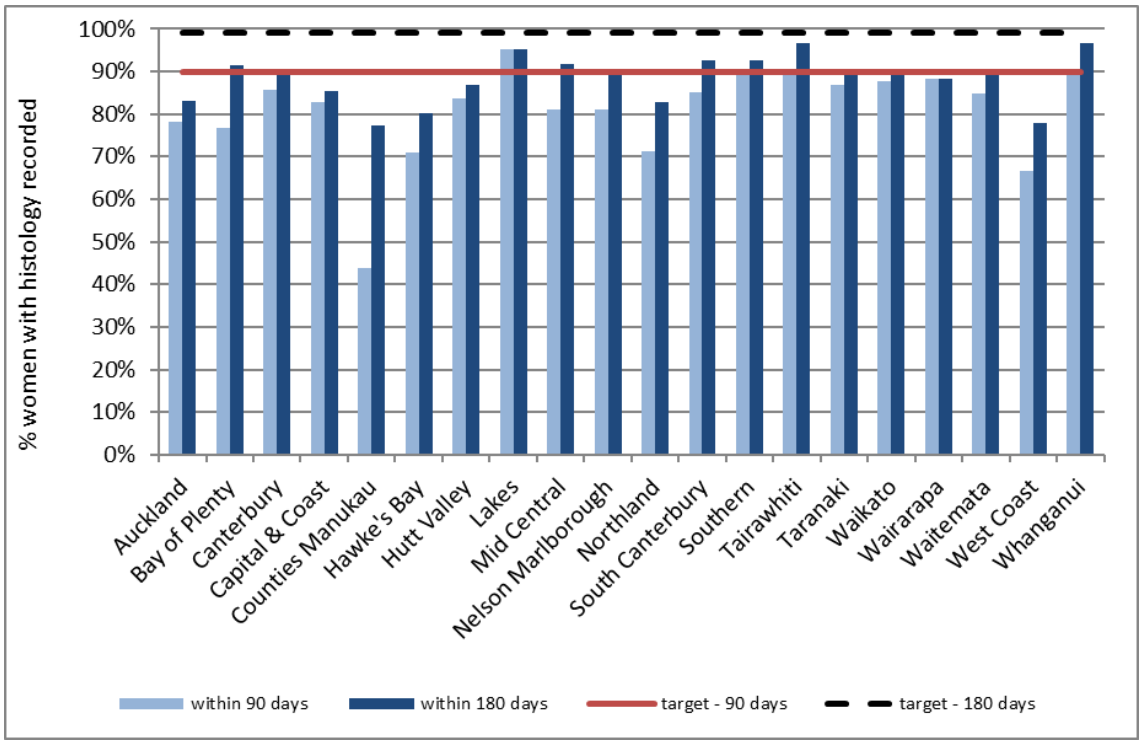
cytology tests selected for follow-up indicated that referral or further assessment was recommended.

The risk level for women with no recorded biopsy is difficult to ascertain because a lack of histology can be due to a number of reasons, including:

i) examined but no biopsy taken,
ii) did not attend (DNA) or refusal to attend
iii) wait time issue
iv) died or left New Zealand

Risk is also related to the degree of abnormality including microinvasive/ invasive carcinoma. Women who do not or refuse to attend are at highest risk due to no colposcopic examination. Due to the significant risk for this group of women if not followed up, NCSP Portfolio Managers ensure that priority is given to follow-up of these women through DHBs.

Figure 75 - Proportion of women (ages 20-69) with a histology report within 90 days, and within 180 days of their high-grade cytology report, by DHB



Target: 90% within 90 days; 99% within 180 days.

Table 12 - Women with a histology report within 90 and 180 days of a high-grade cytology report, by DHB

DHB	High-grade cytology	Follow-up histology within 90 days		Follow-up histology within 180 days	
	N	N	%	N	%
Auckland	220	172	78.2	183	83.2
Bay of Plenty	82	63	76.8	75	91.5
Canterbury	222	190	85.6	201	90.5
Capital & Coast	117	97	82.9	100	85.5
Counties Manukau	185	81	43.8	143	77.3
Hawke's Bay	76	54	71.1	61	80.3
Hutt Valley	61	51	83.6	53	86.9
Lakes	42	40	95.2	40	95.2
Mid Central	84	68	81.0	77	91.7
Nelson Marlborough	53	43	81.1	48	90.6
Northland	52	37	71.2	43	82.7
South Canterbury	27	23	85.2	25	92.6
Southern	161	144	89.4	149	92.5
Tairawhiti	31	28	90.3	30	96.8
Taranaki	61	53	86.9	55	90.2
Waikato	147	129	87.8	133	90.5
Wairarapa	17	15	88.2	15	88.2
Waitemata	256	217	84.8	228	89.1
West Coast	9	6	66.7	7	77.8
Whanganui	30	27	90.0	29	96.7
Total	**1,933**	**1,538**	**79.6**	**1,695**	**87.7**

Table 13 - Women with a histology report within 90 and 180 days of a high-grade cytology report, by age

Age (years)	High-grade cytology	Follow-Up histology Within 90 days		Follow-up histology Within 180 days	
	N	N	%	N	%
<20	1	0	0.0	0	0.0
20-24	245	207	84.5	229	93.5
25-29	353	291	82.4	313	88.7
30-34	364	330	90.7	347	95.3
35-39	249	212	85.1	229	92.0
40-44	155	132	85.2	143	92.3
45-49	151	109	72.2	125	82.8
50-54	104	75	72.1	85	81.7
55-59	127	87	68.5	96	75.6
60-64	94	43	45.7	66	70.2
65-69	50	31	62.0	37	74.0
70+	40	21	52.5	25	62.5
Total	**1,933**	**1,538**	**79.6**	**1,695**	**87.7**

Table 14 - Women with a histology report within 90 days of a high-grade cytology report, by DHB and ethnicity

DHB	Māori		Pacific		Asian		European/ Other	
	N	%	N	%	N	%	N	%
Auckland	10	71.4	7	43.8	45	75.0	110	84.6
Bay of Plenty	11	78.6	1	33.3	4	80.0	47	78.3
Canterbury	16	80.0	2	100.0	4	80.0	168	86.2
Capital & Coast	9	90.0	6	85.7	6	60.0	76	84.4
Counties Manukau	14	48.3	13	31.0	16	45.7	38	48.1
Hawke's Bay	10	62.5	1	100.0	4	66.7	39	73.6
Hutt Valley	11	91.7	2	100.0	7	87.5	31	79.5
Lakes	7	87.5	1	100.0	3	100.0	29	96.7
Mid Central	10	83.3	3	100.0	5	83.3	50	79.4
Nelson Marlborough	3	75.0	1	100.0	3	100.0	36	80.0
Northland	11	100.0	-	-	2	100.0	24	61.5
South Canterbury	1	50.0	-	-	1	50.0	21	91.3
Southern	12	92.3	3	60.0	4	100.0	125	89.9
Tairawhiti	12	85.7	-	-	-	-	16	94.1
Taranaki	10	90.9	-	-	1	100.0	42	85.7
Waikato	36	87.8	2	66.7	8	80.0	83	89.2
Wairarapa	4	80.0	-	-	-	-	11	91.7
Waitemata	15	83.3	10	66.7	50	86.2	142	86.1
West Coast	1	100.0	0	0.0	-	-	5	71.4
Whanganui	10	100.0	1	100.0	1	100.0	15	83.3
Total	**213**	**80.4**	**53**	**51.5**	**164**	**74.9**	**1,108**	**82.3**

'– ' indicates there were no women in this sub-category with a high-grade cytology report.

Table 15 - Women with a histology report within 180 days of a high-grade cytology report, by DHB and ethnicity

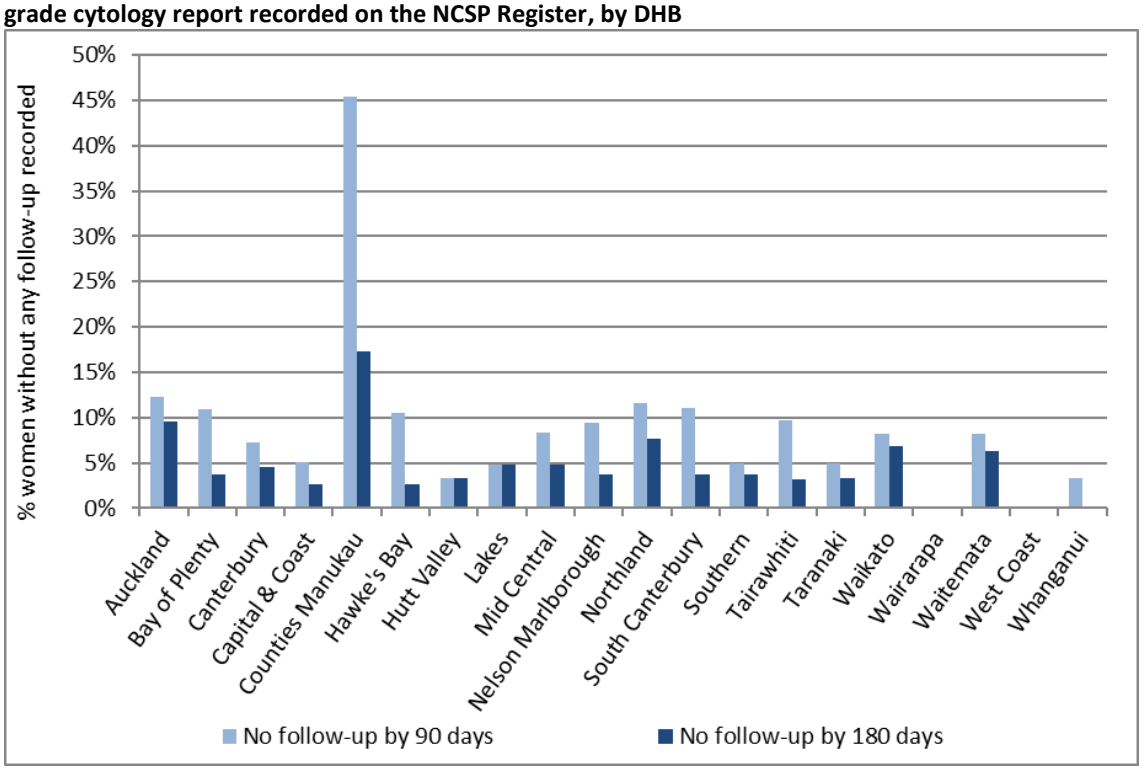
DHB	Māori		Pacific		Asian		European/ Other	
	N	%	N	%	N	%	N	%
Auckland	10	71.4	8	50.0	49	81.7	116	89.2
Bay of Plenty	14	100.0	3	100.0	5	100.0	53	88.3
Canterbury	17	85.0	2	100.0	5	100.0	177	90.8
Capital & Coast	9	90.0	6	85.7	7	70.0	78	86.7
Counties Manukau	24	82.8	26	61.9	26	74.3	67	84.8
Hawke's Bay	11	68.8	1	100.0	6	100.0	43	81.1
Hutt Valley	12	100.0	2	100.0	7	87.5	32	82.1
Lakes	7	87.5	1	100.0	3	100.0	29	96.7
Mid Central	12	100.0	3	100.0	5	83.3	57	90.5
Nelson Marlborough	3	75.0	1	100.0	3	100.0	41	91.1
Northland	11	100.0	-	-	2	100.0	30	76.9
South Canterbury	1	50.0	-	-	2	100.0	22	95.7
Southern	12	92.3	4	80.0	4	100.0	129	92.8
Tairawhiti	14	100.0	-	-	-	-	16	94.1
Taranaki	11	100.0	-	-	1	100.0	43	87.8
Waikato	37	90.2	3	100.0	8	80.0	85	91.4
Wairarapa	4	80.0	-	-	-	-	11	91.7
Waitemata	16	88.9	12	80.0	52	89.7	148	89.7
West Coast	1	100.0	1	100.0	-	-	5	71.4
Whanganui	10	100.0	1	100.0	1	100.0	17	94.4
Total	**236**	**89.1**	**74**	**71.8**	**186**	**84.9**	**1199**	**89.1**

'– ' indicates there were no women in this sub-category with a high-grade cytology report.

Table 16 - Women with high-grade cytology who have follow-up within 90 and 180 days recorded on the NCSP Register, by urgency of referral and type of follow-up

	Urgent referral (HS2, SC, AC1-AC5)		No suspicion of invasion (ASH, HS1, AG1-AG5, AIS)	
	N	%	N	%
Follow-up within 90 days				
- histology	48	68.6	1,490	80.0
- any follow-up	51	72.9	1,659	89.0
- no follow-up	19	27.1	204	11.0
Follow-up within 180 days				
- histology	57	81.4	1,638	87.9
- any follow-up	55	78.6	1,757	94.3
- no follow-up	15	21.4	106	5.7

Figure 76 - Proportion of women without any follow-up test within 90 days and within 180 days of a high-grade cytology report recorded on the NCSP Register, by DHB



There were no women without follow-up recorded within 180 days in Wairarapa, West Coast and Whanganui.

Figure 77 - Proportion of women without any follow-up test within 90 days and within 180 days of a high-grade cytology report recorded on the NCSP Register, by ethnicity

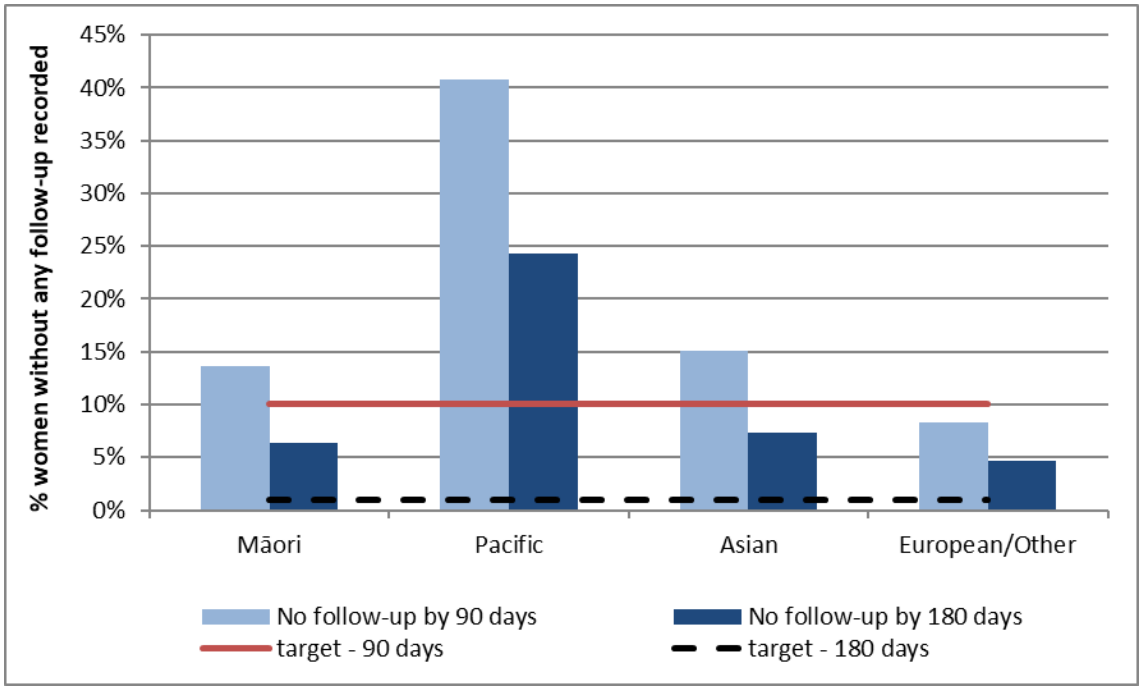


Table 17 - Women without any follow-up test within 90 and 180 days of a high-grade cytology report recorded on the NCSP Register, by DHB

DHB	High-grade cytology	Without a follow-up test by 90 days		Without a follow-up test by 180 days	
	N	N	%	N	%
Auckland	220	27	12.3	21	9.5
Bay of Plenty	82	9	11.0	3	3.7
Canterbury	222	16	7.2	10	4.5
Capital & Coast	117	6	5.1	3	2.6
Counties Manukau	185	84	45.4	32	17.3
Hawke's Bay	76	8	10.5	2	2.6
Hutt Valley	61	2	3.3	2	3.3
Lakes	42	2	4.8	2	4.8
Mid Central	84	7	8.3	4	4.8
Nelson Marlborough	53	5	9.4	2	3.8
Northland	52	6	11.5	4	7.7
South Canterbury	27	3	11.1	1	3.7
Southern	161	8	5.0	6	3.7
Tairawhiti	31	3	9.7	1	3.2
Taranaki	61	3	4.9	2	3.3
Waikato	147	12	8.2	10	6.8
Wairarapa	17	-	0.0	-	0.0
Waitemata	256	21	8.2	16	6.3
West Coast	9	-	0.0	-	0.0
Whanganui	30	1	3.3	-	0.0
Unspecified	-	-		-	
Total	**1,933**	**223**	**11.5**	**121**	**6.3**

'– ' indicates there were no women in this sub-category with a high-grade cytology report.

Table 18 - Women without any follow-up test within 180 days of a high-grade cytology report recorded on the NCSP Register, by ethnicity

Ethnicity	High-grade cytology	Without follow-up by 90 days		Without follow-up by 180 days	
	N	N	%	N	%
Māori	265	36	13.6	17	6.4
Pacific	103	42	40.8	25	24.3
Asian	219	33	15.1	16	7.3
European/ Other	1,346	112	8.3	63	4.7
Total	**1,933**	**223**	**11.5**	**121**	**6.3**

Figure 78 – Trends in the proportion of women with high-grade cytology who have follow-up within 90 days recorded on the NCSP Register, by DHB

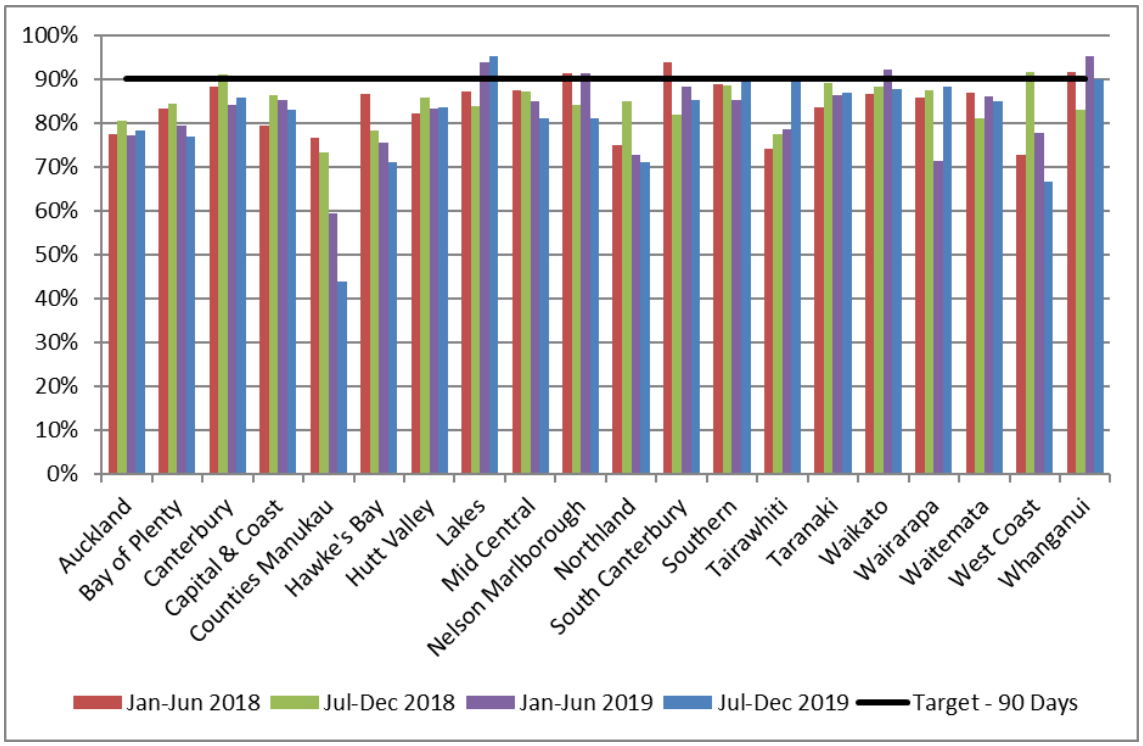


Figure 79 – Trends in the proportion of women with high-grade cytology who have follow-up within 180 days recorded on the NCSP Register, by DHB

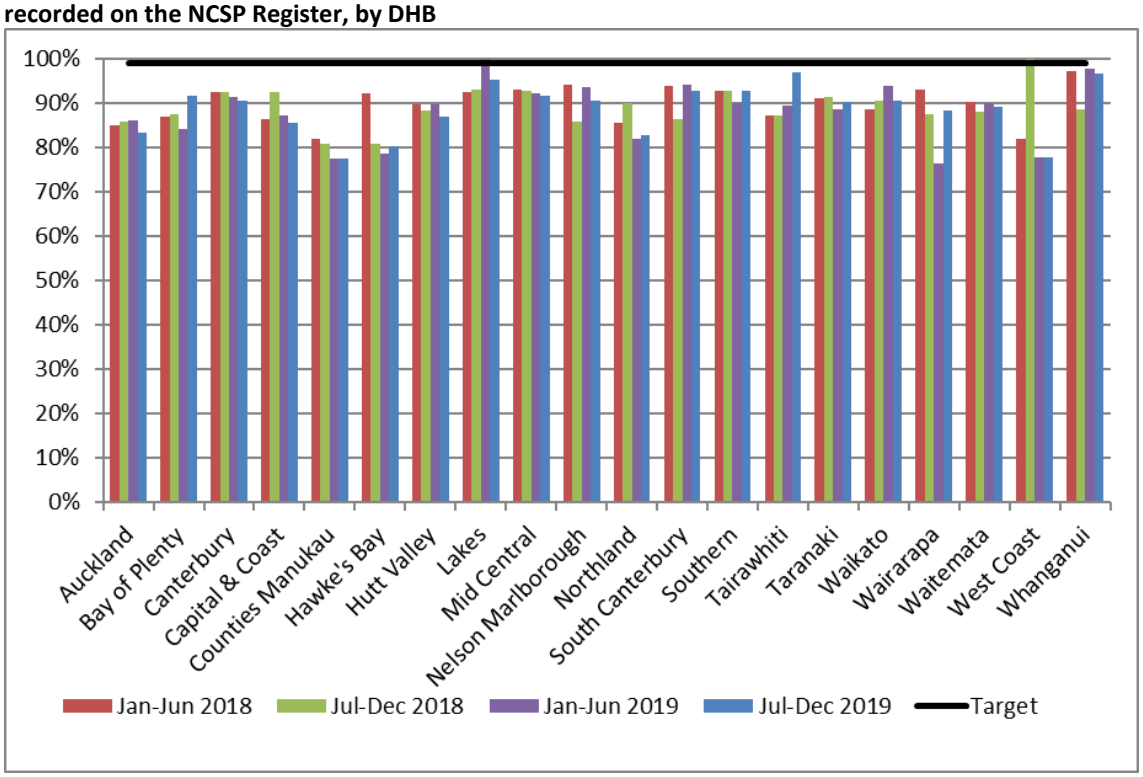


Figure 80 - Trends in the proportion of women with high-grade cytology who have follow-up within 90 days recorded on the NCSP Register, by ethnicity

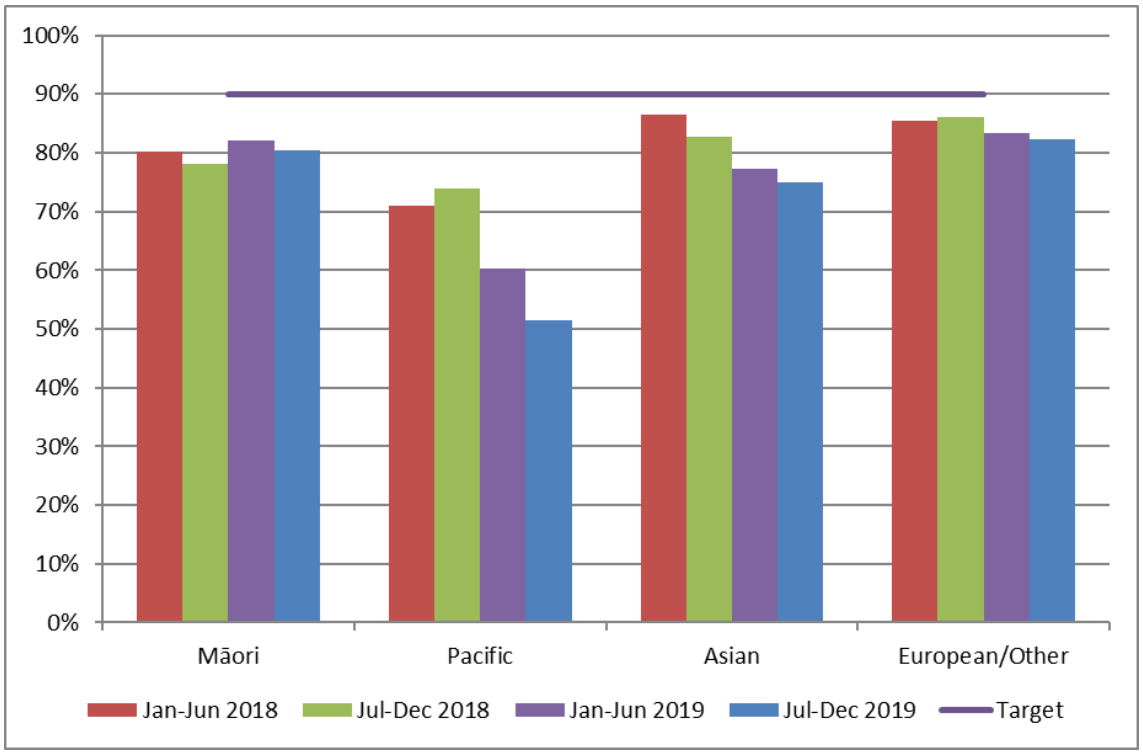


Figure 81 - Trends in the proportion of women with high-grade cytology who have follow-up within 180 days recorded on the NCSP Register, by ethnicity

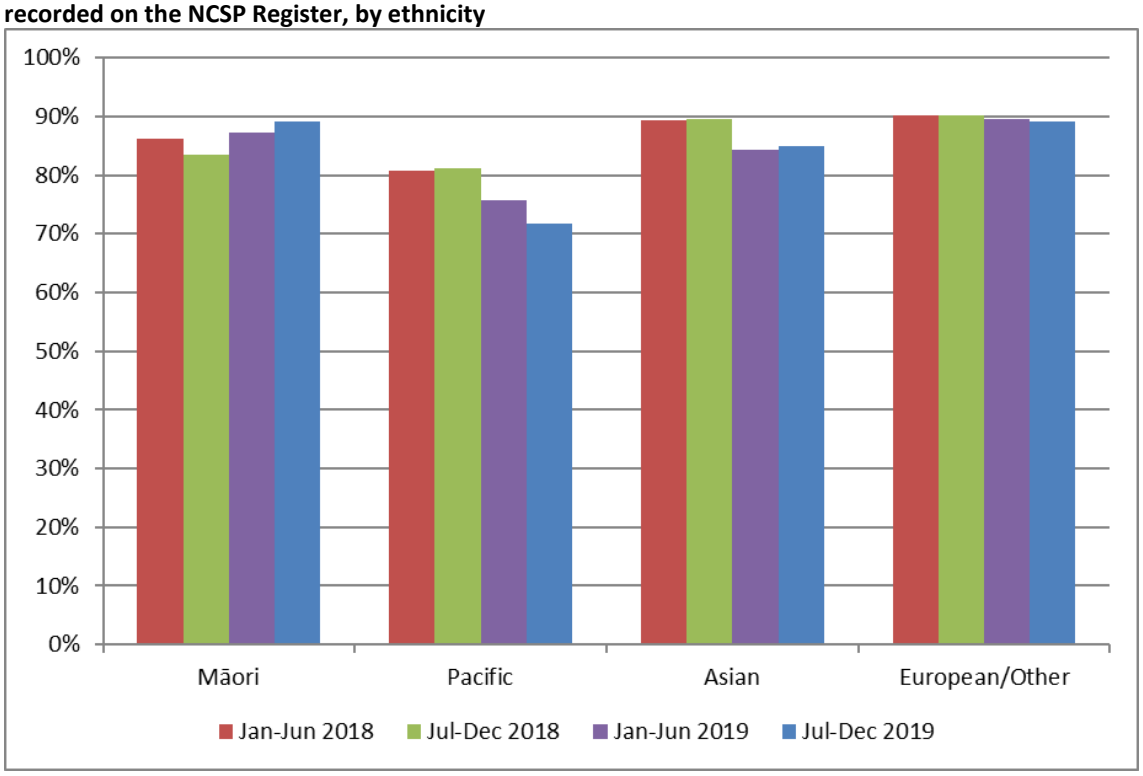


Figure 82 - Trends in the proportion of women with high-grade cytology who have follow-up within 90 days recorded on the NCSP Register, by age group

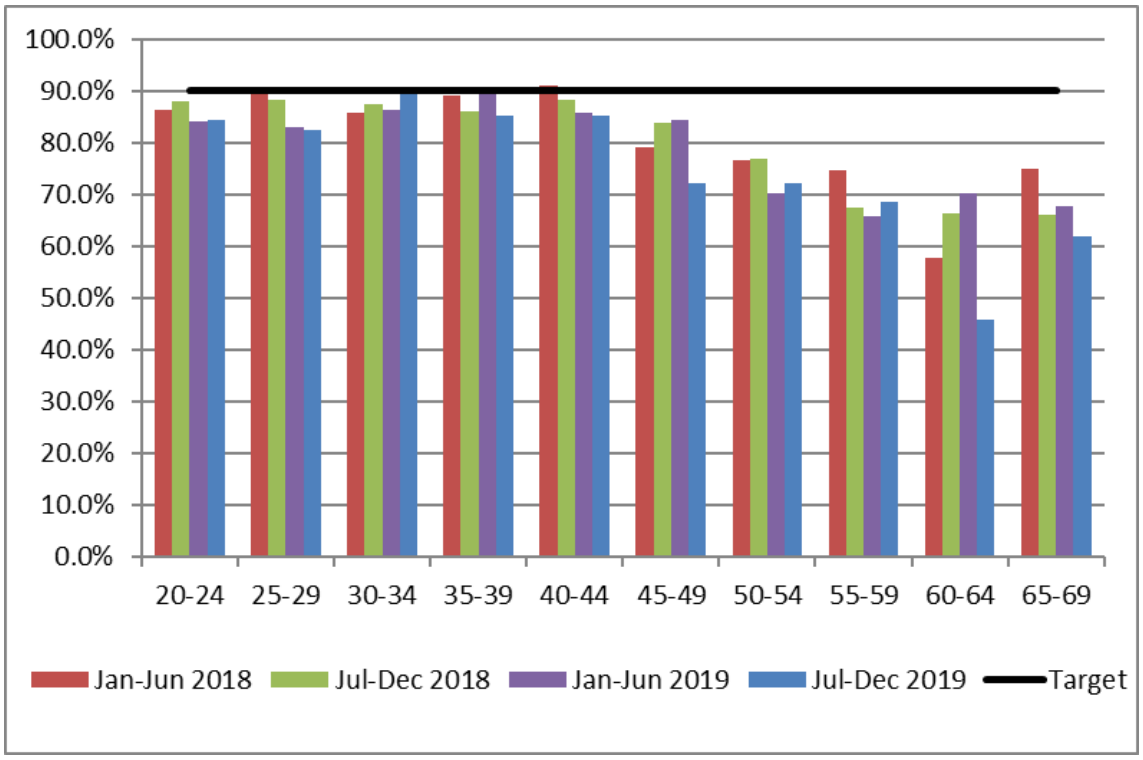


Figure 83 - Trends in the proportion of women with high-grade cytology who have follow-up within 180 days recorded on the NCSP Register, by age group

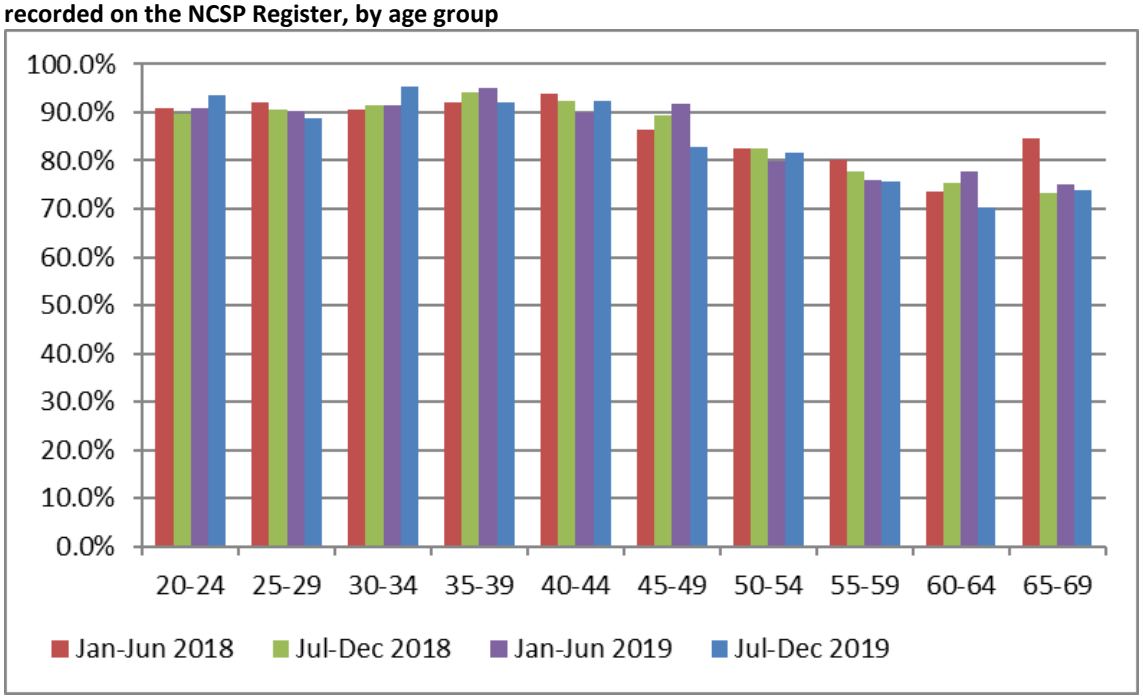


Figure 84 - Trends in the proportion of women with high-grade cytology who have no follow-up within 90 days recorded on the NCSP Register, by DHB

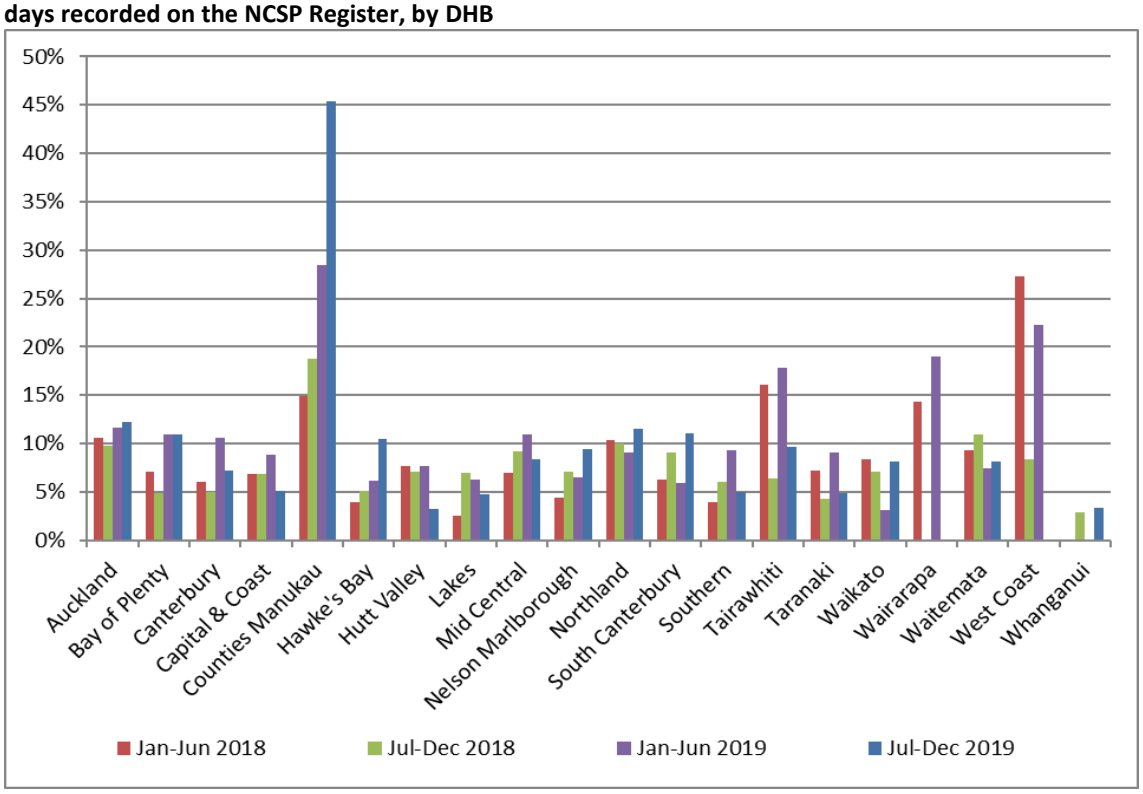
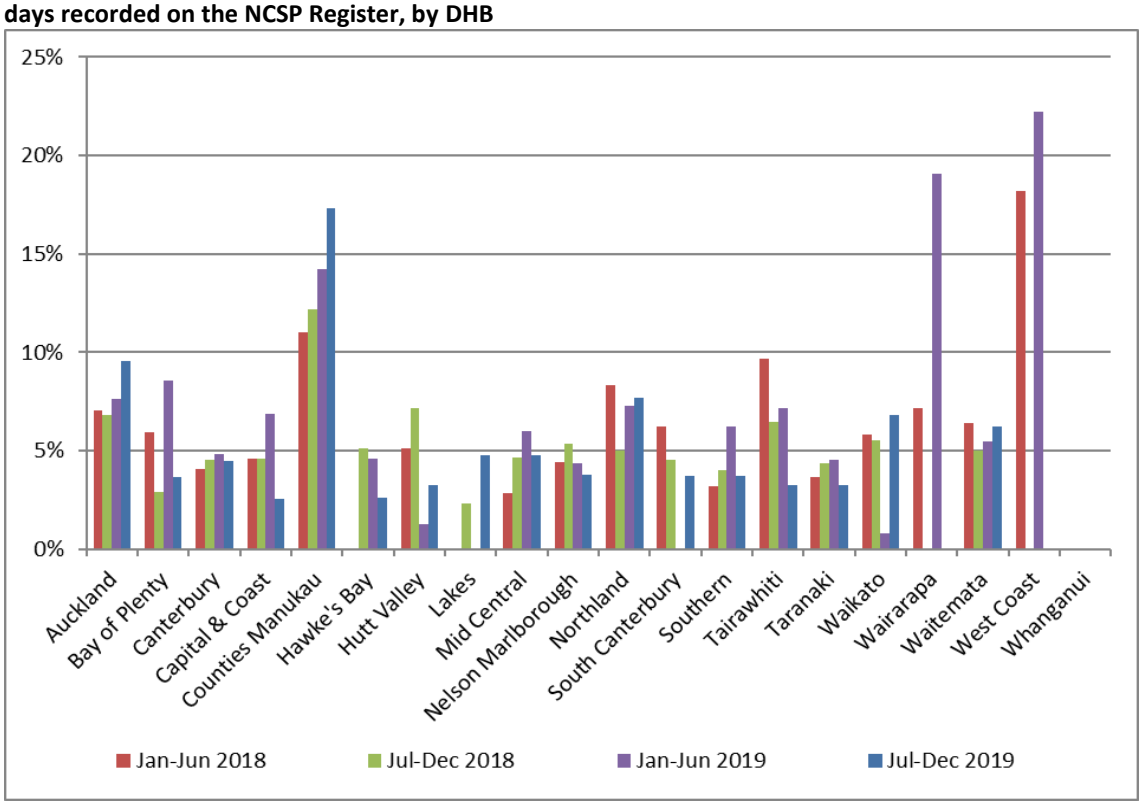


Figure 85 - Trends in the proportion of women with high-grade cytology who have no follow-up within 180 days recorded on the NCSP Register, by DHB



Indicator 7 – Colposcopy Indicators

These indicators report on colposcopy, against the 2013 NCSP Policies and Standards, Section 6. They include the following aspects:

7.1. Timeliness of colposcopic assessment of high-grade cytology results (Standard 602)

7.2. Timeliness of colposcopic assessment of low-grade cytology results (Standard 602)

7.3. Adequacy of documenting colposcopy assessment (Standard 603)

7.4. Timeliness of treatment (Standard 605)

7.5. Timely discharging of women after treatment (Standard 608)

7.6. Failure or refusal to attend appointments (Standard 609)

7.7. Maintaining staff skill levels - minimum colposcopy volumes (Standard 611)

Some of these indicators (7.6 and 7.7) have not been developed. It is envisioned that all indicators will be reviewed as part of the planned transition to primary HPV screening, and so these may be included in future monitoring reports after the programme transitions.

Colposcopy data has been recorded on the NCSP Register for a relatively short time, compared to cytology and histology data. There is incomplete reporting of colposcopy data to the NCSP Register, and therefore results for these indicators may need to be interpreted with some caution. However, it was and is felt that colposcopy indicators were an important quality measure of the NCSP, and reporting on them should not be unduly delayed. This was also a recommendation of the 2011 Parliamentary Review into the NCSP.[17] It is anticipated that completeness of colposcopy data on the NCSP Register will continue to improve over time. The 2015 Parliamentary Review again emphasised that achieving complete recording of colposcopy data on the NCSP Register is essential. [18]

Additionally, not all DHBs were yet reporting the full data required by Colposcopy Policies and Standards 2013 for the full -time periods reported on in this report (as all indicators other than 7.3 can report on colposcopy which occurred earlier than the current monitoring period); the last three DHBs went live with the 2013 Standards in August 2016. This means that in many cases performance indicators are not directly compared to the targets or have had to rely on proxy data to measure performance. Where relevant, this is described in the sections relating to the individual indicators.

Indicator 7.1 – Timeliness of colposcopic assessment – high-grade cytology

Definition

This indicator measures performance against Standard 602. It relates to the proportion of women seen at colposcopy within the recommended time period, from the time of the receipt of a referral from the sample taker for a high-grade cytology.

As in Indicator 6, high-grade cytology results are included if the cytology sample was collected in the six months preceding the current monitoring period (i.e. 1 January - 30 June 2019). High-grade cytology is defined as that associated with any of the TBS codes ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5. Where a woman has more than one high-grade cytology result in the relevant time period, the result from the first high-grade cytology sample collected is used. Timeliness of colposcopic assessment is calculated separately for those women with clinical suspicion of invasive carcinoma, or a suspicion of invasive carcinoma (based on either cytological interpretation TBS codes HS2, SC, AC1-AC5 or recommendation codes R10 or R14 that may be used in the context of symptoms); and for women with other high-grade cytology results (TBS codes ASH, HS1, AG1-AG5, AIS), since the timeframes differ for these two groups.

Referrals and colposcopy visits for these women were retrieved from the NCSP Register. The standard requires that a woman be seen within a time period from when the colposcopy unit received the referral. However due to the completeness of the accepted referral date compared to the received date, referral accepted date is used in this indicator as a proxy for the date the referral was received, and the start date for calculating timeliness. Referrals were retrieved where the date on which the referral was accepted occurred after the date the cytology sample was collected, and the referral was accepted no later than four weeks prior to the end of the current monitoring period. Colposcopy visits recorded on the NCSP Register were retrieved if they occurred after an accepted referral (to the same DHB) and no later than the end of the current monitoring period. The difference of four weeks between the two was to ensure that there were at least four weeks of data following every accepted referral which could be searched for colposcopy visits. In the current report, histology data are also used to supplement colposcopy data and help ascertain if a colposcopy visit occurred. Women with a histology sample collected after their cytology sample are assumed to have attended a colposcopy clinic for follow-up on the date the histology sample was collected, even if a colposcopy visit is not explicitly recorded on the NCSP Register.

Histology results have been used by the NCSP Register to follow up missing colposcopy visit data to improve the quality of colposcopy data on the Register. During the previous and current monitoring periods all DHBs adopted electronic reporting of the 2013 Standards, with the last three DHBs going live in August 2016. This has greatly improved the data on the Register and for public DHBs and when data are sufficiently complete future reports will be able to report directly against the 2013 Standards without using the current proxies for DHBs (with limited exceptions). Whereas, for private clinics complete reporting against the 2013 Standards is taking more time with the majority still

	reporting against 2008 standards. Therefore, values reported for the private aggregate will need to continue to use histology proxies (where necessary) until all private data is in accordance with the 2013 Standards. Results are reported by ethnicity and DHB. For women who attended colposcopy, DHB is assigned on the basis of the DHB of the colposcopy facility where they attended for colposcopy. The date on which the referral to that DHB was accepted is used to calculate timeliness. If there are multiple referrals for the same woman to that DHB, the date of the first accepted referral following the cytology sample is used. Women who attended colposcopy but had no relevant referral to that DHB recorded on the NCSP Register were excluded from the calculations of timeliness (since the time between the acceptance of the referral and the colposcopy visit could not be calculated). However, these women were reported on separately. For women who did not attend colposcopy prior to the end of the current monitoring period, DHB is assigned based on the DHB of the facility which accepted the referral for that woman (where the referral was accepted no later than four weeks prior to the end of the current monitoring period). If there were multiple referrals for the same woman which occurred after the cytology sample, the most recently accepted referral within the timeframe was used. For women who neither attended colposcopy nor had an accepted referral with any DHB, DHB is assigned on the basis of the health facility where their high-grade cytology sample was collected. Since cytology samples were collected in the six months prior to the current monitoring period, this allows a follow-up period of at least six months for all women (and up to 12 months for some women) where a woman can attend colposcopy and be assigned to a DHB, or alternately have a referral accepted by a DHB. High-grade cytology tests indicating that a woman was already under specialist management (TBS=R13) were excluded from this measure.
Target	***Timeliness – high-grade cytology indicating suspicion of invasive disease*** 95% or more of women who have evidence of clinical suspicion of invasive carcinoma, or a laboratory report indicating 'features suspicious for invasion', or 'changes consistent with squamous cell carcinoma' (TBS codes HS2, SC, AC1-AC5), or similar, must receive a date for a colposcopy appointment or a gynaecological assessment that is within 10 working days from when the colposcopy unit received the referral from the cytology sample taker/ referrer. ***Timeliness – high-grade cytology (no suspicion of invasive disease)*** 95% or more of women who have high-grade cervical cytology sample abnormalities (but no suspicion of invasive disease; TBS codes ASH, HS1, AG1-AG5, AIS) must receive a date for a colposcopy appointment within 20 working days from when the colposcopy unit received the referral from the cytology sample taker/ referrer.

The targets for this indicator rely on records of colposcopy appointments on the NCSP Register. As advised by the Ministry and NCSP Advisory Group for all women with a high-grade cytology test in the six months prior to the current monitoring period, timeliness is instead measured from the time between a referral is accepted to when women *have their first subsequent* colposcopy visit, acknowledging that this is not exactly as stated in the Standard target above.

Current Situation

In the period 1 January - 30 June 2019, there were 1,933 women with high-grade cytology results who were not already under specialist management. There were 70 women who had results indicating suspicion of invasive disease, and the remaining 1,863 had other high-grade cytology results. In total, accepted referrals were found for 1,687 (87.3%) of the 1,933 women (Table 71).

Timeliness – high-grade cytology indicating suspicion of invasive disease

Accepted referrals for colposcopy were found for 37 (52.9%) of the 70 women who had high-grade cytology indicating suspicion of invasive disease. For those with an accepted colposcopy referral recorded, referrals are broken down by the detailed cytological result in Table 74. Of these 37 women with a referral, 31 (83.8%) have a record of a colposcopy visit on the NCSP Register within ten working days of their referral, and 33 (89.2%) have a visit within 20 working days (Table 19).

Considering all 70 women with high-grade cytology indicating suspicion of invasive disease, regardless of whether or not a referral to colposcopy was recorded, a total of 55 (78.6%) have a record of a colposcopy visit prior to 31 December 2019 representing a follow-up period of at least six and up to 12 months after their high-grade cytology report.

Timeliness – high-grade cytology (no suspicion of invasive disease)

Accepted referrals for colposcopy were found for 1,650 women (88.6%) of the 1,863 women who had high-grade cytology not indicating suspicion of invasive disease. Among the women with accepted referrals, 1,179 (71.5%) were seen at colposcopy within 20 working days of their referral, and 1,424 (86.3%) were seen within 40 working days (Table 72). The proportion of women seen within 20 working days varied by ethnicity, from 34.6% (Pacific women) to 76.8% (European/ Other women; Figure 86, Table 72). This proportion also varied by DHB from 4.6% (Counties Manukau) to 100.0% (Whanganui; Figure 87, Table 73). The proportion of women seen within 20 and 40 working days was low in Counties Manukau, so the time period was additionally extended to a period of 80 working days; by this time, 87.0% of women had been seen in this DHB.

In total, 1,761 (94.5%) of the 1,863 women with high-grade cytology (but no suspicion of invasive disease) relating to a sample collected in the period 1 January - 30 June 2019 have a record of a colposcopy visit prior to 31 December 2019 (representing a follow-up period of at least six and up to 12 months after their high-grade cytology).

Trends

Nationally, the proportion of women with high-grade cytology indicating suspicion of invasive disease and an accepted colposcopy referral who were seen within the target timeframe (10 working days) has increased from 81.3% to 83.8%. The percentage of women with high-grade cytology indicating suspicion of invasive disease and an accepted colposcopy referral who were seen within 20 working days (89.2%) is also higher than the previous report (85.4%).

The proportion of women with high-grade cytology (but no suspicion of invasive disease) and an accepted colposcopy referral was considerably lower in Counties Manukau in this report (from 36.0% to 4.6% within 20 working days and 64.7% to 19.1% within 40 working days). The proportion of women seen within 20 working days has been decreasing for at least the last two reporting periods in Counties Manukau, Hawke's Bay, and Mid Central (Figure 89).

The proportion of women with high-grade cytology (but no suspicion of invasive disease) and an accepted colposcopy referral who were seen within 20 working days (71.5%) is lower than in the previous report (72.9%). This proportion was also lower in three ethnic groups (Māori: 70.2% to 62.2%; Pacific: 47.7% to 34.6%; Asian: 68.1% to 66.0%; Figure 88). The proportion of all women with high-grade results for whom an accepted referral was available on the NCSP Register is lower in the current report compared to the previous report (87.3% in the current report; 87.9% in the previous report).

Comments

Since this indicator relies on colposcopy data in the NCSP Register, any incompleteness in reporting of referrals and colposcopy visits at the time of the data extract from the NCSP Register (March 2020 for the current report) would lead to an underestimate of the number of women with referrals and/or follow-up colposcopy visits. In order to help address this, in the current report, histology data are also used to help ascertain if a colposcopy visit occurred. Women with a histology sample collected after their cytology sample are assumed to have attended a colposcopy clinic for follow-up, even if a colposcopy visit is not explicitly recorded on the NCSP Register. Among the 1,816 women (with or without a referral) who had a colposcopy visit by the end of the current monitoring period, there were 112 (7.1%) women where the colposcopy visit was not explicitly recorded on the NCSP Register and was inferred by using the histology result proxy.

For women with high-grade cytology indicating suspicion of invasive disease, the number referred for colposcopy is likely to be an underestimation of women with appropriate follow-up. Many women referred with suspicion of invasive disease are referred directly to gynae-oncology for a cone biopsy instead of colposcopy. This likely explains the comparatively low proportion of women with AC1-5 results who have a record of colposcopy referral (50% or less). Therefore, the proportion with colposcopy in this group does not fully reflect the level of performance.

Additional information about follow-up tests performed in women with high-grade cytology is included in Indicator 6. The same 1,933 women (70 with

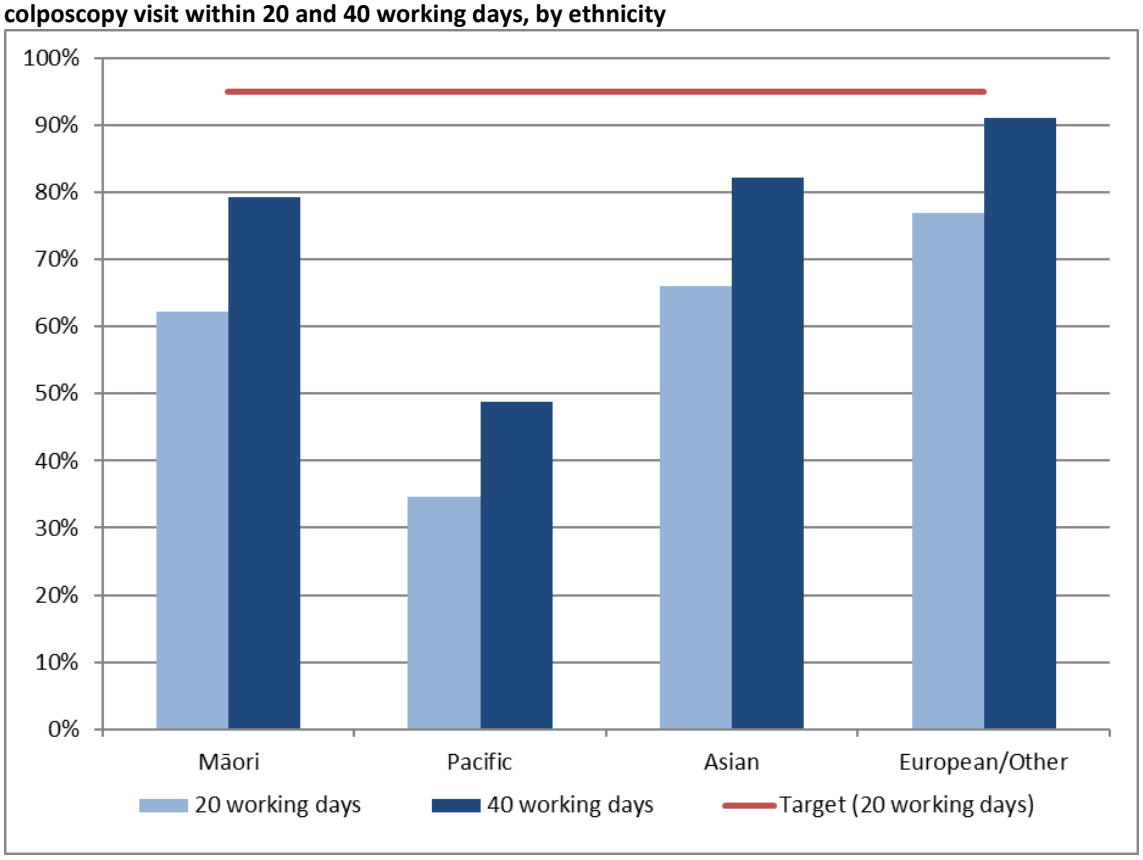
suspicion of invasive disease, 1,863 with other high-grade cytology) are included in both this measure and Indicator 6. In Indicator 6, it was found that 1,694 (87.9%) had histology within 180 days and 1,812 (93.7%) had a follow-up test of some sort within 180 days. While in this indicator, colposcopy and histology records indicate that 1,816 (93.9%) women had attended colposcopy prior to 31 December 2019 (i.e. in a period of at least 181 days and up to one year after their high-grade cytology sample). Note that there may be some differences in results by DHB, however, since in Indicator 6 the DHB assigned to a woman is her own DHB (or, where this information is not available on the NCSP Register, the DHB of her responsible health facility, based on the clinic's geographic location). In this indicator, women are assigned to a DHB based on either the DHB where they attended colposcopy, or the most recent DHB to which they have been referred (for women without colposcopy visits), or to the DHB of the health facility where the high-grade cytology sample was collected (for women with no referral and no colposcopy visit). Additionally, only public clinics are assigned a DHB within Indicator 7.1; private clinics are separated out and reported on as a group.

Reasons why a woman may not attend colposcopy within the recommended timeframe include both capacity limitations within the clinic, and potentially factors related to the woman requiring follow-up. Currently there is incomplete information available on the NCSP Register about colposcopy appointments which are scheduled for women where the woman reschedules or does not attend. Therefore, in this indicator it is not possible to distinguish delays in attending colposcopy following high-grade cytology which are due to capacity constraints which restrict the clinic's ability to offer timely appointments, and delays which may be due to an individual woman's need to reschedule an appointment or failure to attend. Factors which may lead a woman to delay a recommended visit include caring responsibilities, planned travel, competing prior commitments, illness, or menstruation.

Table 19 - Women with a high-grade cytology report (suspicion of invasive disease), accepted referral and colposcopy visit, by ethnicity

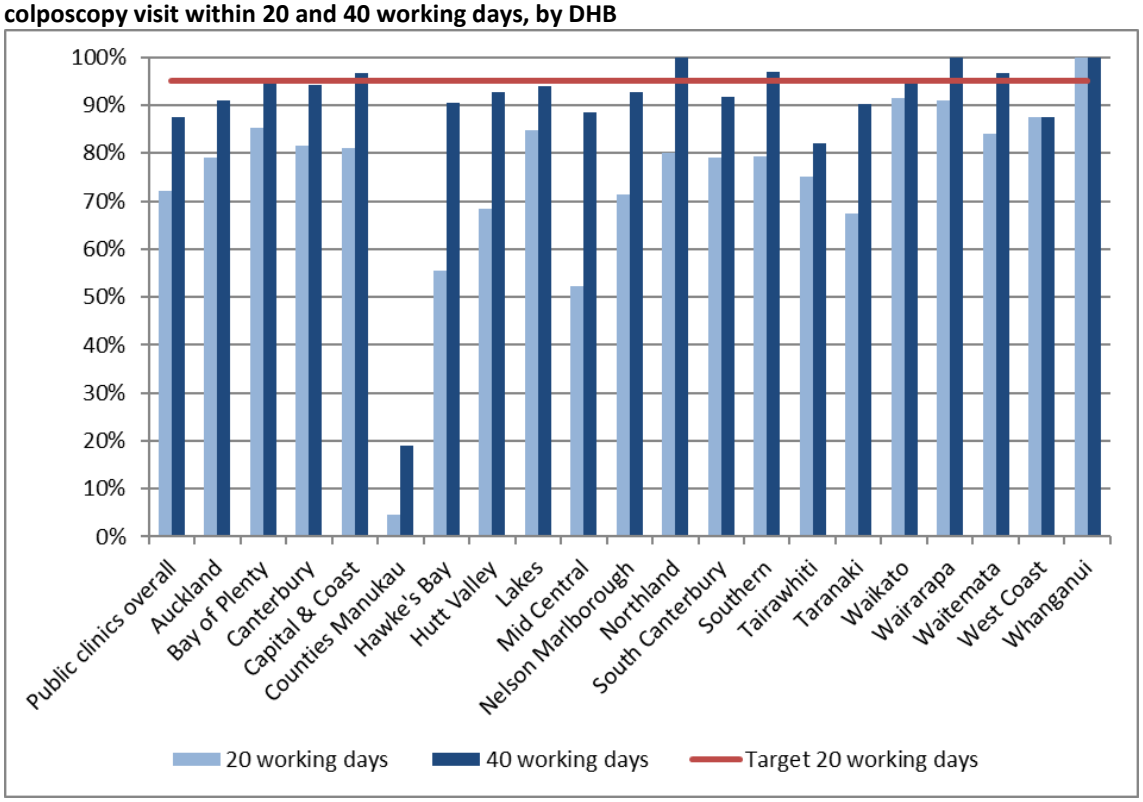
Ethnicity	HG women (suspicion of invasion)	Urgent referrals received	Women seen within:			
			10 working days		20 working days	
	N	N	N	%	N	%
Māori	10	8	7	87.5	8	100.0
Pacific	9	2	1	50.0	1	50.0
Asian	4	2	2	100.0	2	100.0
European/ Other	47	25	21	84.0	22	88.0
Total	**70**	**37**	**31**	**83.8**	**33**	**89.2**

Figure 86 - Percentage of women with a high-grade cytology (no suspicion of invasive disease) with a colposcopy visit within 20 and 40 working days, by ethnicity



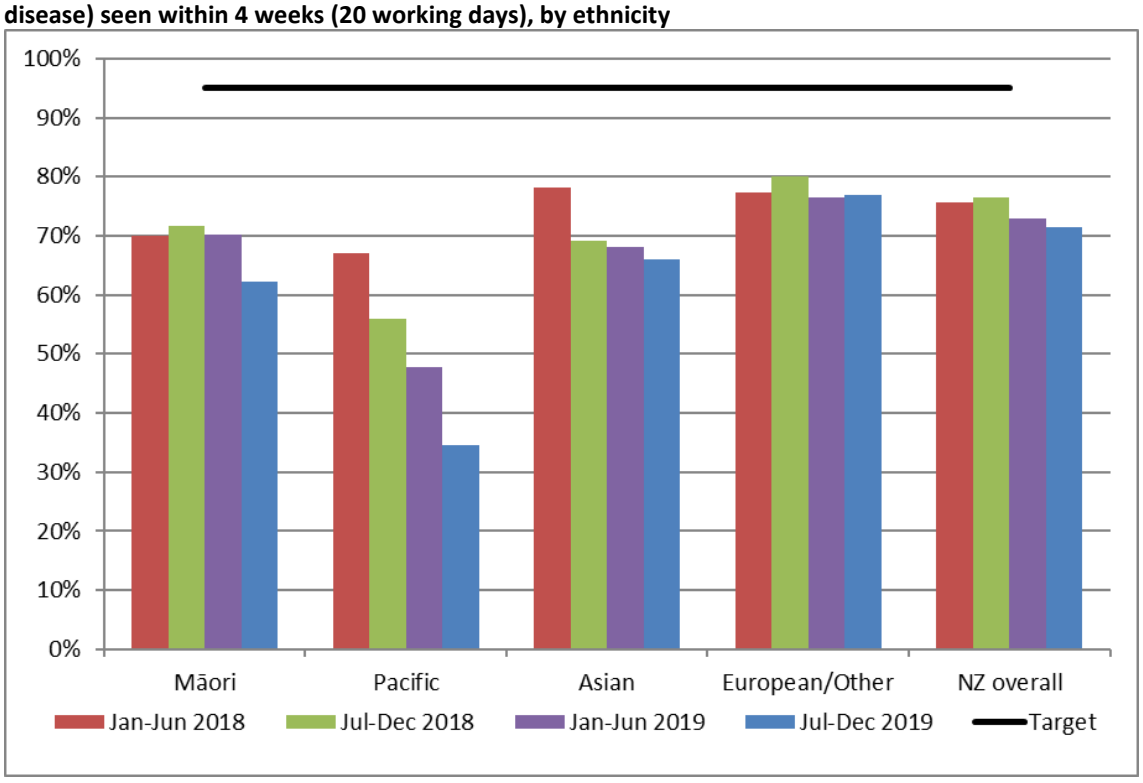
95% target relates to colposcopy visits within 20 working days.

Figure 87 - Percentage of women with a high-grade cytology (no suspicion of invasive disease) with a colposcopy visit within 20 and 40 working days, by DHB



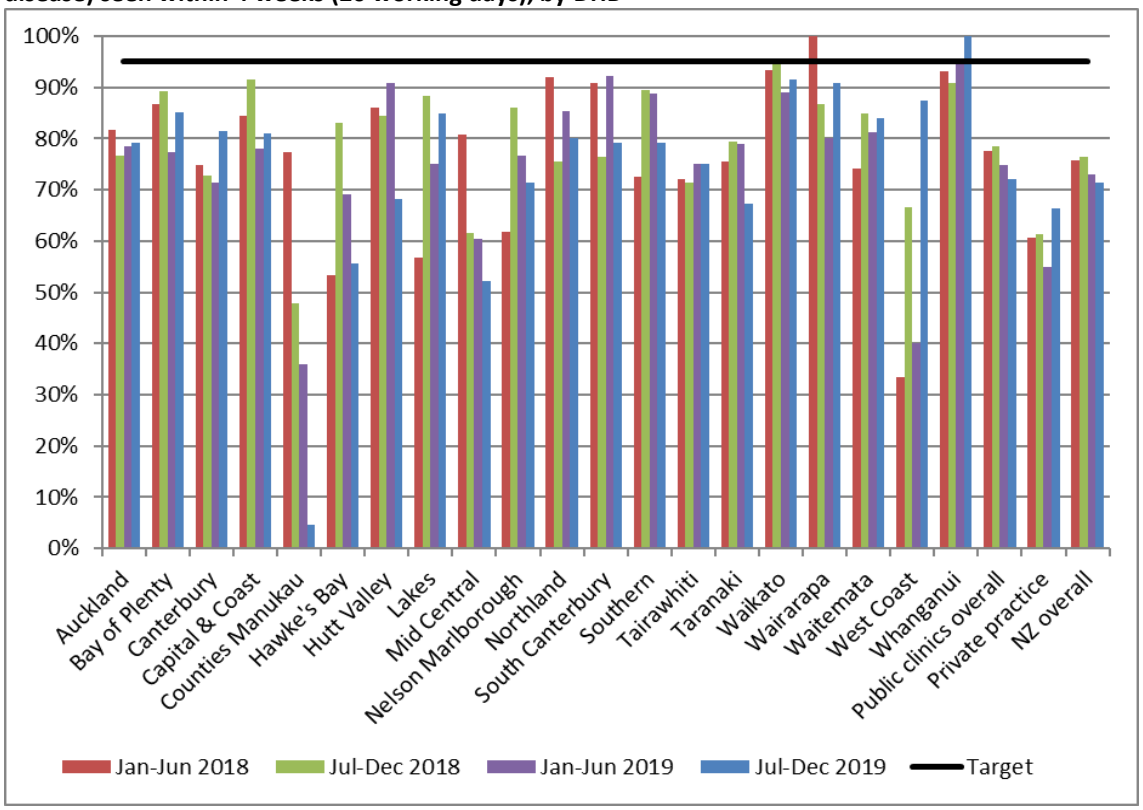
95% target relates to colposcopy visits within 20 working days.

Figure 88 – Trends of the proportion of women with a high-grade cytology report (no suspicion of invasive disease) seen within 4 weeks (20 working days), by ethnicity



95% target relates to colposcopy visits within 20 working days.

Figure 89 – Trends of the proportion of women with a high-grade cytology report (no suspicion of invasive disease) seen within 4 weeks (20 working days), by DHB



95% target relates to colposcopy visits within 20 working days.

Indicator 7.2 – Timeliness of colposcopic assessment – low-grade cytology

Definition

This indicator measures performance against Standard 602. It reports on the timeliness of colposcopic assessment of women with either persistent low-grade cytology, or low-grade cytology and concurrent positive hrHPV test.

Women were included in this measure if they had a cytology sample collected in the 6-month period ending 12 months prior to the end of the current monitoring period (1 July – 31 December 2018 for the current report) where the results were low-grade (ASC-US or LSIL), and either a positive hrHPV test (within four weeks of the cytology result) or a previous low-grade cytology result (within the previous five years). Women undergoing test-of-cure management for a recent treatment of a high-grade squamous lesion (within the previous 4 years) were excluded.

Referrals and colposcopy visits for these women were retrieved from the NCSP Register. Referrals were retrieved where the date on which the referral was accepted occurred after the date the cytology sample was collected, and at least 26 weeks before the end of the current monitoring period (i.e. 26 weeks before 31 December 2019, to allow at least 26 weeks following the referral for colposcopy to occur). Colposcopy visits recorded on the NCSP Register were retrieved if they occurred after the cytology test and no later than the end of the current monitoring period. In addition to explicit colposcopy visit records, histology samples in the same timeframe were used as a proxy for a colposcopy visit, to supplement colposcopy visit data.

Results are reported by ethnicity and DHB. DHB is assigned in the same way as in Indicator 7.1. For women who attended colposcopy, DHB is assigned on the basis of the DHB of the colposcopy facility where they attended for colposcopy (or where the histology sample was collected if a visit is not explicitly recorded). If there are multiple referrals for the same woman to that DHB, the date of the first accepted referral following the cytology sample is used.

For women who did not attend colposcopy prior to the end of the current monitoring period, DHB is assigned based on the DHB of the facility which accepted the referral for that woman. If there were multiple referrals for the same woman which occurred after the cytology sample, the most recently accepted referral within the timeframe was used.

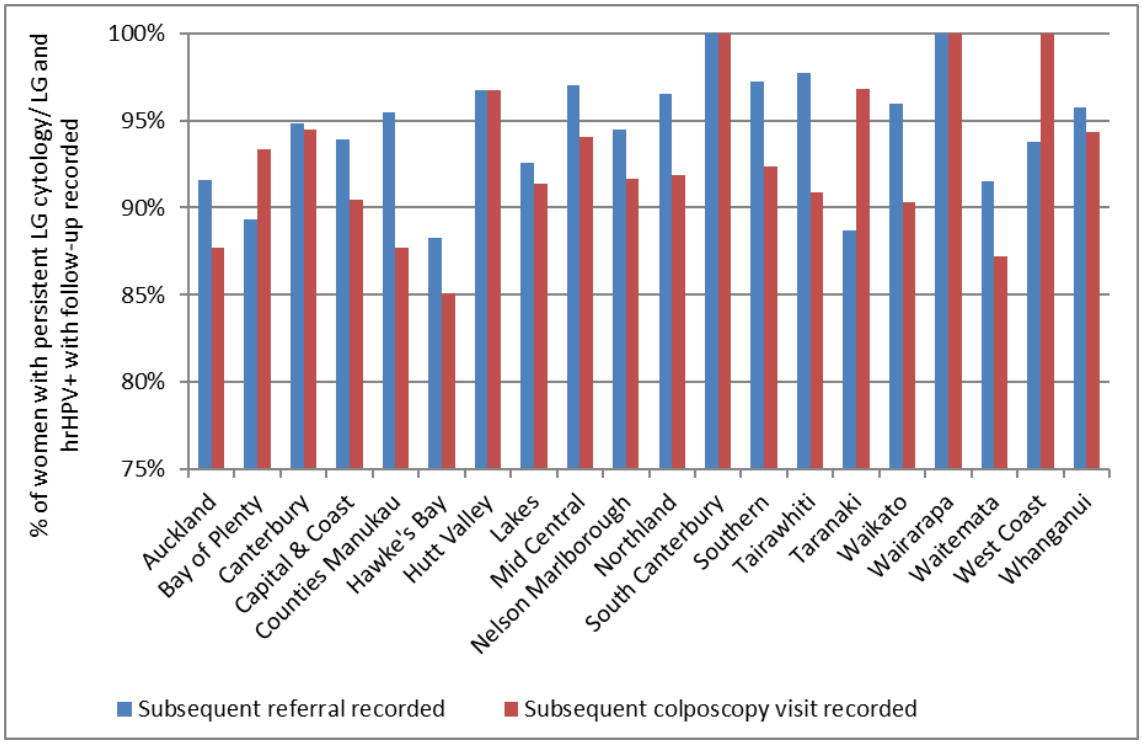
For women who neither attended colposcopy nor had an accepted referral with any DHB, DHB is assigned on the basis of the geographic region of the health facility where their low-grade cytology sample was collected.

Since cytology samples were collected in the 6-month period ending 12 months prior to the end of the current monitoring period, this allows a follow-up period of at least twelve months for all women (and up to 18 months for some women) where a woman can attend colposcopy and be assigned to a DHB.

Target	95% of women who have persistent low-grade abnormalities, or a low-grade abnormality and positive HPV test, must receive a date for a colposcopy appointment that does not exceed 26 weeks of receipt of the referral. At present, this indicator reports on aspects of follow-up, but not specifically on timeliness in relation to the standard, as the date of the first colposcopic assessment is not yet available for all women with a low-grade cytology test in the 6-month period 12-months prior to the end of the current monitoring period. In the interim, it reports on the number and percentage of women for whom a subsequent accepted referral and/ or a colposcopy visit are recorded, and the number and proportion of women who attended colposcopy within 26 weeks of an accepted referral.
Current situation	There were 3,737 women with either persistent low-grade cytology or low-grade cytology and a positive hrHPV test collected in the period 1 July – 31 December 2018. Nationally, subsequent accepted referrals are recorded for 3,215 (86.0%) of these women, and subsequent colposcopy for 3,414 (91.4%). The proportion of women for whom a subsequent referral and colposcopy visit are recorded are shown by DHB in Figure 90, and by ethnicity in Figure 91. The proportion of women for whom an accepted referral was recorded on the NCSP Register ranged from 88.3% (Hawke's Bay) to 100.0% (South Canterbury, Wairarapa; Figure 90). The proportion of women with a subsequent colposcopy visit (which occurred by the end of the current monitoring period) recorded on the NCSP Register ranged from 85.1% (Hawke's Bay) to all women (South Canterbury, West Coast, Wairarapa; Figure 90). For ethnicity, the proportion of women for whom an accepted referral was recorded on the NCSP Register ranged from 83.5% for Asian women to 90.4% for Māori women (Figure 91). The proportion of women with a subsequent colposcopy visit recorded on the NCSP Register (regardless of whether or not a referral was recorded) ranged from 82.1% (Pacific women) to 93.3% (European/ Other women; Figure 91). Timeliness of colposcopic assessment is provided by examining the time between when a referral is accepted for a colposcopy and when a woman attended for colposcopy. Among the 3,215 women with an accepted referral nationally, 2,536 (78.9%) women attended for colposcopy within 26 weeks of their accepted referral (Table 75). By DHB, the proportion of women who attended for colposcopy within 26 weeks of their accepted referral ranged from 8.4% (Hawke's Bay) to all women (Taranaki, West Coast, Wairarapa; Figure 92, Table 75). By ethnicity, this figure ranged from 70.9% of Māori women attending for colposcopy within 26 weeks of their accepted referral, to 82.7% of Asian women (Figure 93, Table 76) Overall, 3,012 women attended colposcopy following an accepted referral on the NCSP Register, and by the end of the current monitoring period (a follow-up period of 12 - 18 months after their cytology sample). This is equivalent to 80.6% of all women with persistent low-grade cytology or low-grade cytology and a positive hrHPV test, and 93.7% of women who had an accepted referral following their low-grade cytology.

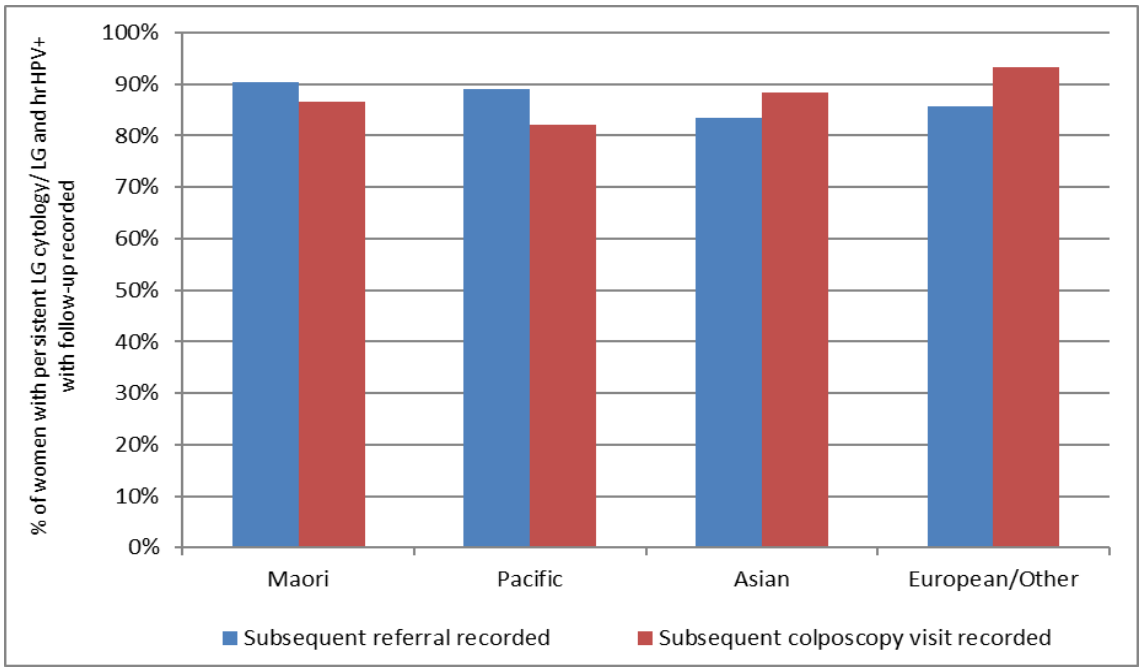
Trends	Nationally, the proportion of women with a record of colposcopy within 26 weeks of being referred is lower (78.9% in the current report, compared to 80.1% in the previous report). It is lower in two ethnic groups (Māori and Pacific women) and higher in two (Asian and European/ Other women; Figure 94). The proportion of women seen within 26 weeks is higher than in the previous report in ten out of twenty DHBs (Figure 95). A substantial decrease (greater than 10 percentage points) in the proportion seen within 26 weeks was observed in four DHBs (Hawke's Bay, Mid Central, Southern and Tairawhiti). Conversely, a substantial increase (greater than 10 percentage points) in the proportion of women with colposcopy within 26 weeks compared to the previous report was seen in one DHB (Waikato). The decrease in the number of women seen within 26 weeks appears to be associated with an substantial increase in the number of colposcopies performed in some of these DHB's (see Figure 98).
Comments	Since this indicator relies on colposcopy data in the NCSP Register, any incompleteness in reporting of referrals and colposcopy visits as at the time of the data extract from the NCSP Register (March 2020 for the current report) would lead to an underestimate of the number of women with referrals and/ or follow-up colposcopy visits. In order to help address this, in the current report, histology data are also used to help ascertain if a colposcopy visit occurred. Women with a histology sample collected after their cytology sample are assumed to have attended a colposcopy clinic for follow-up, even if a colposcopy visit is not explicitly recorded on the NCSP Register. As has been the case for previous monitoring periods, it is evident that referrals are incompletely recorded on the NCSP Register, as some women have a record of a colposcopy visit, but no record of an accepted referral.

Figure 90 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive hrHPV test, by DHB



** For colposcopies 'follow-up' includes colposcopies or histology samples recorded on the NCSP Register which occurred no later than the end of the current monitoring period, regardless of whether there is a referral or not. Referrals includes those recorded on the NCSP Register that were accepted no later than 26 weeks prior to the end of the current monitoring period.*

Figure 91 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive hrHPV test, by ethnicity



** For colposcopies 'follow-up' includes colposcopies or histology samples recorded on the NCSP Register which occurred no later than the end of the current monitoring period, regardless of whether there is a referral or not. Referrals includes those recorded on the NCSP Register that were accepted no later than 26 weeks prior to the end of the current monitoring period.*

Figure 92 - Women with persistent LG cytology/ LG cytology and positive hrHPV test and an accepted referral for colposcopy: percentage with a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by DHB

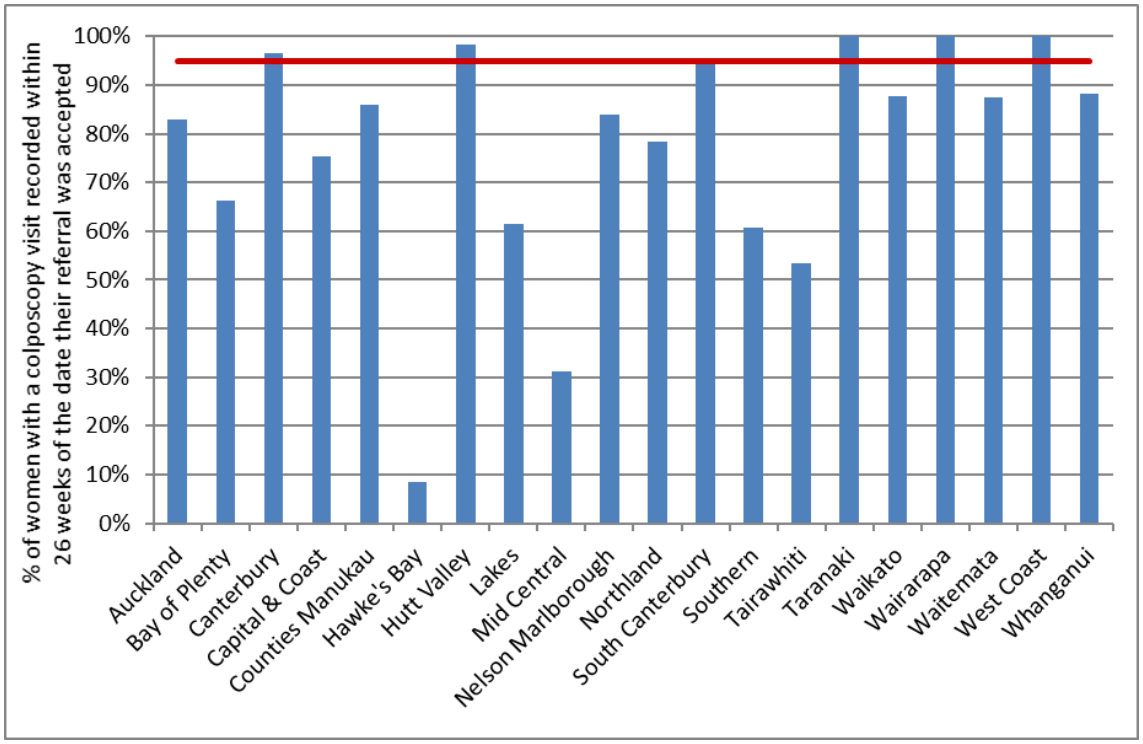


Figure 93 - Women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy: percentage with a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by ethnicity

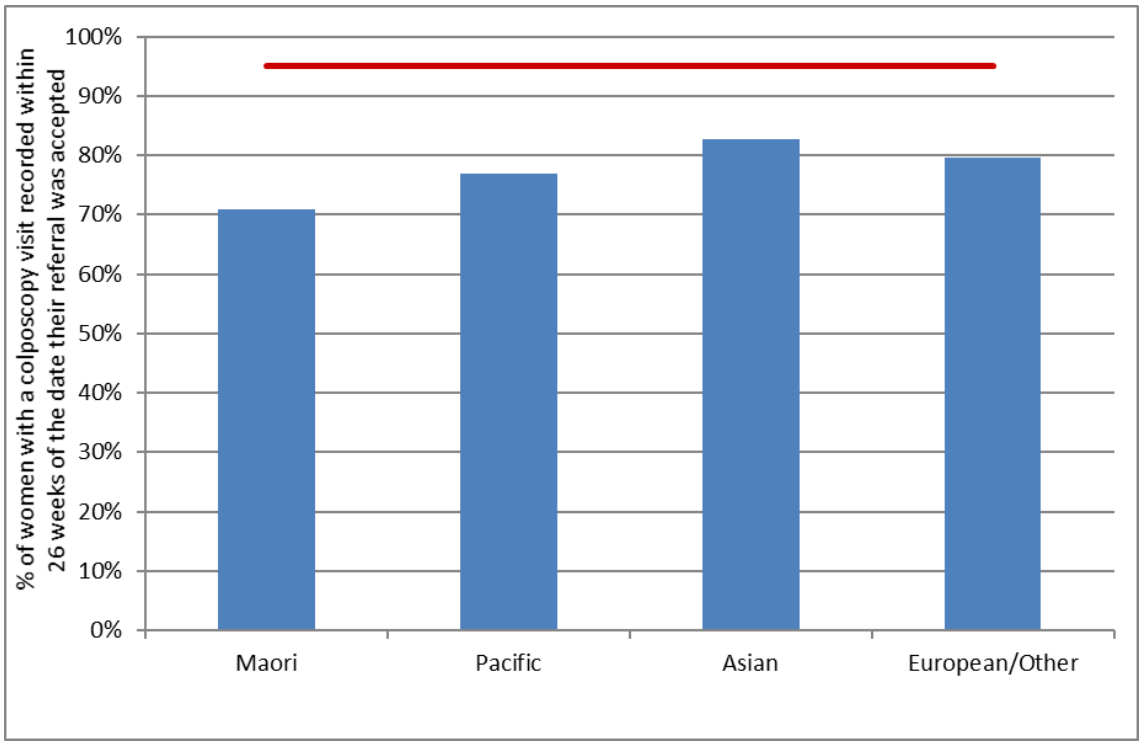


Figure 94 - Trends in the proportion of women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy who have a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by DHB

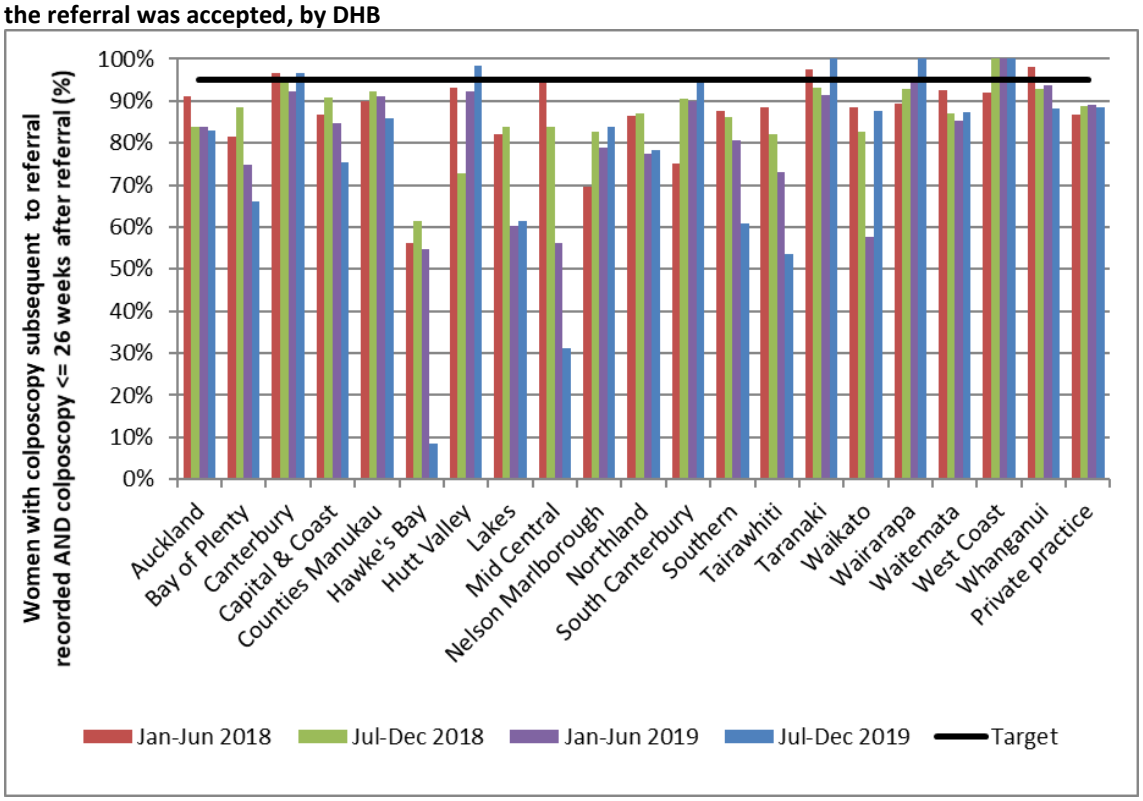
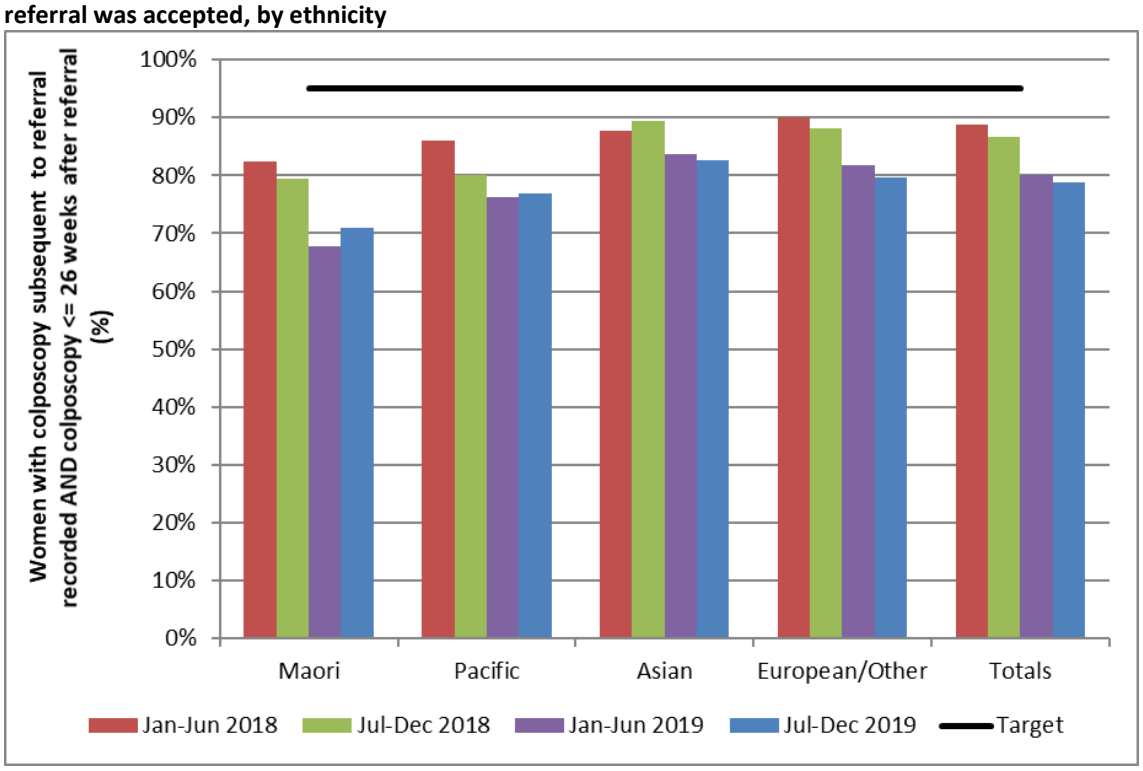


Figure 95 - Trends in proportion of women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy who have a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by ethnicity



Indicator 7.3 – Adequacy of documenting colposcopy assessment

Definition

This indicator measures performance against Standard 603.

The proportion of colposcopies which occurred within the monitoring period with complete reporting of

i) visibility of the squamo-columnar junction

ii) presence or absence of a visible lesion

iii) colposcopic opinion regarding the nature of the abnormality

iv) recommended management and follow-up

v) timeframe recommended for follow-up

vi) items i), ii), and iii) completed

Results are reported by DHB, based on the DHB of the facility where colposcopy was performed.

Target

100% of medical notes will accurately record colposcopic findings at first and any subsequent assessments, including:

i) visibility of the squamo-columnar junction

ii) presence or absence of a visible lesion

iii) visibility of the limits of lesion

iv) colposcopic opinion regarding the nature of the abnormality and the requirement for treatment

v) recommended management and follow-up

vi) timeframe recommended for follow-up.

Items i), ii), v), vi) and the first of the items in iv) can be assessed using data in the NCSP Register, and are reported on below. Item iii) and the second half of item iv) cannot currently be assessed as although all DHBs have transitioned to reporting using 2013 Standards these fields cannot be fully utilised due to a lack of completeness. For private clinics, however, complete reporting against the 2013 Standards is likely to take more time with the majority still reporting against 2008 standards. Therefore, values reported for the private aggregate will continue to use proxies for a much longer period until complete 2013 reporting occurs.

When calculating the completeness of recording of the colposcopic opinion regarding the nature of the abnormality, this was restricted to those colposcopy visits where the presence of a lesion was either noted (colposcopic appearance recorded as abnormal), or could not be ruled out (colposcopic appearance recorded as inconclusive).

When calculating the overall completeness of items i), ii), and iii), colposcopic opinion regarding the nature of the abnormality was only required where colposcopic appearance was recorded as either abnormal or inconclusive.

Current Situation

There were 12,146 colposcopy visits within the current monitoring period recorded on the NCSP Register. Documentation relating to these visits was analysed (Table 77).

Nationally, the visibility of the squamo-columnar junction was documented for 97.3% of visits; the presence or absence of a lesion was documented for all visits; and an opinion regarding the lesion grade was documented for 92.5% of visits where the presence of a lesion could not be ruled out. Additionally, the type of follow-up was documented for 92.2% of visits and the timeframe for follow-up was documented for 91.6% of visits. The visibility of the squamo-columnar junction, presence or absence of a visible lesion, and the colposcopic opinion regarding the nature of the abnormality (where relevant) were all documented for 93.1% of visits.

The colposcopic appearance was reported to be abnormal in 55.1% of colposcopies, and inconclusive in 4.5% of colposcopies (Table 77). Biopsies were taken at 91.9% of colposcopies when the colposcopic appearance was abnormal; 35.0% of colposcopies where the colposcopic appearance was reported as inconclusive, and 20.1% of colposcopies where colposcopic appearance was reported as normal (Table 78).

Documentation varied by DHB, as shown in Figure 96 and Table 77. Documentation of visibility of the squamo-columnar junction varied from 92.3% (South Canterbury) to 99.5% of cases in Tairawhiti. In all DHBs, all colposcopy reports documented the presence or absence of a lesion. Recording of the opinion regarding the abnormality grade (which was only assessed if the colposcopic appearance was recorded as abnormal or inconclusive), ranged from 84.3% (South Canterbury) to 97.4% (Tairawhiti). Recording of the recommended type of follow-up ranged from 54.8% (Nelson Marlborough) to 99.2% of cases (Taranaki) and recording of the recommended timeframe for follow-up ranged from 54.8% (Nelson Marlborough) to 99.2% (Taranaki). Complete documentation of the visibility of the squamo-columnar junction, presence or absence of a visible lesion, and the colposcopic opinion regarding the nature of the abnormality (where required) ranged from 85.7% (South Canterbury) to 97.8% (Tairawhiti; Figure 97, Table 77).

Abnormal colposcopic appearance ranged from 41.7% of colposcopies (South Canterbury) to 67.1% of colposcopies (West Coast). Inconclusive colposcopic appearance ranged from 1.6% of colposcopies (Tairawhiti) to 11.0% of colposcopies (West Coast; Table 78). The proportion of colposcopies where a biopsy was taken also varied by DHB. This proportion ranged from 86.6% of visits in Bay of Plenty, up to 97.6% (Whanganui) when the colposcopic appearance was abnormal, and from South Canterbury (7.1%) up to Wairarapa (37.5%) when the colposcopic appearance was normal (Table 79).

	Colposcopies performed in private practice accounted for 10.9% of all colposcopies recorded on the NCSP Register in New Zealand in the current monitoring period. The documentation rate varied according to the recorded section in private practice when compared with public clinics overall (Table 77). Documentation completion rate was similar in private and public clinics overall for the proportion of colposcopies documenting visibility of the squamo-columnar junction (97.7% for private practice and 97.3% for public clinics overall) and for documenting the presence or absence of a lesion (100.0% in both private and public clinics). An opinion regarding the lesion grade was documented for 94.9% of visits in public practice where the presence of a lesion could not be ruled out and 92.2% of visits in private clinics. The proportion completed was lower in public clinics compared to private clinics overall for documenting follow-up timeframe (92.0% public clinics; 88.3% for private practice) and somewhat higher in private clinics overall for follow-up type (92.6% for public clinics and 89.4% for private practice). Complete documentation of the visibility of the squamo-columnar junction, presence or absence of a visible lesion, and the colposcopic opinion regarding the nature of the abnormality lower in public clinics compared to private clinics (94.9% for private practice vs 92.9% for public clinics overall.
Trends	For New Zealand as a whole, documentation of colposcopy visit items has remained fairly consistent over the last four monitoring periods. In the current period visibility of the squamo-columnar junction was documented for 97.3% of colposcopies, compared with between 97.1% and 97.3% over the previous three monitoring periods. The presence or absence of a lesion was documented for all visits in the last four monitoring periods. In the current period an opinion regarding the lesion grade was documented for 92.5% of visits where the presence of a lesion could not be ruled out, compared with between 91.6% and 92.7% for the previous three monitoring periods. Recording of recommended follow-up type was documented for 92.2% of visits in the current period, which is within the range seen for the previous three periods (90.1% - 95.6%). This was also the case for recommended timeframe for follow-up, which was recorded for 91.6% of visits in the current period compared with 89.4% - 94.9% in the previous three periods. Trends in the completion of all required fields by DHB are shown in Figure 97. In total 60.3% of colposcopies had an associated biopsy compared to 59.4% in the previous report. Of these, biopsies were taken in 91.9% of colposcopies with an abnormal appearance in this report and 91.3% in the previous report. 20.1% of colposcopies with a normal appearance also had documentation of a biopsy taken in this reporting period and between 18.8% and 21.4% in previous reporting periods. Trends in the number of colposcopies recorded on the NCSP Register by DHB are shown in Figure 98. The number of colposcopies decreased in the current monitoring period in eight of the twenty DHBs with an overall decrease in the number of colposcopies of 1.0%.
Comments	The current colposcopy standard was published in July 2013 (available at https://www.nsu.govt.nz/health-professionals/national-cervical-screening-programme/policies-and-standards). This indicator is only able to assess

adequacy of documentation where colposcopy visits have been entered onto the NCSP Register in accordance with the 2013 Colposcopy Standard. Therefore, it cannot provide an absolute estimate of adequacy if these data are incomplete on the NCSP Register (that is, if the colposcopy visit itself is not recorded on the NCSP Register). The data used in this analysis was extracted from the NCSP Register in March 2020.

Some items required by the standard, such as the recording of recommended follow-up type and timeframe, cannot necessarily be completed at the time of the colposcopy visit – for example because they will depend on results of histology tests or other reviews. For DHBs that electronically report data to the NCSP Register, the completeness of these fields is likely to lag behind that of other fields, because the colposcopy visit data will be loaded onto the NCSP Register soon after the visit and before this information is available. As more DHBs have moved to electronic reporting, this lag could explain the reduction in the percentage of colposcopies where these items are complete, compared to previous reports. Additionally, since there is a lag in reporting recommended type and timeframe for follow-up, these two items were removed from the calculation of 'all items complete' in Report 43 and this has remained the case in subsequent reports. These are often not the fields with the lowest completion rates however, and therefore removing them from the calculation made a relatively small difference to 'all items complete'. In the majority of the DHBs, the field with the lowest completion rate is the documentation of the opinion regarding the nature of abnormality grade (only required where the presence of a lesion could not be ruled out). It is possible that the low completion rate for predicted abnormality grade could be because some clinics are incorrectly interpreting the requirement to document a *predicted* abnormality grade (which should be documented at the time of colposcopy) as a requirement to document the *diagnosed* abnormality grade, which can only be done after histology results are available.

Some items in the 2013 colposcopy standard are not included in the 2008 colposcopy visit form or on the NCSP Register, in particular the visibility of the limits of the lesion, the biopsy site, and an explicit colposcopic opinion regarding the need for treatment (although a recommended follow-up timeframe is recorded, and whether follow-up is recommended with a colposcopist, oncology services, or sample taker). It is also not possible to determine the reason for the visit from the colposcopy visit form, for example if this is a first visit or a follow-up visit; or whether it was prompted by a high-grade cytology result, a low-grade cytology result which is either persistent or accompanied by a positive high -risk HPV test result, a request for referral regardless of cytology results, or another reason. As most private colposcopists were still reporting to the NCSP Register using the 2008 standard and due to the low completeness of the fields required to calculate the additional items for those DHBs using 2013 Standards, these items could not be taken into account in this indicator for the current report.

Figure 96 - Completion of colposcopic assessment fields, by DHB

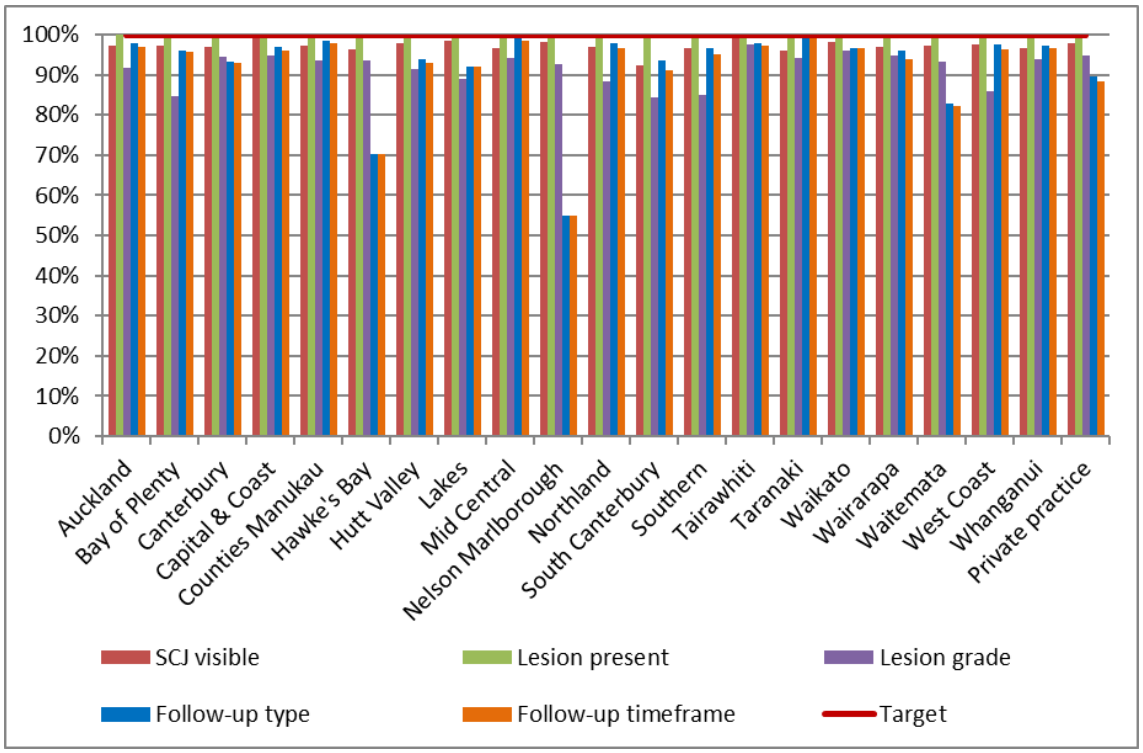


Figure 97 - Trends in the completion of all required colposcopic assessment fields, by DHB

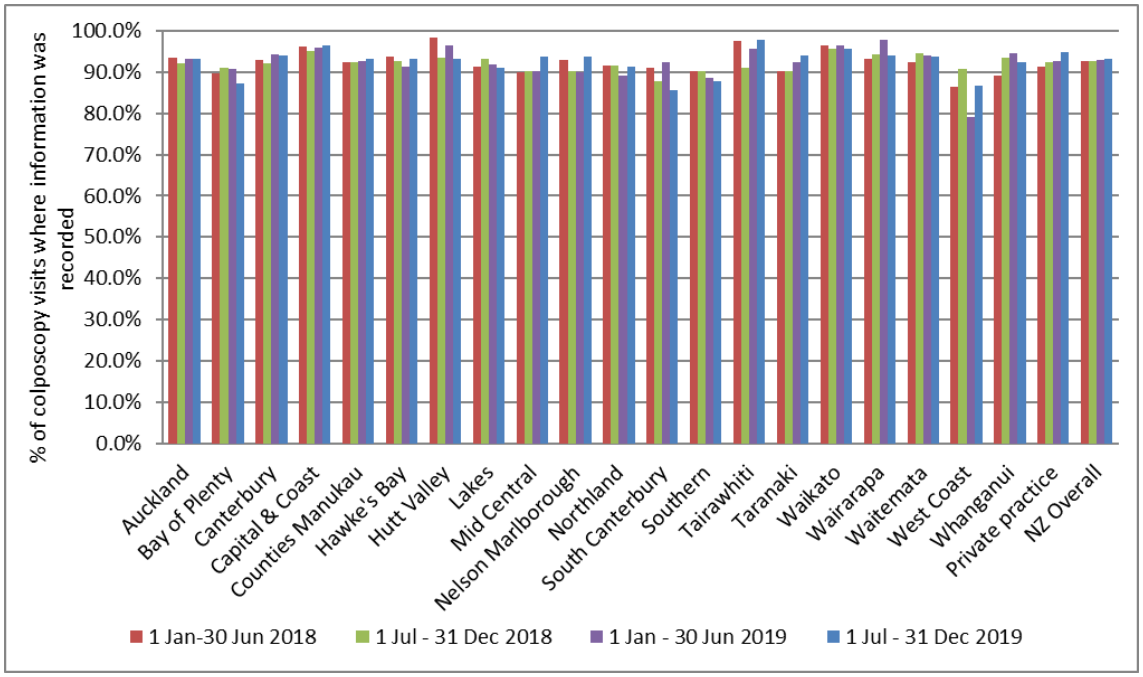
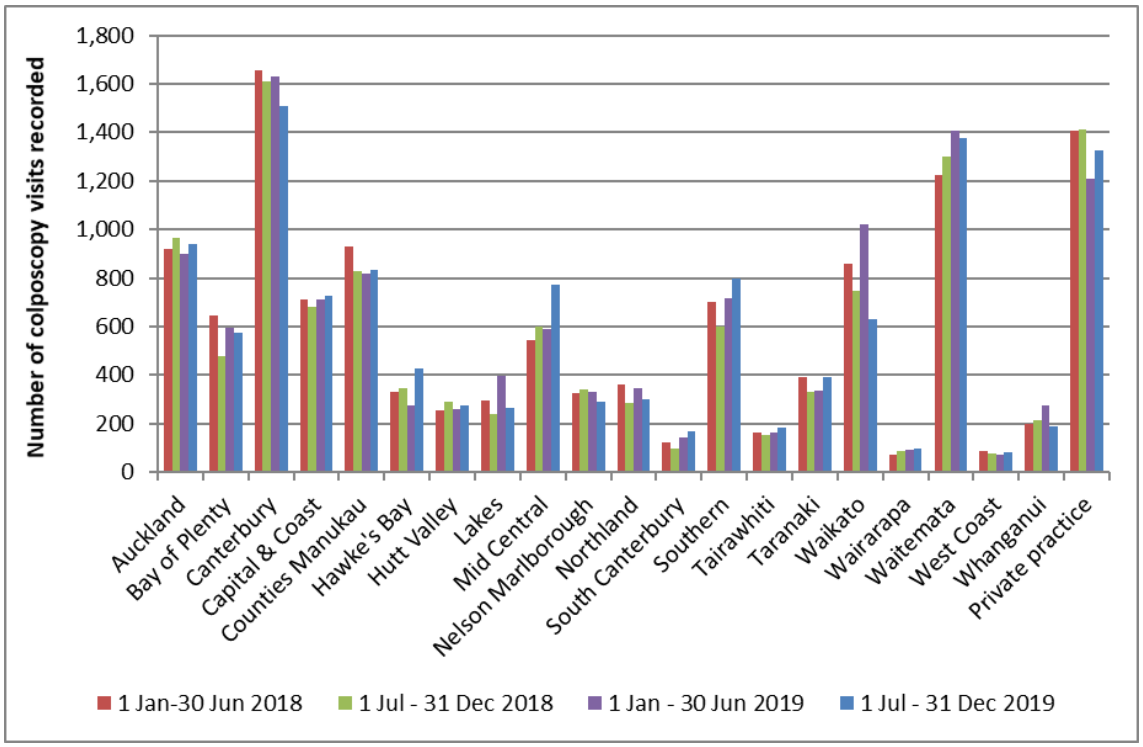


Figure 98 - Trends in the number of colposcopies recorded on the NCSP Register, by DHB



Indicator 7.4 – Timeliness and appropriateness of treatment

Definition

This indicator measures performance against Standard 605.

It reports on the proportion of women with histological high-grade squamous intraepithelial lesions (HSIL) who are treated within eight weeks of histological confirmation. Histological HSIL is defined as CIN 2, CIN 3, CIN 2/3 or HSIL not otherwise specified (SNOMED codes M74007, M74008, M80102, M80702 and M67017).

Histological LSIL is not routinely treated, as treatment is not recommended for women with low-grade abnormalities in the 2013 Colposcopy Standards (consistent with 2008 NCSP *Guidelines for Cervical Screening in New Zealand*). The 2013 Colposcopy Standard recommends that the number of women who are treated with low-grade lesions (less than CIN 2 on histology) be minimised. Therefore, treatment of LSIL is included in this report for descriptive purposes and to examine the appropriateness (not timeliness) of treatment. This report describes the number and proportion of women with histological low-grade squamous intraepithelial lesions (LSIL) who are treated. To ensure consistency in the follow-up time examined for each woman and in order to allow timely reporting, treatments are included if they occur within 26 weeks of histological confirmation. Histological LSIL is defined as CIN1 or CIN not otherwise specified (SNOMED codes M74006, M67016, M74000 and M67015). Women with histological LSIL who are treated but who also have a record of histological HSIL in the six-month period prior to their treatment are excluded, as their treatment in considered appropriate.

Women are included in this indicator if they have a histology sample where the result is HSIL or LSIL (as previously defined, above), and the sample was collected in the six-month period immediately prior to the current monitoring period (i.e. in the period 1 January - 30 June 2019). HSIL results must have been reported at least 8 weeks prior to the end of the current monitoring period, and LSIL results must have been reported at least 26 weeks prior to the end of the current monitoring period, in order to allow sufficient follow-up time for this indicator.

Treatment was defined as a colposcopy visit where there was a record of electrosurgical excision, laser ablation or excision, cold knife cone biopsy, or total hysterectomy. Colposcopy visits involving punch biopsies only are not included.

DHB is assigned based on the clinic where the histology sample was collected.

Target

90% or more of women with HSIL are treated within 8 weeks of histological confirmation of CIN 2/3.

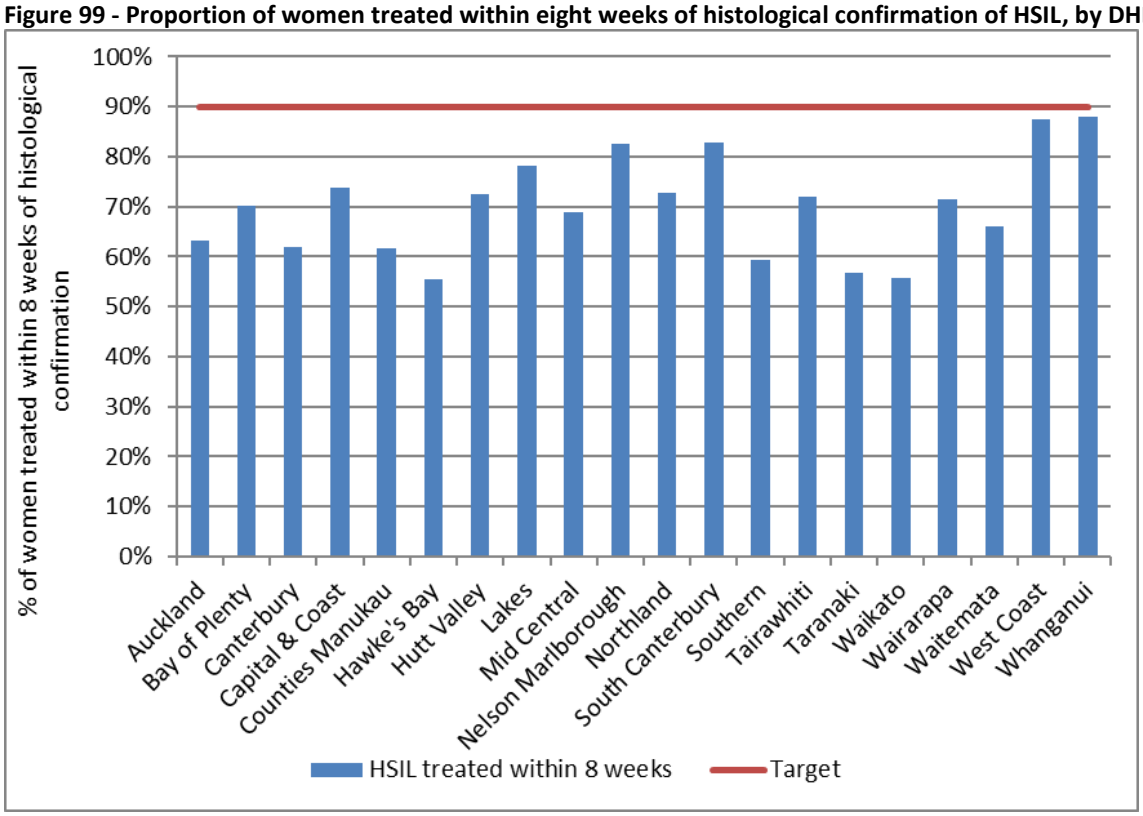
There is no explicit target relating to low-grade lesions, but the standard recommends that the number of women who are treated with low-grade lesions (less than CIN 2 on histology) be minimised.

Current Situation	There were 2,054 women with a histological diagnosis of CIN 2/3 (associated with histology samples collected in the previous six months and reported at least eight weeks prior to 31 December 2019). Of these women, 1,262 women (61.4%) were treated within eight weeks of HSIL being histologically confirmed. The proportion of women treated within eight weeks varied widely by DHB, from 55.6% (Hawke's Bay) to 87.9% of women (Whanganui). No DHBs met the target of at least 90% of women treated within eight weeks of histological confirmation of HSIL (Figure 99, Table 20). No ethnicity group met the target with the proportion of women treated within eight weeks ranging from 53.5% in Pacific women to a maximum of 65.0% in Asian women (Figure 100). Similarly, no age group met the target, with the proportion of women treated within eight weeks ranging from 37.9% in 20-24 year old women to a maximum of 70.7% in 40-44 year old women (Figure 101). The age-specific proportions of women treated within eight weeks of histological confirmation of HSIL are shown by ethnicity in Figure 103 and Table 23. There were 1,872 women with a histological diagnosis of LSIL (associated with histology samples collected in the previous six months and reported at least 26 weeks prior to 31 December 2019). Treatment for histological LSIL is not routinely recommended in the 2013 Colposcopy Standards or the 2008 NCSP *Guidelines for Cervical Screening in* New *Zealand*[19], and so timeliness of treatment is not examined or compared to a target for LSIL. However, for descriptive purposes and to examine appropriateness of treatment, follow-up records were retrieved for the 1,872 women with histological LSIL. Of these women, 114 (6.1%) women were subsequently treated within 26 weeks of LSIL being histologically confirmed and had no additional record of high-grade histology in the six months preceding their treatment. The proportion of women subsequently treated varied widely by DHB, from no women (Wairarapa and West Coast) to 16.7% (Northland and Taranaki; Table 20). The DHB where the largest number of women were treated was Canterbury (26 women). The minimum proportion of women treated within 26 weeks was 5.5% in Maori women and a maximum of 7.9% in Pacific women. The minimum proportion of women treated within 26 weeks was 0.0% in women <20 years and 0.3% in women 20-24 years old and a maximum of 15.8% in 60-64 year old women. The proportion treated by age and ethnicity are shown in Table 24.
Trends	Nationally, the proportion of women with histological HSIL who were treated within eight weeks of histological confirmation is slightly higher than the previous monitoring report (61.1% in the previous report, 61.4% in the current report). The proportion of women with histological HSIL who were treated within eight weeks for the current report period is higher in thirteen of the twenty DHBs when compared with the previous report (Figure 102). The proportion treated within eight weeks has decreased over the last two monitoring periods in seven DHBs. The proportion of women with histological LSIL who were subsequently treated (within 26 weeks of LSIL being histologically confirmed) has increased, from 5.9% for the previous report to 6.1% in the current report.
Comments	Whether or not treatment has occurred is determined for this indicator via colposcopy data in the NCSP Register. Trends may reflect changes in the

completeness of colposcopy data recording treatment within a DHB rather than necessarily true increases or decreases in the proportion of women treated. This incomplete recording of treatment potentially affects the results for treatments for both HSIL and LSIL. In some cases, treatment may have occurred in a different clinic to that where the original histology sample was collected. Facilities not explicitly defined as DHB (public) clinics are aggregated together as private practice. It is possible that women whose original HSIL (or LSIL) histology sample was collected outside a DHB clinic may in practice have been treated at a DHB clinic (or conversely a woman whose histology sample was collected at a DHB clinic may have been treated outside a DHB clinic). Note, however, that timeliness is assessed here by including any treatment visits, regardless of where they occurred.

The 2013 National Cervical Screening Programme Policies and Standards: 'Section 6 – Providing a Colposcopy Service' requires colposcopy clinics to provide information about the "decision to treat date" and "date histology result is received". At present, these dates are not available to use due to low completeness of this item on the NCSP Register. When this information is available for all DHBs for a full monitoring period, it will be used to calculate timeliness of treatment for women with histological HISL.

Figure 99 - Proportion of women treated within eight weeks of histological confirmation of HSIL, by DHB



Date that histology results were reported to requesting clinician is used as the date of histological confirmation. DHB is assigned based on the clinic where the original HSIL histology sample was collected, however treatments will be included regardless of where they occurred.

Figure 100 - Proportion of women treated within eight weeks of histological confirmation of HSIL, by ethnicity

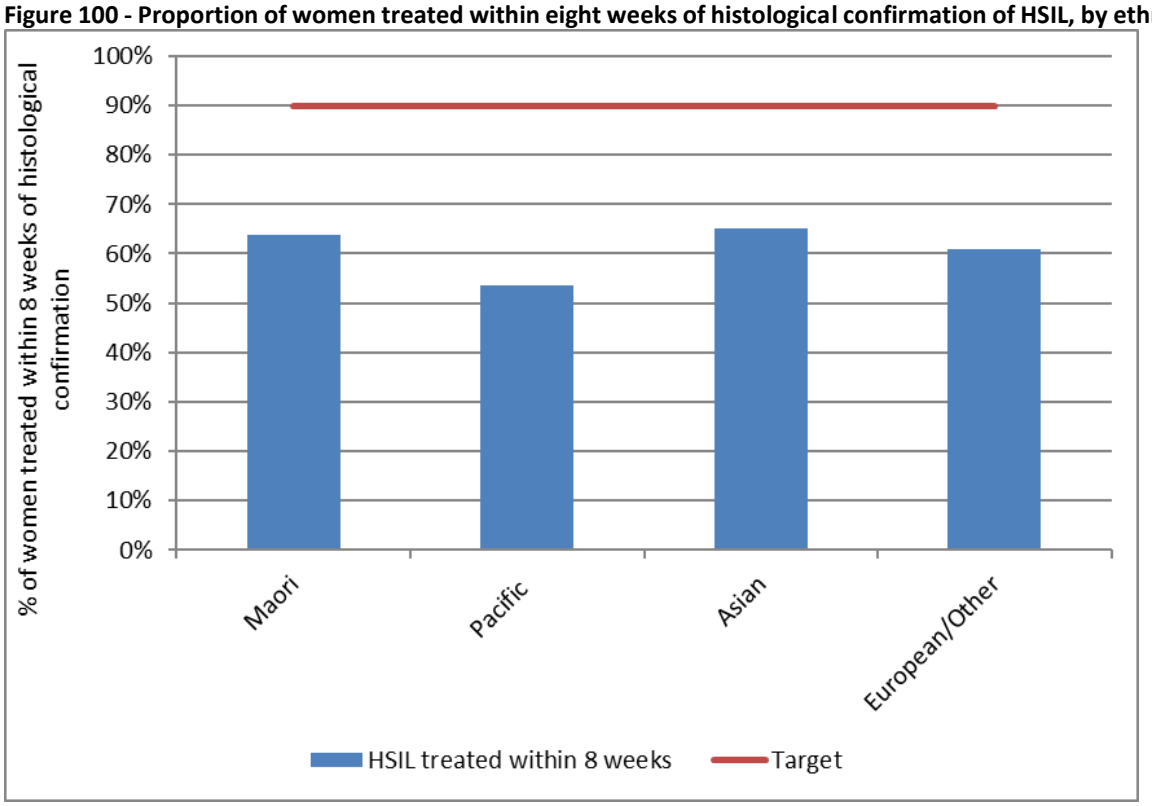


Figure 101 - Proportion of women treated within eight weeks of histological confirmation of HSIL, by age

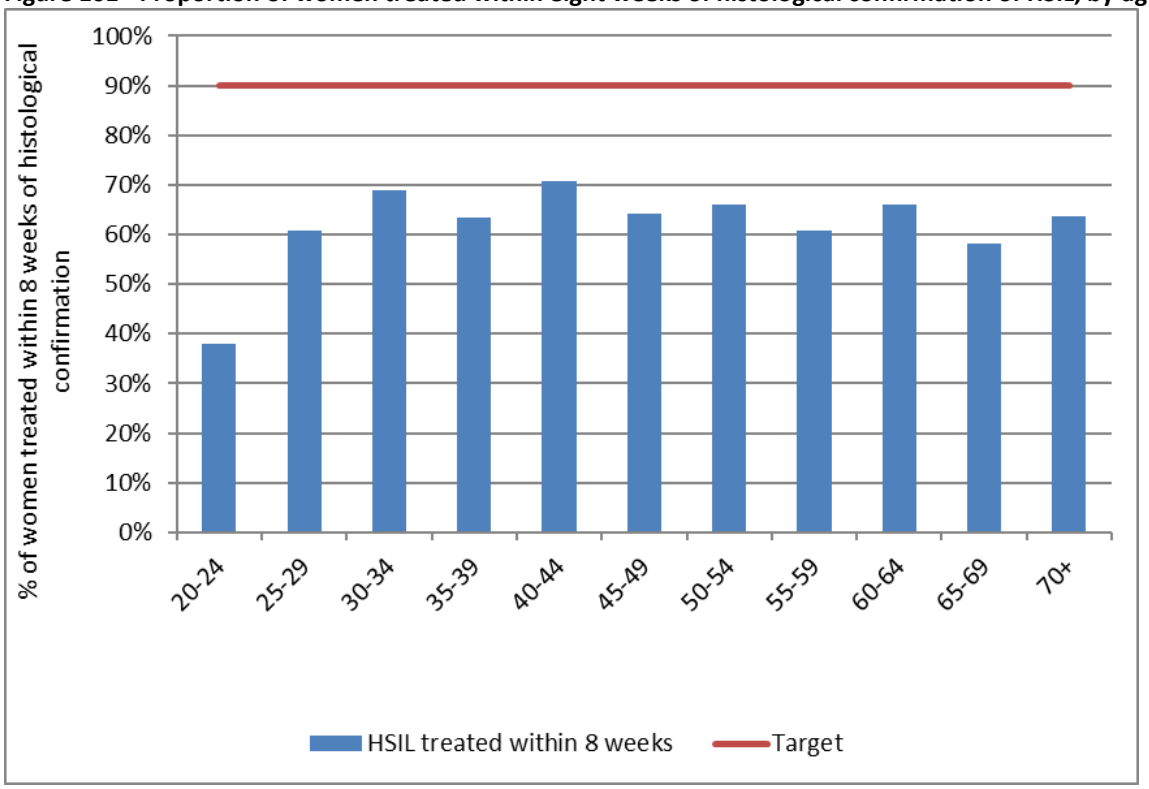


Figure 102 - Trends in the proportion of women treated within eight weeks of histological confirmation of HSIL, by DHB

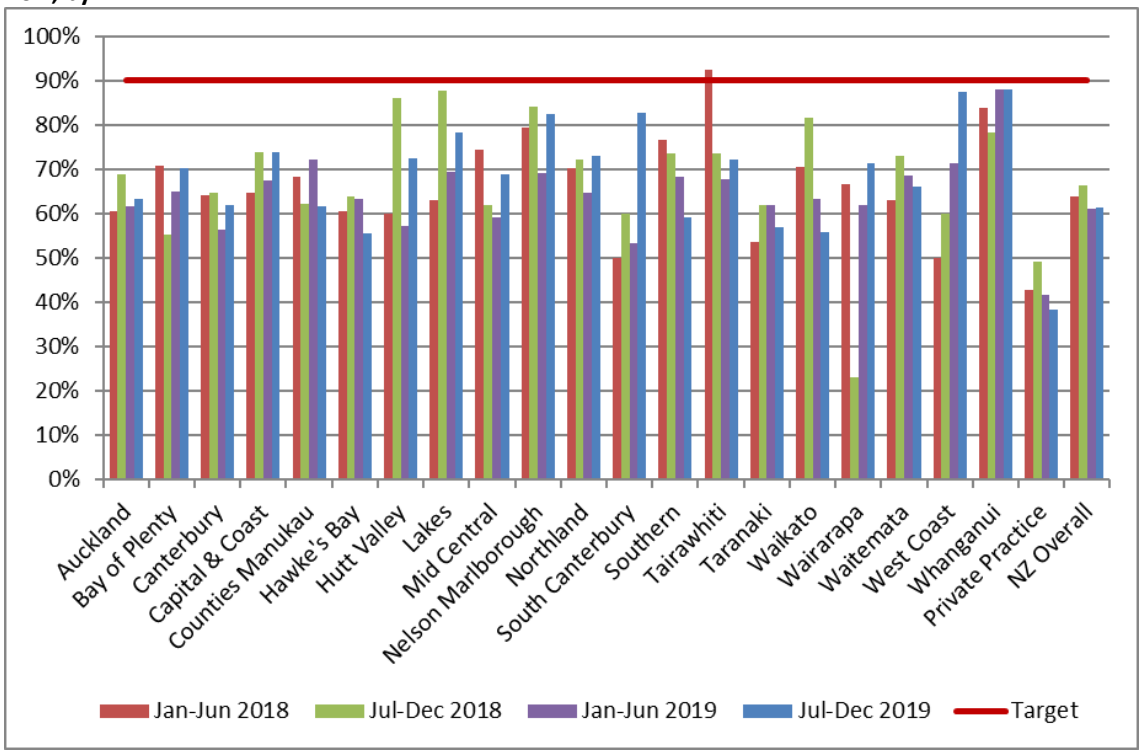


Figure 103 - Timeliness and appropriateness of treatment (HSIL), by age (20-69) and ethnicity

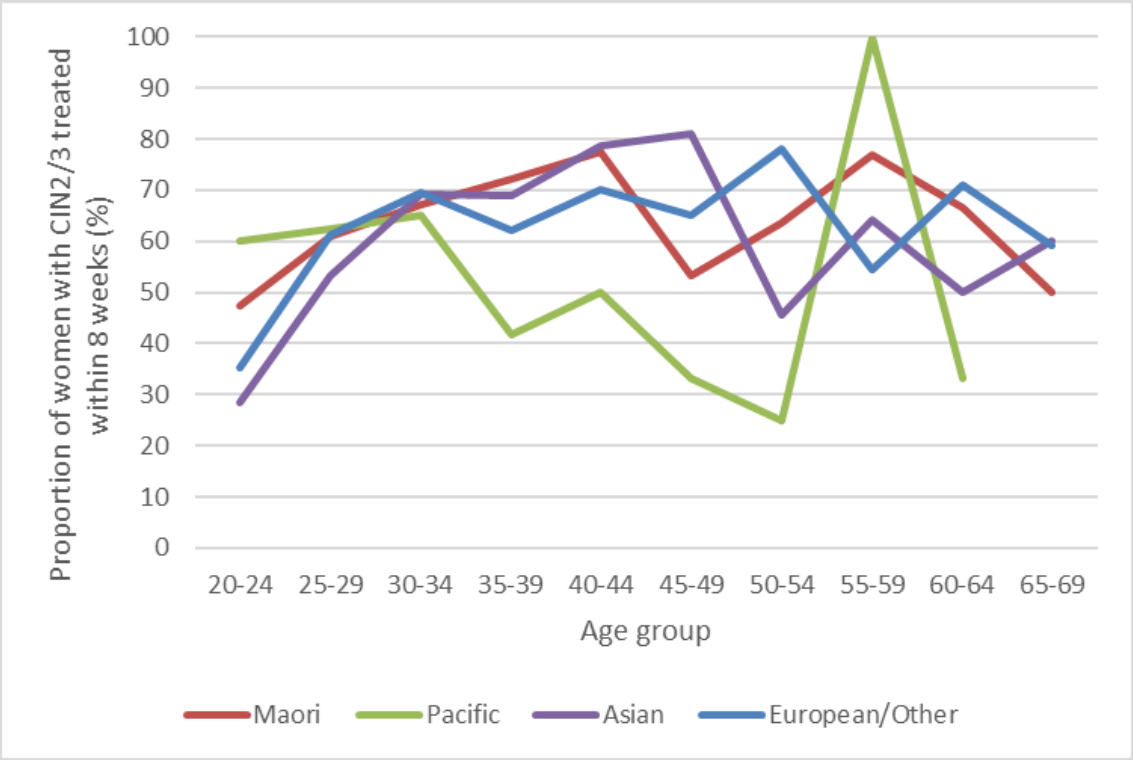


Table 20 - Timeliness and appropriateness of treatment, by DHB

Age	Women with CIN 2/3	Treated within 8 weeks		Women with histological LSIL*	Women subsequently treated†	
	N	N	%	N	N	%
Public clinics (overall)	*1,704*	*1,128*	*66.2*	*1,458*	*97*	*6.7*
Auckland	139	88	63.3	136	7	5.1
Bay of Plenty	84	59	70.2	70	6	8.6
Canterbury	226	140	61.9	384	26	6.8
Capital & Coast	80	59	73.8	85	12	14.1
Counties Manukau	104	64	61.5	165	8	4.8
Hawke's Bay	54	30	55.6	15	1	6.7
Hutt Valley	51	37	72.5	33	3	9.1
Lakes	55	43	78.2	40	1	2.5
Mid Central	106	73	68.9	42	1	2.4
Nelson Marlborough	40	33	82.5	20	1	5.0
Northland	59	43	72.9	18	3	16.7
South Canterbury	29	24	82.8	8	1	12.5
Southern	157	93	59.2	58	1	1.7
Tairawhiti	43	31	72.1	15	1	6.7
Taranaki	44	25	56.8	30	5	16.7
Waikato	165	92	55.8	108	2	1.9
Wairarapa	14	10	71.4	11	0	0.0
Waitemata	180	119	66.1	165	17	10.3
West Coast	16	14	87.5	17	0	0.0
Whanganui	58	51	87.9	38	1	2.6
Private Practice	*350*	*134*	*38.3*	*414*	*17*	*4.1*
Total	**2,054**	**1,262**	**61.4**	**1,872**	**114**	**6.1**

DHB is assigned based on the clinic where the original HSIL histology sample was collected, however treatments will be included regardless of where they occurred.
** CIN1, CIN not otherwise specified (SNOMED codes M67015, M67016, M74000 and M74006). CIN1 is not routinely treated (consistent with 2008 NCSP Guidelines for Cervical Screening in New Zealand), so these results are not compared to a target. They appear here for descriptive purposes to show how frequently the women with histologically confirmed LSIL were treated. † Includes women treated within 26 weeks of the date that LSIL histology results were reported to requesting clinician.*

Table 21 - Timeliness and appropriateness of treatment, by ethnicity

Age	Women with CIN 2/3	Treated within 8 weeks		Women with histological LSIL*	Women subsequently treated†	
	N	N	%	N	N	%
Māori	307	196	63.8	181	10	5.5
Pacific	86	46	53.5	76	6	7.9
Asian	206	134	65.0	230	18	7.8
European/ Other	1,455	886	60.9	1,385	80	5.8
NZ overall	**2,054**	**1,262**	**61.4**	**1,872**	**114**	**6.1**

** CIN1, CIN not otherwise specified (SNOMED codes M67015, M67016, M74000 and M74006). CIN1 is not routinely treated (consistent with 2008 NCSP Guidelines for Cervical Screening in New Zealand), so these results are not compared to a target. They appear here for descriptive purposes to show how frequently the women with histological LSIL were treated. † Includes women treated within 26 weeks of the date that LSIL histology results were reported to requesting clinician.*

Table 22 - Timeliness and appropriateness of treatment, by age

Age	Women with CIN 2/3	Treated within 8 weeks		Women with histological LSIL*	Women subsequently treated†	
	N	N	%	N	N	%
<20	-	-	-	2	-	-
20-24	272	103	37.9	339	1	0.3
25-29	436	265	60.8	342	9	2.6
30-34	470	324	68.9	319	20	6.3
35-39	304	193	63.5	231	9	3.9
40-44	181	128	70.7	186	19	10.2
45-49	140	90	64.3	166	20	12.0
50-54	91	60	65.9	110	14	12.7
55-59	74	45	60.8	90	10	11.1
60-64	44	29	65.9	38	6	15.8
65-69	31	18	58.1	35	4	11.4
70+	11	7	63.6	14	2	14.3
NZ overall	**2,054**	**1,262**	**61.4**	**1,872**	**114**	**6.1**

** CIN1, CIN not otherwise specified (SNOMED codes M67015, M67016, M74000 and M74006). CIN1 is not routinely treated (consistent with 2008 NCSP Guidelines for Cervical Screening in New Zealand), so these results are not compared to a target. They appear here for descriptive purposes to show how frequently the women with histological LSIL were treated. † Includes women treated within 26 weeks of the date that LSIL histology results were reported to requesting clinician.*

Table 23 - Timeliness and appropriateness of treatment (HSIL), by age (20-69) and ethnicity

Age	Women with CIN2/3 (N)				Treated within 8 weeks (%)			
	Māori	Pacific	Asian	European/Other	Māori	Pacific	Asian	European/Other
20-24	40	10	7	215	47.5	60.0	28.6	35.3
25-29	59	16	30	331	61.0	62.5	53.3	61.3
30-34	64	20	55	331	67.2	65.0	69.1	69.5
35-39	36	12	45	211	72.2	41.7	68.9	62.1
40-44	31	12	14	124	77.4	50.0	78.6	70.2
45-49	30	3	21	86	53.3	33.3	81.0	65.1
50-54	22	8	11	50	63.6	25.0	45.5	78.0
55-59	13	1	14	46	76.9	100.0	64.3	54.3
60-64	6	3	4	31	66.7	33.3	50.0	71.0
65-69	4	-	5	22	50.0	-	60.0	59.1
70+	2	1	-	8	100.0	100.0	-	50.0
NZ overall	**307**	**86**	**206**	**1455**	**63.8**	**53.5**	**65.0**	**60.9**

Table 24 - Timeliness and appropriateness of treatment (LSIL), by age (20-69) and ethnicity

Age	Women with CIN2/3 (N)				Treated within 8 weeks (%)			
	Māori	Pacific	Asian	European/Other	Māori	Pacific	Asian	European/Other
<20	1	-	-	1	-	-	-	-
20-24	36	12	16	275	-	-	6.3	-
25-29	35	11	31	265	2.9	-	-	3.0
30-34	28	12	48	231	-	16.7	8.3	6.1
35-39	29	13	49	140	6.9	7.7	4.1	2.9
40-44	14	9	23	140	7.1	-	13.0	10.7
45-49	15	9	29	113	33.3	11.1	10.3	9.7
50-54	10	5	10	85	-	20.0	10.0	14.1
55-59	6	2	13	69	-	-	15.4	11.6
60-64	4	-	4	30	25.0	-	25.0	13.3
65-69	3	2	6	24	-	-	16.7	12.5
70+	-	1	1	12	-	100.0	-	8.3
NZ overall	**181**	**76**	**230**	**1385**	**5.5**	**7.9**	**7.8**	**5.8**

'– ' indicates there were no women in this sub-category with histological HSIL/ LSIL.

Indicator 7.5 – Timely discharging of women after treatment

Definition

This indicator measures performance against Standard 608.

It reports on the proportion of women treated for a high-grade lesion who:

- receive colposcopy within the period up to nine months after their treatment
- receive colposcopy and cytology within the period up to nine months after their treatment
- are discharged appropriately within 12 months of their treatment.

Treatment was defined as a colposcopy visit where there was a record of electrosurgical excision, laser ablation or excision, cold knife cone biopsy, or total hysterectomy. Colposcopy visits involving punch biopsies only are not included. Treatment was included if it was for a high-grade lesion (CIN 2 or CIN 3), based on histology results for any histology specimen collected concurrent with or up to six months prior to treatment.

To allow for 12 months of follow-up information to be available, this indicator reports on women treated in the six-month period ending 12 months prior to the end of the current monitoring period (i.e. 1 July - 31 December 2018). Records for each woman treated in the six-month period ending 12 months prior to the end of current monitoring period were retrieved from the NCSP Register. Among these treated women, the number of women with a colposcopy visit, and with both a colposcopy visits and a cytology sample was calculated. Follow-up colposcopy visits were not restricted to only those within the same DHB as where initial treatment occurred; rather any colposcopy visit recorded on the NCSP Register for that woman was included. Follow-up visits were retrieved for the period up to nine months after the treatment visit.

Eligibility for discharge is not explicitly defined in the NCSP Colposcopy Standard, so based on advice from the NCSP Advisory Group, women were defined as eligible for discharge if they had a colposcopy visit and cytology test following their treatment, and their cytology result was negative.

Women were defined as having been discharged when their colposcopy report form recommended follow-up by their sample taker/ referring practitioner.

Results are reported by DHB, based on the DHB of the facility where the treatment colposcopy was performed. Therefore, for the purpose of this indicator, the DHB where treatment occurred was regarded as the DHB responsible for ensuring a treated woman was followed up. However, as previously described, the follow-up colposcopy visit need not have occurred within that DHB.

Target

90% or more of women treated for CIN 2 or 3 should have a colposcopy and cytology sample within the nine-month period post-treatment

90% or more of women treated for CIN 2 or 3 should be discharged back to the sample taker as appropriate.

Current Situation

There were 1,268 women treated for CIN 2 or CIN 3 lesions in the six-month period from 1 July - 31 December 2018. These women were followed up for 12 months from the date of their treatment visit.

Follow-up post treatment

There were 884 women (69.7%) with a follow-up colposcopy, and 866 women (68.3%) with both a follow-up colposcopy and a cytology sample in the nine-month period after their treatment visit.

Figure 104 shows the percentage of treated women with a record of follow-up colposcopy, and both follow-up colposcopy and a cytology sample, in the period up to nine months post-treatment by DHB. Generally, the number of women with both cytology and colposcopy was very similar to the number of women with at least colposcopy (Table 81). The maximum number of women with colposcopy only and no record of a cytology sample in the timeframe was at most three in Canterbury.

Nationally, the percentage of women treated for high-grade lesions with a record of colposcopy and cytology within the nine-month period post-treatment (68.3%) is below the target value of 90%. No DHBs met the target of at least 90% of women receiving cytology and colposcopy within nine months post-treatment (Figure 104, Table 81) The percentage of treated women with a record of both follow-up colposcopy and a cytology sample in the period up to nine months post-treatment varied by DHB from 26.3% (Bay of Plenty) to 89.2% women (Nelson Marlborough).

Women discharged appropriately

In total, 900 women (71.0% of those treated) were eligible to be discharged by 12 months after their treatment visit, and 742 of these women (82.4%) were discharged within 12 months of treatment (Table 80). Figure 105 shows how these percentages varied by DHB. The percentage of women eligible for discharge who were discharged within 12 months of treatment ranged from 52.6% (Bay of Plenty) to all eligible women (Hutt Valley, Waikato, Wairarapa, West Coast; Table 80). In some cases, the number of women eligible for discharge was small, so these results should be interpreted with caution (ten or fewer women in West Coast, Wairarapa, South Canterbury).

Nine DHBs met the target of discharging 90% of women where appropriate within 12 months (Auckland, Capital & Coast, Counties Manukau, Hutt Valley, Nelson Marlborough, Southern, Waikato, Wairarapa, West Coast). In total (that is, without considering whether or not women met the criteria suggested by the NCSP Advisory Group to be eligible for discharge), 855 women were discharged within 12 months of being treated for a high-grade lesion (67.4% of all women treated for a high-grade lesion).

Trends

The proportion of women with follow-up is lower overall (from 74.4% to 69.7% for colposcopy, and from 73.1% to 68.3% for both cytology and colposcopy). No DHBs

	met the target of 90% of women having colposcopy and cytology within nine months of treatment, compared to four DHBs in the previous report. The proportion of women discharged appropriately to their sample taker by 12 months is lower (84.9% in the previous report; 82.4% in the current report). The number of DHBs meeting the target of 90% remained similar (nine in this report and the previous report).
Comments	Since this indicator relies on colposcopy data in the NCSP Register, there is the possibility that incomplete reporting of colposcopy visits has led to an underestimate of the number of women with follow-up colposcopy visits and the number discharged in a given time period. The data used in this analysis was extracted from the NCSP Register in late March 2020. The target that 90% or more of women treated for CIN 2 or 3 should be discharged back to the sample taker as appropriate was assessed in this monitoring report, based on guidance from the NCSP Advisory Group as to when discharge would be appropriate. However, it should be noted that neither the 2008 NCSP Guidelines for Cervical Screening in New Zealand nor the 2013 Colposcopy Standards themselves provide explicit guidance for when discharge back to the sample taker is appropriate. In some circumstances, women may be treated within one DHB, but referred to another DHB for follow-up. This information is not always recorded in the NCSP Register, however this measure does take into account all follow-up visits which women attend, regardless of the DHB in which they occurred. For clarity in this report, women remain assigned to the DHB where their treatment was performed.

Figure 104 - Percentage of women treated with colposcopy, and both colposcopy and cytology, within nine months post-treatment, by DHB

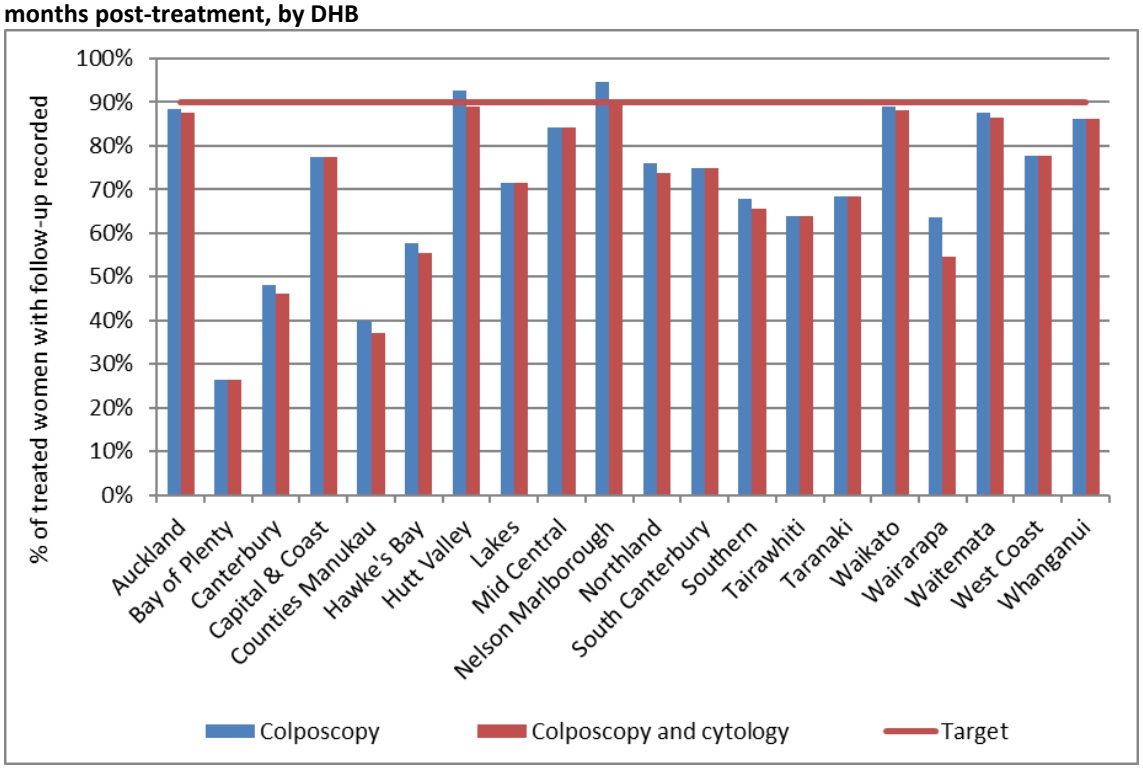
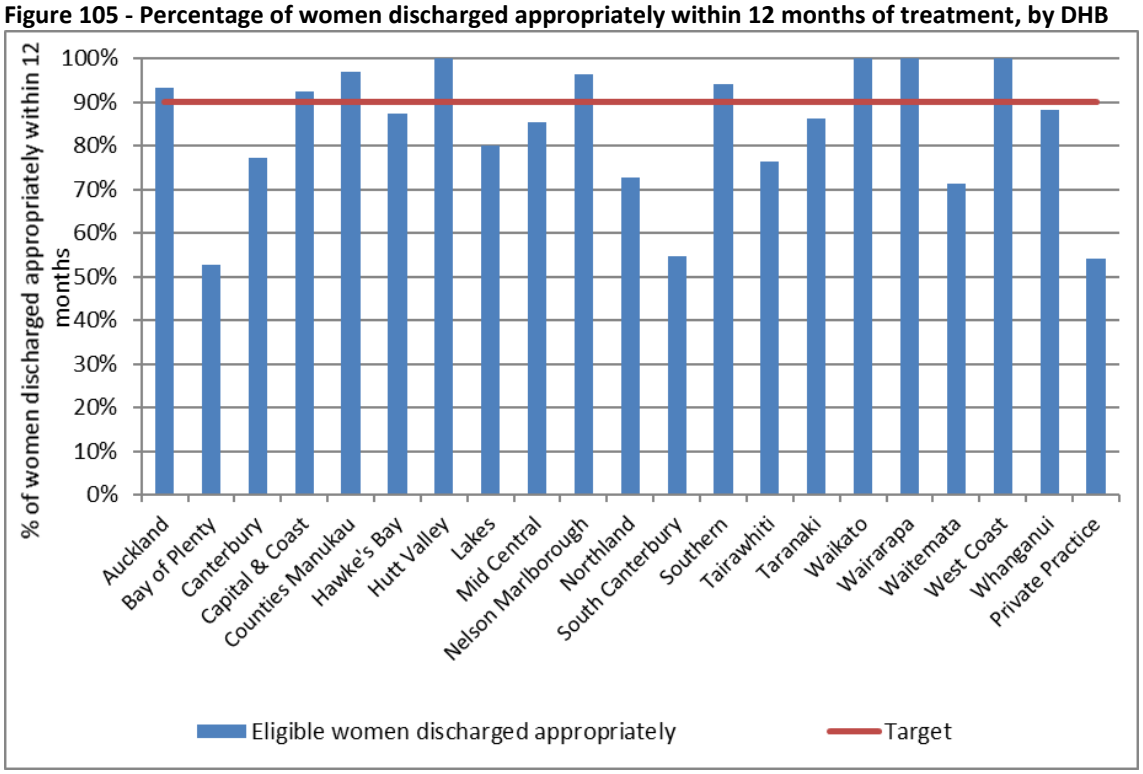


Figure 105 - Percentage of women discharged appropriately within 12 months of treatment, by DHB



Indicator 8 – HPV tests

The indicators report on the use of HPV testing. At present, they incorporate the following indicators:

8.1 Triage of low-grade cytology

8.2 HPV test volumes (including purpose for which the test was performed)

8.3 HPV tests for follow-up of women with a historical high-grade abnormality

Other than HPV test volumes (indicator 8.2) specific monitoring of the other uses of HPV testing is not yet included. These other purposes include:

- Management of women previously treated for CIN
- Management of women with a high-grade squamous cytology result in the past followed by negative cytology
- Resolution of discordant cytology, colposcopy and histology

Indicator 8.1 – Triage of low-grade cytology

Definition	For women with an ASC-US or LSIL (low-grade) cytology result relating to a cervical sample taken in the monitoring period, and with no recent abnormal cytology (i.e. abnormal cytology results relating to specimens taken in the preceding five years), the following are reported on as follows: • The number and proportion of women with a subsequent HPV triage test (by age group, and cytology laboratory) • Women with positive HPV triage result, as a proportion of women with a valid HPV test (by age group, and cytology laboratory) • Histological outcomes in women with a positive triage test, where this information is available within 12 months following a positive HPV triage test Where a woman has two different low-grade cytology results, relating to a sample or samples collected on the same date, she is grouped in accordance with the most serious result (i.e. LSIL). A subsequent HPV triage test is defined as an HPV test where the sample was collected at the same time or after the cytology sample, and where there is a result available (including invalid results). Women whose ASC-US or LSIL cytology test is associated with a recommendation code of R14 (refer regardless of cytology result) are excluded, as they may be symptomatic. Women who are aged less than 30 years are excluded from this indicator if they have ever had either a high-grade squamous cytology result (ASC-H, HSIL) or a high-grade squamous histology result (CIN 2/3), as they may be having an HPV test in order to follow-up a previous high-grade squamous abnormality (cytology or histology, i.e. historical testing or as a test-of-cure following treatment for CIN2/3). If a laboratory which performed the cytology refers the HPV test to a different laboratory, measures are based on the laboratory which performed the cytology test. Measures reported by age are based on the age of the women on the date that the cytology sample was collected.
Target	Targets have not yet been set.
Current Situation	There were 578 women aged less than 30 years and 1,521 women aged 30 years or more with an ASC-US cytology result relating to a sample collected in the current monitoring period, and who had no abnormal cytology results relating to samples taken in the previous five years. The corresponding figures

for LSIL are 1,738 women aged less than 30 years and 1,544 women aged 30 years or more.

HPV triage

NCSP Guidelines (2008) recommend that women aged 30 years or more who have not had an abnormal cytology report in the previous five years are offered a HPV triage test following ASC-US or LSIL cytology. Among these eligible women, 97.1% of women aged 30 years or more with an ASC-US cytology result, and 97.4% of women aged 30 years or more with an LSIL cytology result are recorded as having a subsequent HPV test (Table 82, Table 83). These proportions ranged from 93.3% (Medlab Central Ltd) to 98.7 (Anatomical Pathology Services) for ASC-US cytology results and from 94.8% (LabPLUS) to 100.0% (Canterbury Health Laboratories) for LSIL cytology results (Figure 106, Table 82, Table 83).

HPV triage is not included in the recommendations for women aged less than 30 years, and accordingly the proportions of women aged less than 30 years with a subsequent HPV test are very small. Subsequent HPV tests are recorded in the NCSP Register for 1.0% of women aged less than 30 years with ASC-US results, and 0.9% of women aged less than 30 years with LSIL results. These proportions ranged from no women (Canterbury Health Laboratories, LabPLUS, Pathlab) to 2.5% (Medlab Central Ltd) for women with ASC-US results, and from no women (Pathlab) to 1.6% (Southern Community Labs) for women with LSIL results (Table 82, Table 83).

Positive triage tests

Among women aged 30 years or more with a valid HPV triage test results, the proportion who were positive for high-risk HPV (hrHPV) was 22.3% for women with ASC-US results, and 59.4% for women with LSIL results. These proportions varied by laboratory from 11.9% (Canterbury Health Laboratories) to 28.7% (Anatomical Pathology Services) for women with ASC-US cytology (Figure 107), and from 42.9% (LabPLUS) to 78.1% (Canterbury Health Laboratories) for women with LSIL cytology (Figure 108).

The proportion of women whose HPV triage test was positive also varied by age. Among women aged 30-69 years, HPV positivity rates were highest for those aged 30-39 years for women with ASC-US cytology (30.7%), and 30-39 years for those with LSIL cytology (65.5%). HPV positivity rates generally decreased with increasing age but were broadly similar for women in each of the 10-year age groups between 40 and 69 years. For women with ASC-US results, the positivity rates in the 10-year age groups between 40 and 69 years ranged between 16.5% and 26.0% (Figure 109, Table 25). For women with LSIL results, the positivity rates were between 53.4% and 54.5% for these 10-year age groups (Figure 109, Table 26).

Histological outcomes in triage-positive women who attended colposcopy

In order to allow sufficient time for women to have attended colposcopy following a positive triage test, histological outcomes were assessed in women with low-grade cytology and a positive HPV triage test in the six-month period 1 July – 31 December 2018. In this period, there were 390 women with an ASC-

US cytology result and positive HPV triage test, and 920 who had an LSIL cytology result and positive HPV triage test. 358 (91.8%) of the women with ASC-US who were triage-positive and 850 (92.4%) of the women with LSIL who were triage-positive had a record of colposcopy and/or histology within the 12 months following their initial test results. Among the women with a record of colposcopy, 244 (68.2%) and 604 (71.1%) of the women with ASC-US and LSIL respectively have a histology record.

Histological outcomes in these women were initially considered in an analogous manner to Indicator 5.2 – that is, the number of women with CIN 2 or worse histology (CIN 2+; also see Appendix D), as a percentage of women who had a histology result available. The percentage of women with histology whose histology result was CIN 2+ was 21.7% for HPV triage-positive ASC-US and 18.7% for HPV triage-positive LSIL (Table 84, Table 85). These percentages varied by laboratory from 14.3% (Canterbury Health Laboratories) to 25.9% (Medlab Central Ltd) for HPV triage-positive ASC-US and from 10.0% (Canterbury Health Laboratories) to 30.2% (Medlab Central Ltd) for HPV triage-positive LSIL (Figure 110).

We additionally considered histological outcomes as a percentage of women who attended colposcopy (rather than only those with a histology result), as some women may have no histology because colposcopic impression was normal. The corresponding percentages of women with CIN 2+ histology was 14.8% for HPV triage-positive ASC-US and 13.3% for HPV triage-positive LSIL (Table 84, Table 85). These percentages varied by laboratory from 10.5% (Canterbury Health Laboratories) to 16.3% (Anatomical Pathology Services) for HPV triage-positive ASC-US and from 8.8% (Canterbury Health Laboratories) to 22.2% (Medlab Central Ltd) for HPV triage-positive LSIL (Figure 111). For context, these are also compared with the corresponding percentages for women with ASC-H and HSIL cytology with CIN 2+ histology (among women who attended colposcopy within six months), by laboratory, in Figure 111 and Figure 112.

Histological outcomes within 12 months in women with triage-positive test results are shown by age, as a percentage of women with histology recorded (Figure 113), and as a percentage of women with colposcopy recorded (Figure 114). Among women aged 30-69 years, the percentage of women with CIN 2+ histology within 12 months generally decreased with increasing age for HPV triage-positive ASC-US and LSIL. There were no cases of CIN 2+ among women aged 70+ years with ASC-US and a positive HPV triage test. There were no cases for women ages 70+ years with LSIL. The age group with the highest proportion of triage positive women with CIN2+ histology was 30-39 years for both ASC-US and LSIL (30.1% and 22.8%, respectively).

Trends

HPV triage

The proportion of women aged 30 years or more with low-grade cytology (and no recent abnormal cytology in the preceding five years) who received a subsequent HPV test is lower than the previous report for women with ASC-US results (97.6% in the previous period compared to 97.1% in the current period),

but women with LSIL results are higher than the previous period (96.0% in the previous period compared to 97.4% in the current period). The proportion of women aged less than 30 years with a subsequent HPV test is lower than the previous monitoring period for ASC-US but higher for LSIL results (1.1% in the previous period compared to 1.0% in the current period for ASC-US; and 0.6% in the previous period compared to 0.9% in the current period for LSIL).

Positive triage tests

The proportion of women aged 30 years or more who tested positive for a high risk HPV type is lower than the current report for ASC-US (23.7% in the previous report; 22.3% in the current report), and lower for LSIL (61.2% in the previous report; 59.4% in the current report).

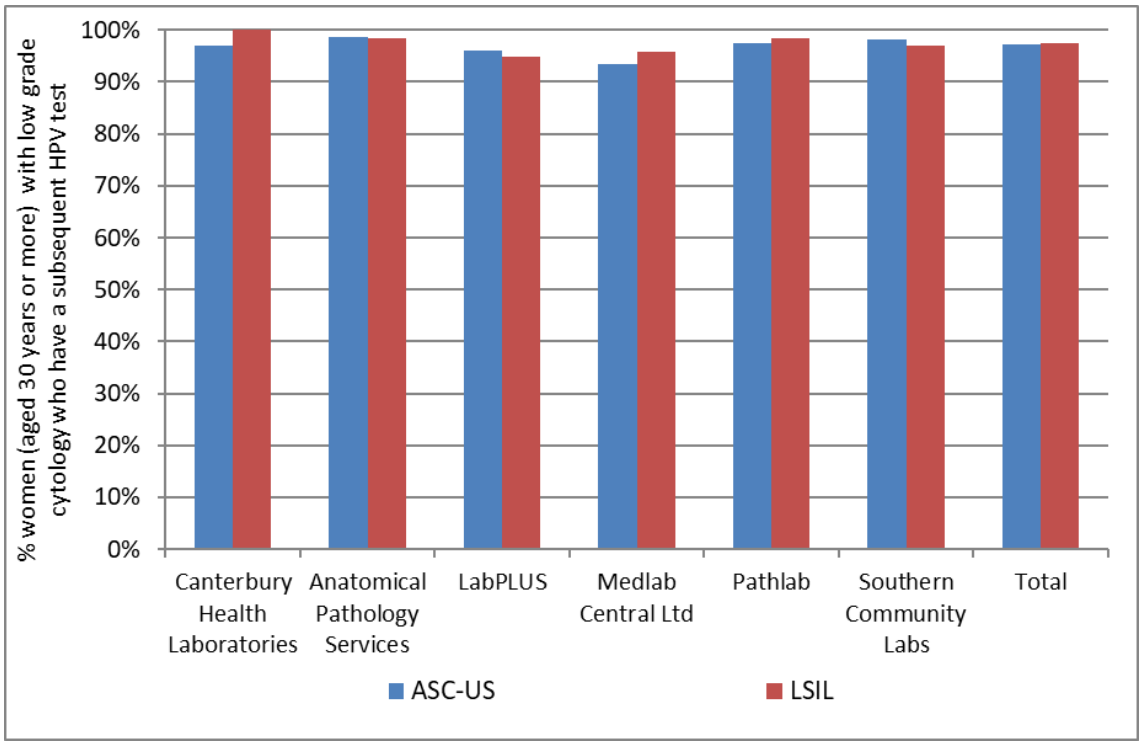
Histological outcomes in triage-positive women who attended colposcopy

91.8% of women with ASC-US cytology and a positive HPV triage test in the six-month reference period for the current report had a record of colposcopy and/or histology within the 12 months following their test result, which is higher than in the previous report (91.7%). For the current report, 68.2% of these women with colposcopy also had a histology record, which is lower than the previous report (69.8%). Of these women with a histology record, the histology result was CIN 2+ for 21.7% of women in the current report, compared with 19.6% in the previous report. When histological CIN 2+ outcomes were considered as a proportion of women with colposcopy, rather than histology, the corresponding figures were 14.8% in the current report versus 13.7% in the previous report. The proportion of triage-positive ASC-US women with CIN 2+ histology (among those who attended colposcopy) decreased compared to the previous report at three of six laboratories (Canterbury Health Laboratories, Medlab, Southern Community Labs; Figure 115). Caution must be taken when interpreting differences at LabPLUS due to frequently having small numbers of triage-positive women and therefore highly variable percentages).

For women with LSIL cytology and a positive HPV triage test in the reference period for the current report, 92.4% had a record of colposcopy and/ or histology within 12 months of their result, which is higher than the 92.2% of women in the previous report. For the current report 71.1% of these women with colposcopy also had a histology record, compared with 70.8% in the previous report. Of those women with a histology record, the histology result was CIN 2+ for 18.7% of women in the current report, compared with 19.7% in the previous report. When histological CIN 2+ outcomes were considered as a proportion of women with colposcopy, rather than histology, the corresponding figures were 13.3% for the current report and 13.9% for the previous report. Trends in this proportion of LSIL triage-positive women with CIN 2+ histology (among those who attended colposcopy) are shown in Figure 116. The proportion with CIN2+ histology decreased in three laboratories (Canterbury Health Laboratories, LabPLUS, Southern Community Labs Dunedin).

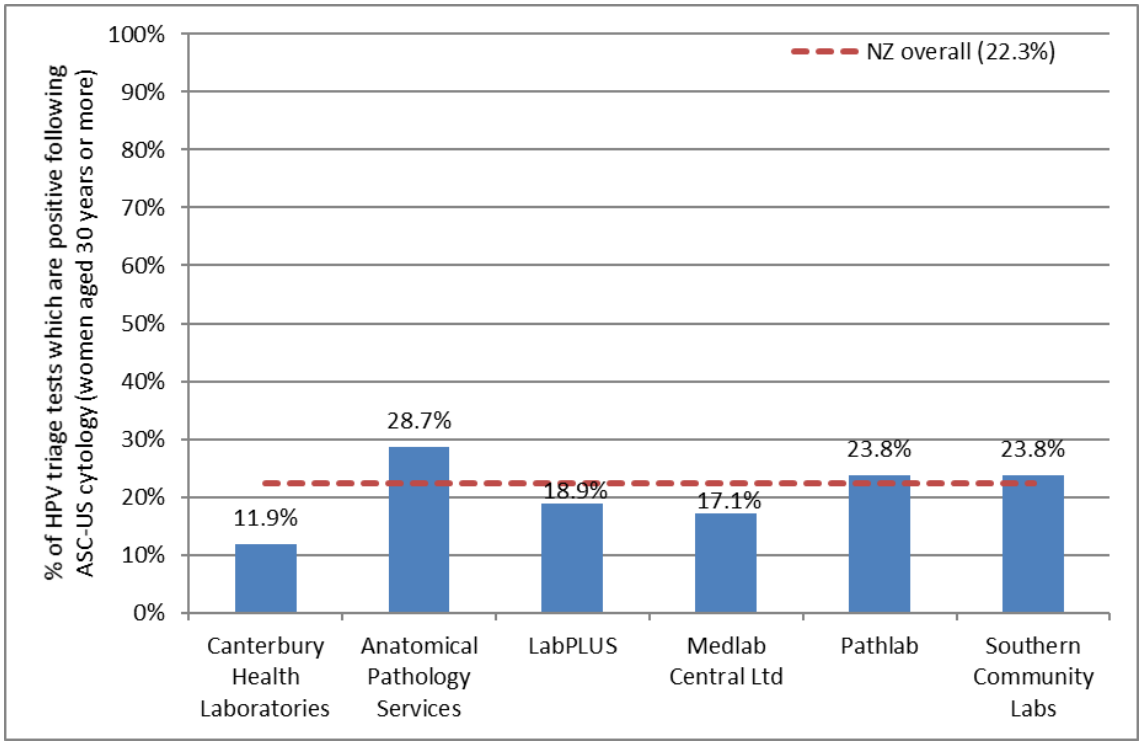
Comments	A small number of women aged less than 30 years with low-grade results, no recent abnormalities (in the previous five years) and no record at any time of a previous high-grade squamous abnormality (cytological or histological), have a record of a subsequent HPV test (22 women). This is the same number of women as in the previous report. It is uncertain whether these HPV tests were performed for the purpose of triage, or for other reasons. In this report, we excluded women aged less than 30 years from this indicator if they had ever had a previous high-grade squamous abnormality (either ASC-H/ HSIL cytology, or CIN 2/3 histology). This was done in order to avoid potential inadvertent inclusion in this group of women being tested for HPV in concordance with the guidelines as part of "historical testing". This could occur as a result of a previous high-grade squamous abnormality (either ASC-H/ HSIL cytology, or CIN 2/3 histology) currently managed by annual cytology, which occurred more than five years earlier (since abnormalities within the previous five years are already taken into account). It is also possible that some women were aged 29 years at the time of their cytology sample, but 30 years at the time of the cytology result, although previous exploration has suggested that the extent of this is likely to be small.[20,21] Another possible explanation is that these women are being followed up for a previous high-grade result but this is not recorded on the NCSP Register (for example because this occurred overseas). The HPV test may also have been ordered by a specialist. However note that inadvertent inclusion of HPV tests ordered by a specialist to resolve discordant results (or for historical testing) should be minimised since women were excluded from this indicator if they had any recent abnormalities (past five years, any abnormality grade); if they had ever had a high-grade squamous abnormality (but no glandular abnormality) recorded on the NCSP Register; if the sample for HPV testing was collected on the same day as a recorded colposcopy visit for that woman; or if the sample for HPV testing was collected more than five weeks after the cytology sample.

Figure 106 - Proportion of women (aged 30 years or more) with low-grade cytology who have a subsequent HPV test, by laboratory and cytology result



Excludes women with abnormal cytology in the five years preceding their low-grade cytology sample.

Figure 107 - Proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more), by cytology laboratory



Note that LabPLUS results are based in very small numbers of triage-positive women (see Table 84).

Figure 108 - Proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more), by cytology laboratory

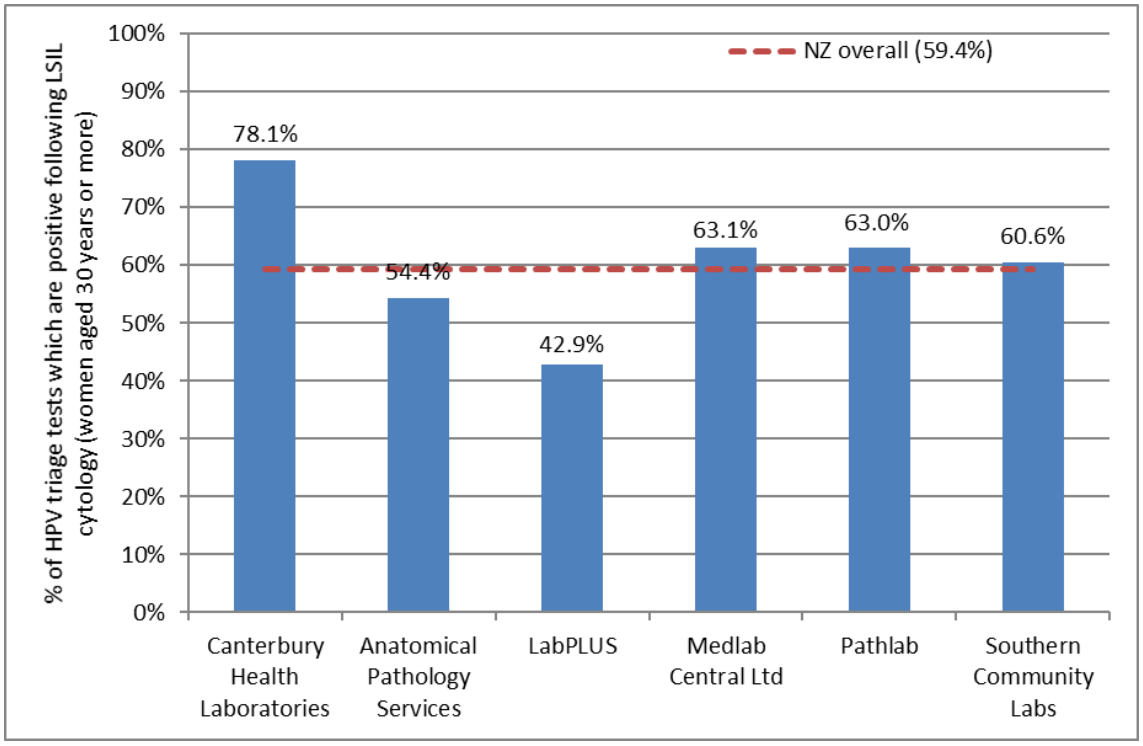
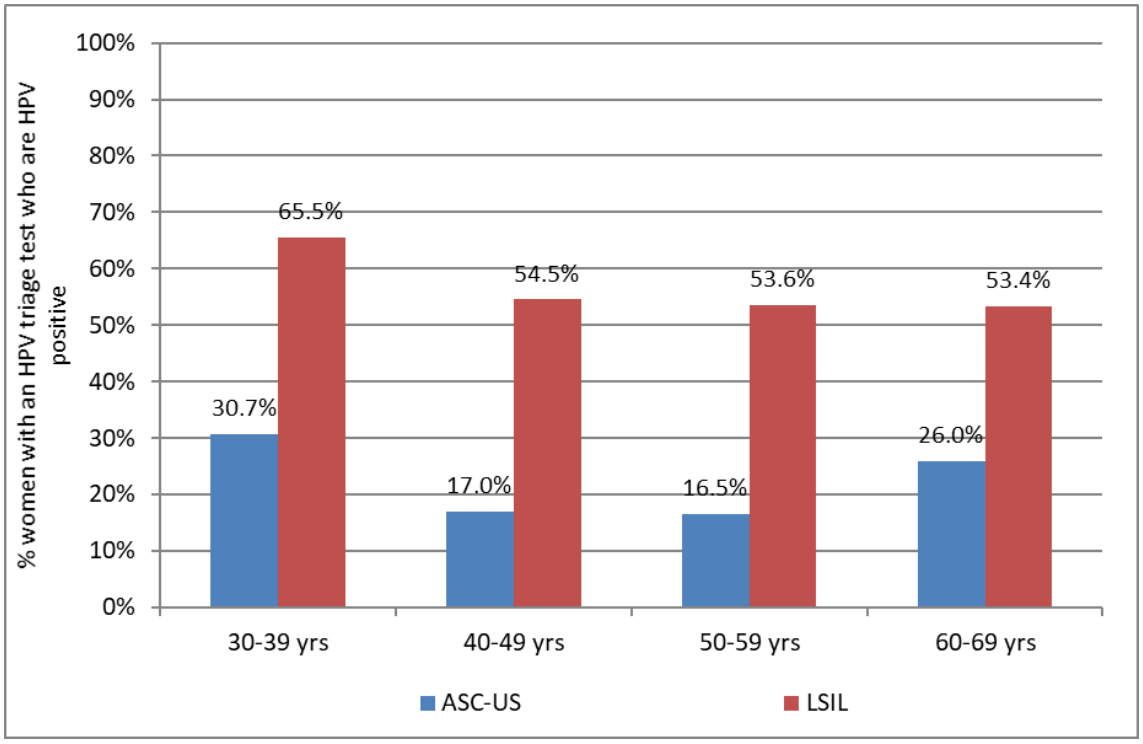


Figure 109 - Proportion of women with an HPV triage test who are HPV positive, by age and cytology result



Note: Excludes results for women aged less than 30 years and aged 70 years or more, since these are based on very small numbers of women with valid HPV test results.

Table 25 - HPV triage test results following ASC-US cytology, by age and cytology laboratory

Laboratory	Women with valid HPV test results		Women with positive HPV test results (number and % within each age group)											
	< 30yrs*	30+ yrs	< 30yrs*		30-39 yrs		40-49 yrs		50-59 yrs		60-69 yrs		70+ yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Canterbury Health Laboratories	0	126	0	0.0	6	14.3	4	11.8	2	5.6	3	23.1	0	0.0
Anatomical Pathology Services	2	296	2	100.0	42	44.2	16	18.4	18	22.8	9	27.3	0	0.0
LabPLUS	0	148	0	0.0	9	19.6	9	17.3	4	12.9	5	29.4	1	50.0
Medlab Central Ltd	2	210	2	100.0	12	20.3	9	12.5	8	15.1	7	28.0	0	0.0
Pathlab	0	273	0	0.0	27	31.8	19	23.8	11	16.2	7	18.4	1	50.0
Southern Community Labs	2	424	1	50.0	50	33.8	16	15.4	19	17.4	16	29.1	0	0.0
Total	**6**	**1477**	**5**	**83.3**	**146**	**30.7**	**73**	**17.0**	**62**	**16.5**	**47**	**26.0**	**2**	**12.5**

Excludes women with abnormal cytology in the five years preceding their low-grade cytology sample.

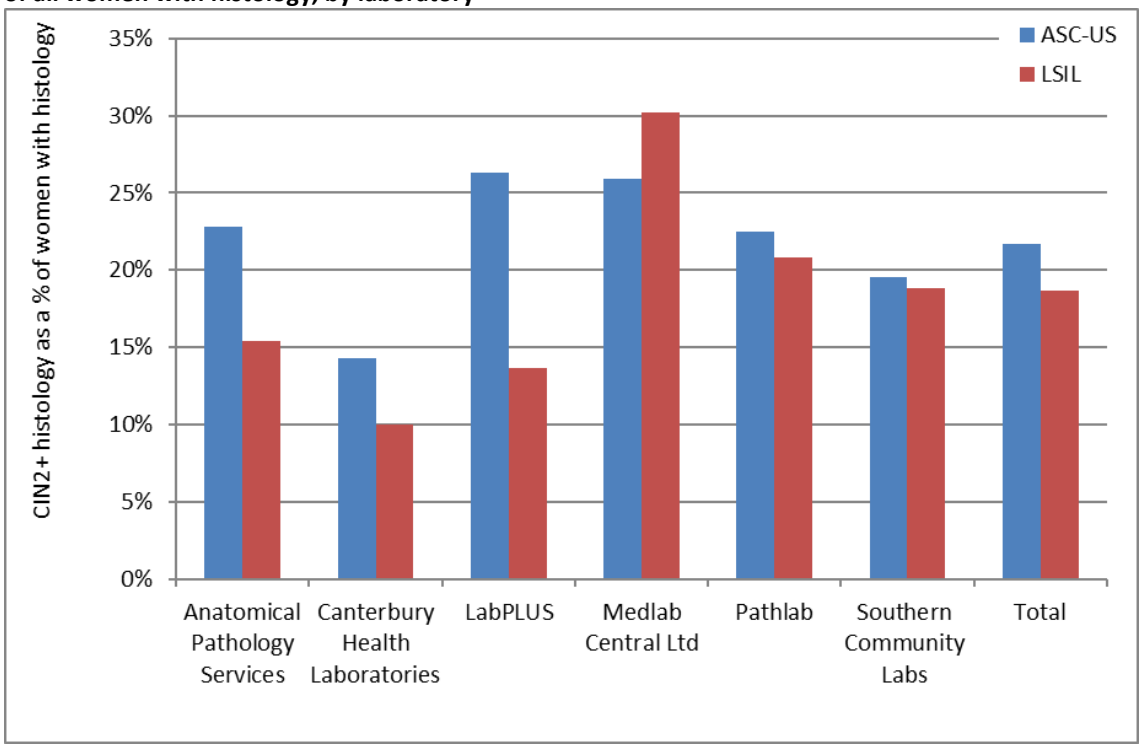
** Additionally excludes women with any previous squamous high-grade (cytology or histology).*

Table 26 - HPV triage test results following LSIL cytology, by age and cytology laboratory

Laboratory	Women with valid HPV test results		Women with positive HPV test results (number and % within each age group)											
	< 30yrs*	30+ yrs	< 30yrs*		30-39 yrs		40-49 yrs		50-59 yrs		60-69 yrs		70+ yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Canterbury Health Laboratories	1	64	1	100.0	29	80.6	9	69.2	9	75.0	3	100.0	0	0.0
Anatomical Pathology Services	1	351	1	100.0	96	57.5	49	52.7	31	47.7	13	56.5	2	66.7
LabPLUS	1	91	0	0.0	20	46.5	13	40.6	4	40.0	2	33.3	0	0.0
Medlab Central Ltd	1	111	0	0.0	40	76.9	17	50.0	8	61.5	5	41.7	0	0.0
Pathlab	0	243	-	-	79	75.2	37	54.4	23	51.1	12	52.2	2	100.0
Southern Community Labs	12	644	10	83.3	191	65.4	104	57.8	65	56.0	28	54.9	2	40.0
Total	**16**	**1504**	**12**	**75.0**	**455**	**65.5**	**229**	**54.5**	**140**	**53.6**	**63**	**53.4**	**6**	**60.0**

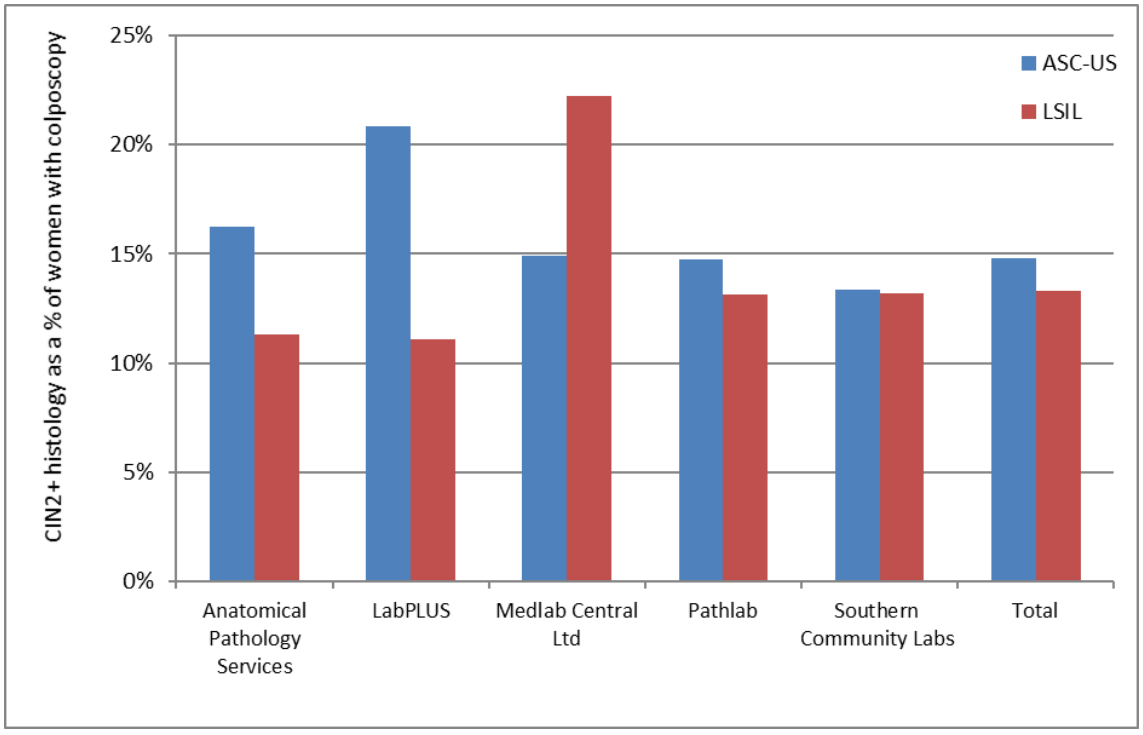
Excludes women with abnormal cytology in the five years preceding their low-grade cytology sample.
** Additionally excludes women with any previous squamous high-grade (cytology or histology).*

Figure 110 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of all women with histology, by laboratory



Note that LabPLUS results are based in very small numbers of triage-positive women (see Table 84 and Table 85).

Figure 111 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of all women who attended colposcopy, by laboratory



Note that LabPLUS results are based in very small numbers of triage-positive women (see Table 84 and Table 85).

Figure 112 - Women with histologically-confirmed CIN 2+ within 12 months, as a percentage of all women who attended colposcopy, by laboratory and referral cytology

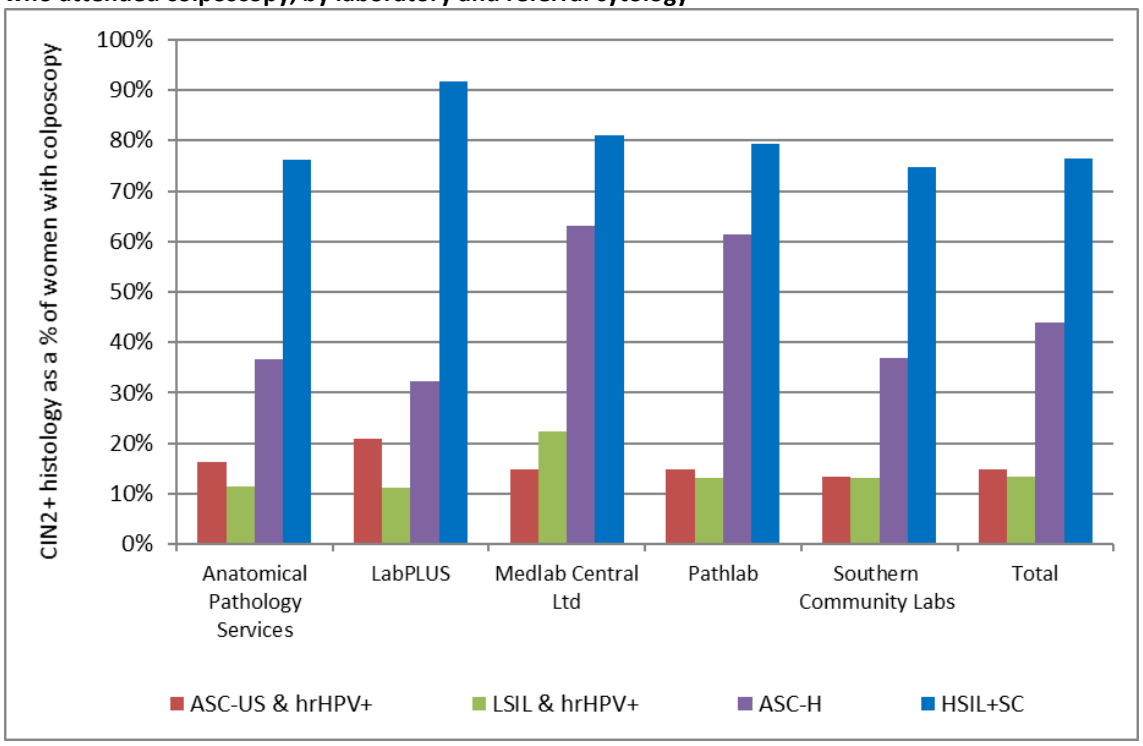


Figure 113 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with histology recorded, by age

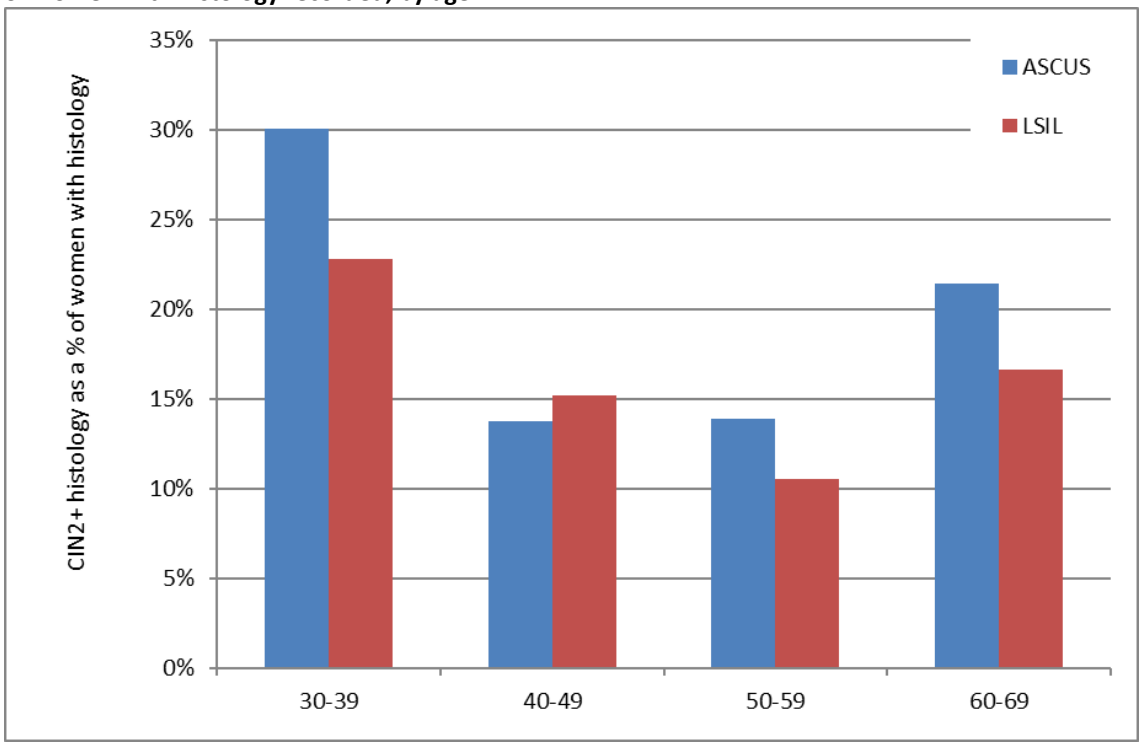


Figure 114 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with colposcopy recorded, by age

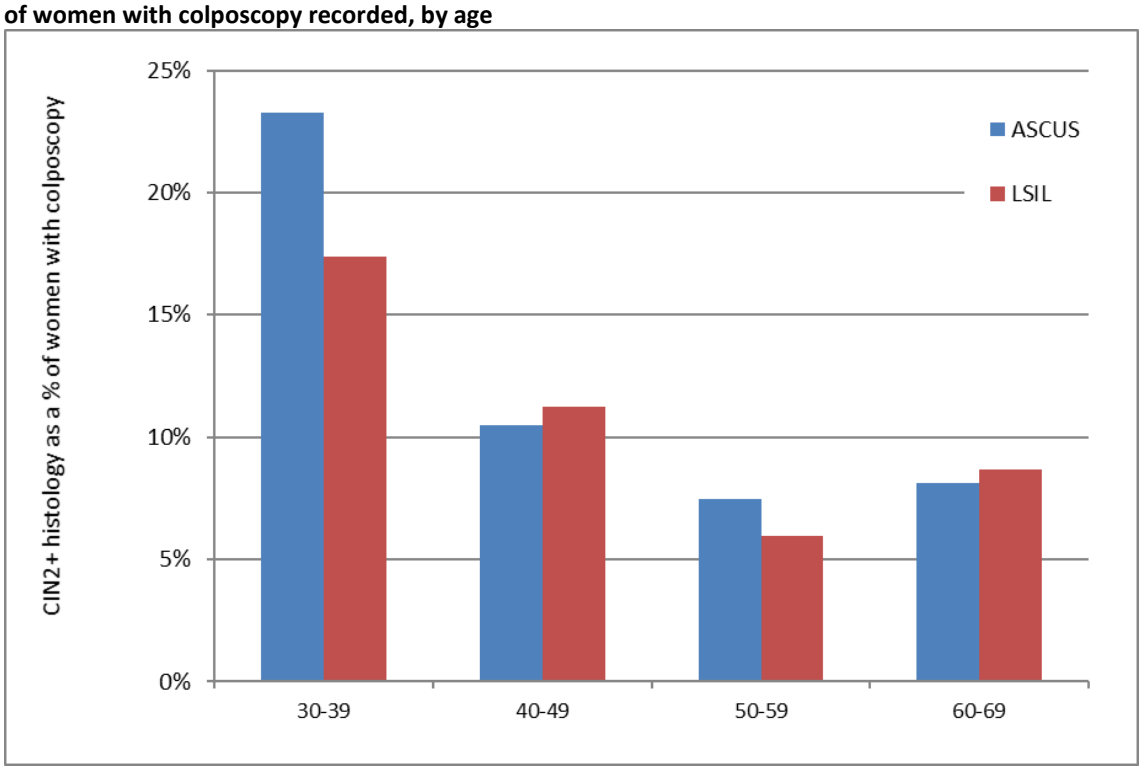
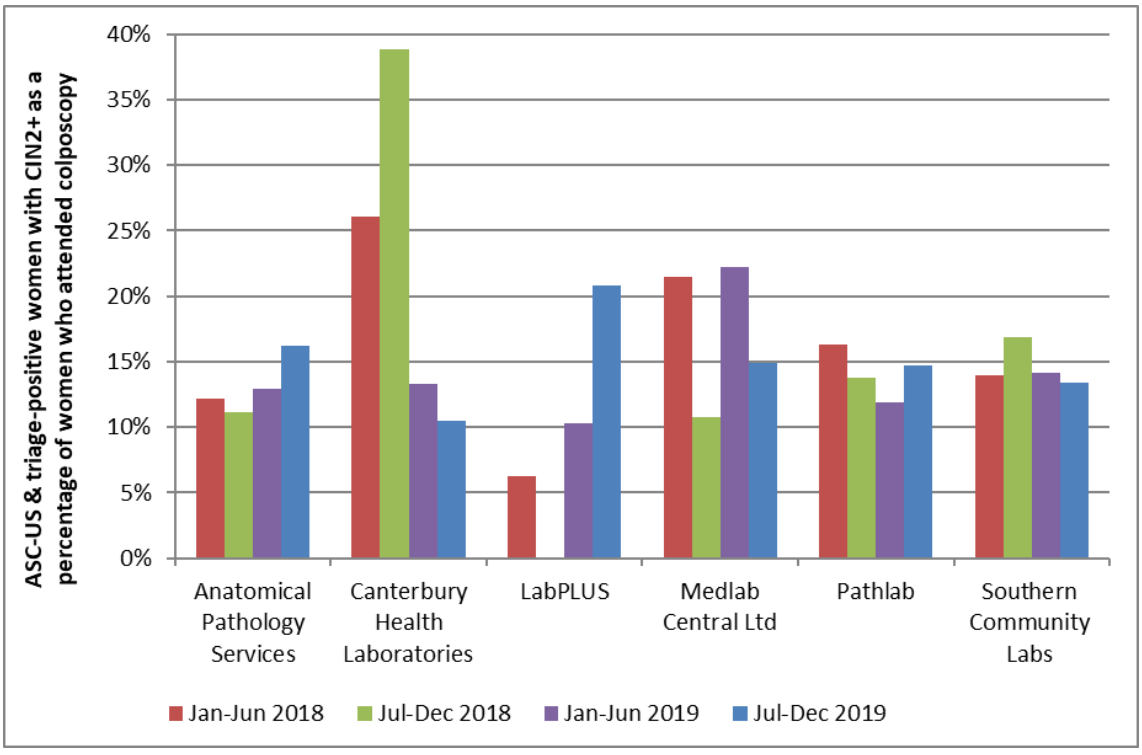
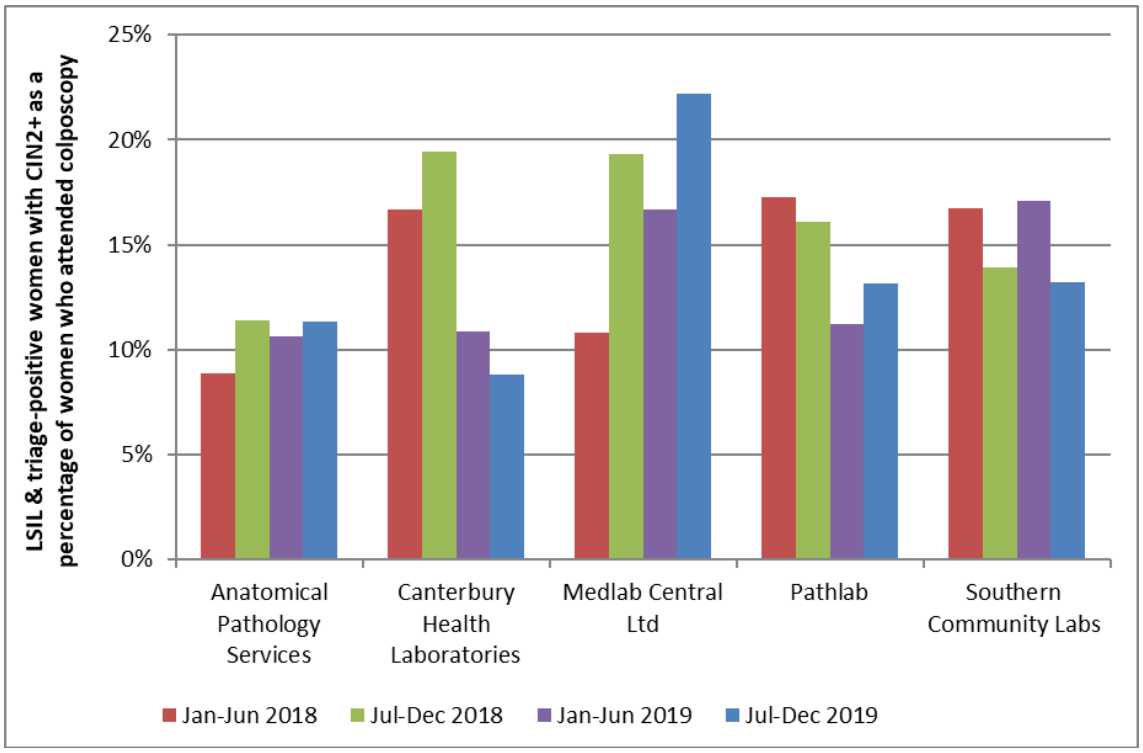


Figure 115 – Trends in ASC-US triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with colposcopy recorded, by laboratory



Time periods relate to monitoring report periods; results relate to samples collected in the 6-month period 12 months prior to the monitoring period, to allow for sufficient follow-up time for colposcopy/ histology. See Table 84.

Figure 116 – Trends in LSIL triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with colposcopy recorded, by laboratory



Time periods relate to monitoring report periods; results relate to samples collected in the 6-month period 12 months prior to the monitoring period, to allow for sufficient follow-up time for colposcopy/ histology. Note that this graph excludes LabPLUS due to frequently having small numbers of triage-positive women and highly variable percentages. See Table 85.

Indicator 8.2 – HPV test volumes

Definition

All HPV tests received by laboratories within the monitoring period were retrieved. This volume of HPV tests (performed for any purpose) is reported on by:

- Laboratory
- Ethnicity
- Age group
- Purpose

Purpose is defined as one of the following categories:

i) Post-treatment *(women treated for high-grade squamous lesions (specifically CIN 2/3) in the period six months to four years prior to the HPV sample date, to capture two rounds of testing)*

ii) Historical *(high-grade squamous cytology (ASC-H/ HSIL) or histology (CIN 2/3) more than three years prior to the HPV test sample)*

iii) Taken at colposcopy (*HPV sample collected on the same date as a colposcopy visit or a histology sample in the same woman)*

iv) HPV triage *(as defined in Indicator 8.1, but restricted to women aged 30 years or more at the time of the cytology specimen, and where the low-grade cytology (ASC-US or LSIL) was no more than six months prior to the HPV test)*

v) Other *(tests which do not fit into any of the above categories)*

These categories are defined hierarchically in the order shown; that is, a test cannot fit into more than one category, and tests are only considered for inclusion in a category if no previous categories in the list apply. The purpose of tests is not at its final stage of development and is an item that is under ongoing review.

Tests in the 'Other' category were explored further. The number of tests that fell into the 'Other' category was found to be relatively high in this report, but this analysis is nonetheless indicative of the appropriate purposes. It is also useful to report the extent of hrHPV tests for other purposes and the need to eliminate hrHPV tests for other purposes that are not within the NCSP guidelines. For this reason, the purpose of hrHPV tests are discussed in this report.

Rates of invalid HPV tests are also reported on.

Measures reported by age are based on the age of the women on the date that the HPV test sample was collected.

Target

Targets have not yet been set.

Current Situation

Overall volumes

There were 15,736 samples received by laboratories for HPV testing within the current monitoring period. These are reported on further in Table 86 to Table 92. Virtually all (98.0%) samples for HPV testing were from women aged 20-69 years. The large majority of women (87.2%) were aged 30 years or more (Figure 117, Table 90).

The number of samples received by laboratories for HPV testing ranged from 812 (LabPLUS; 5.2% of all HPV tests) to 6,879 (Southern Community Labs; 43.7% of all HPV tests; Figure 118, Table 86). Figure 119 and Table 86 show for each laboratory the ratio of the number of HPV tests received, divided by the number of cytology tests received (expressed as a percentage). This measure provides some correction for the variation in workloads between different laboratories. It is likely, for example, that laboratories which process a larger volume of cytology tests would also undertake a larger volume of HPV tests. The ratio of HPV tests to cytology tests reported was on average 7.5% across New Zealand – that is, on average 7.5% of cytology tests are associated with an HPV test. This ratio varied by laboratory from 6.5% (Southern Community Labs; i.e. fewer HPV tests processed in relation to cytology tests processed than the national average) to 12.3% (Canterbury Health Laboratories; i.e. more HPV tests processed in relation to cytology tests processed than the national average). The distribution of HPV tests by ethnicity is shown in Table 89. The overall proportion of HPV tests with invalid results was 0.03% (Table 87). The proportion was small for the HPV test technologies reported (Table 88).

Purpose of HPV tests

These HPV tests were further analysed in order to ascertain the purpose for which they were performed. Nationally, it was calculated that 2,429 (15.4%) were for post-treatment management for women treated in the past four years (Figure 120); 5,758 (36.6%) were for follow-up management of women with high-grade squamous cytology or histology more than three years previously (historical testing); 1,500 (9.5%) were on samples collected at a colposcopy visit which did not fit into a previous category (possibly for resolution of discordant results); and 2,805 (17.8%) were for triage of low-grade cytology in women aged 30 years or more. There were 3,244 (20.6%) HPV tests that did not fit into any of the previously described categories (Figure 120). Further breakdowns of HPV tests by purpose are presented by age (Figure 121, Table 90), laboratory (Figure 122), and ethnicity (Table 89, Table 91).

There were variations in HPV test purpose by age (Figure 121, Table 90). HPV triage (by the definition used here, and consistent with NCSP Guidelines) did not occur in women aged less than 30 years. In women aged less than 30 years, a comparatively larger proportion were taken for post-treatment management (30.8%) or at colposcopy (19.8%). For women aged 20-24 years the most common reason that HPV tests were performed were for colposcopy. For all 5-year age groups from 25 to 59 years the most common reason that HPV tests were performed were for historical high-grade squamous abnormalities (more than three years ago). For women aged 60-64 years and older the most common reason that HPV tests were performed were for Other.

HPV test purpose also varied by laboratory (Figure 122, Table 91). Among tests for which the purpose could be determined, the most common reason for HPV testing for all laboratories except LabPLUS was historical high-grade squamous abnormalities (more than three years ago. For LabPLUS, HPV triage was the most common reason for HPV testing. In all laboratories, however, tests for which the purpose was unclear were quite common, varying from 12.4% at LabPLUS to 26.5% Southern Community Labs. The proportion of tests performed for post-treatment management varied from 13.9% (Southern Community Labs) to 21.3% (Canterbury Health Laboratories), while the proportion performed to follow up women with historical high-grade squamous abnormalities varied from 21.3% (LabPLUS) to 42.1% (Anatomical Pathology Services). The proportion of tests where the sample was collected at colposcopy but not for one of the previous purposes ranged from 2.6% (Anatomical Pathology Services) to 22.7% (LabPLUS). The proportion of tests performed for HPV triage ranged from 14.3% (Southern Community Labs) to 28.7% (LabPLUS).

The most common reason for HPV testing for Māori, Pacific and European/ Other women was historical high-grade squamous abnormalities (more than three years ago), whilst HPV triage was the most common reason for Asian women (Table 89).

Tests in the 'Other' category were further explored. A proportion of the 'Other' tests (3.9%; 125 tests) were potentially tests performed for post-treatment management, because the same woman had CIN 2/3 histology recorded on the NCSP Register, however there was no explicit record of treatment available on the NCSP Register, potentially due to incomplete colposcopy data on the NCSP Register. Another 5.2% occurred after treatment, but did not meet the criteria for post-treatment management because they occurred within 6 months of treatment (1.0%; 32 tests), or after treatment of either a non-squamous high-grade (1.5%; 49 tests), or a non-high-grade (2.6%; 85 tests) or following treatment of cervical cancer (0.06%; 2 tests). A further 20.2% of the 'Other' HPV tests occurred after a previous abnormality but one which did not meet the criteria for historical testing either because it was non-squamous (9.9%; 321 tests), the high-grade squamous cytology was less than three years ago (10.1%; 329 tests), or the histology diagnosis was cervical cancer (0.2%; 5 tests).

A larger proportion of the 'Other' tests (27.4%; 890 tests) occurred in women who did not have any specific high-grade abnormality recorded on the NCSP Register, but who did have a record on the NCSP Register suggesting that they had a previous high-grade abnormality (although the Register does not record whether it was a squamous abnormality or not; consequently, HPV testing is not indicated in these women by the NCSP guidelines). These records predominantly indicated prior high-grade cytology (22.0%; 714 tests), but some suggested prior high-grade histology (5.4%; 176 tests). Smaller proportions of HPV tests were associated with a low-grade abnormality, including either a current low-grade cytology result which did not meet the criteria for triage because the woman had another recent abnormality and triage was not required (3.0%; 97 tests), a record suggesting a previous low-grade cytology

not explicitly recorded on the NCSP Register (3.2%; 105 tests), or collected by a specialist where none of the above reasons applied (7.6%; 246 tests). After this exploration, there remained 958 tests (29.5% of 'Other' tests; 6.1% of all HPV tests in the monitoring period) where purpose still could not be determined.

HPV tests at colposcopy

HPV tests taken at colposcopy, were further explored based on the DHB of the colposcopy clinic where the sample was taken and whether or not it was a public or a private clinic. This included only HPV tests where a colposcopy record exists and not those inferred by a histology result. Nationally, more of the HPV tests that were taken at colposcopy came from public facilities (88.7%; 1,205 tests) than from private facilities (11.3%; 154 tests). As the number of HPV tests collected at a colposcopy clinic is potentially reflective of the number of colposcopies performed there, a rate of HPV tests at colposcopy which takes this variation into account was derived, in order to provide more information. The rate of HPV tests at colposcopy was calculated by dividing the number of HPV tests collected at colposcopy by the total number of colposcopies within that DHB or across private colposcopy clinics, expressed as a percentage. This rate can be broadly interpreted as the percentage of colposcopies (within a given DHB or sector) where an HPV test sample is collected. Across New Zealand, HPV test samples were collected in approximately 11.2% of colposcopies. In DHBs where HPV tests were collected at colposcopy, this value ranged from 3.1% (Auckland) to 35.7% (Lakes), and was 11.1% overall across all public DHB clinics (Figure 123, Table 92). In private practice, this rate was 11.6%. No HPV tests were conducted in Hutt Valley and Tairawhiti.

Trends

A lower volume of HPV samples was received at laboratories for testing in the current (15,736) compared to the previous monitoring period (16,282; a decrease of 3.4%). Two laboratories experienced an increase in the number of samples received between the current monitoring period compared with the previous report period (LabPLUS and Medlab Central). The laboratory with the largest percentage decrease in the number of tests between the previous and current period was Anatomical Pathology Services (from 3,332 to 3,085; 7.4% decrease). Trends by laboratory can be seen in Figure 124.

Changes in HPV test volumes varied across all test purpose categories. The greatest increase in the number of tests performed for the four guidelines categories (post-treatment, historical testing, HPV triage or tests at colposcopy) occurred in HPV tests taken at colposcopy (9.7% increase; 133 tests) and the greatest decrease was seen in HPV tests taken for 'Other' reasons (decrease of 15.5% or 596 tests; Figure 125). A decrease was also seen in the number of HPV tests taken for post-treatment (107 tests). The proportion of HPV tests which are invalid remains very small (Table 88).

Comments

HPV volumes by laboratory will vary for a number of reasons, one of which being the general volume of work in that laboratory. In order to provide some correction for the variation in workloads between different laboratories, we calculated the ratio of HPV tests received to cytology tests reported on (Figure

119, Table 86). Other reasons for variations in the rate of HPV testing by laboratory (which are not taken into account in this ratio) may include differences in the population they serve, because HPV testing is performed in specific subgroups of women. For example, HPV triage testing is performed in women with low-grade (ASC-US/LSIL) cytology results (but without recent abnormalities), therefore laboratories reporting higher rates of low-grade abnormalities may also have higher rates of triage testing. Conversely, laboratories reporting on a larger proportion of cytology from colposcopy clinics may be more likely to perform HPV tests arising from colposcopy (for example LabPLUS) but less likely to perform HPV triage testing, because women attending colposcopy have generally had a recent abnormality and therefore do not require triage. These issues may for example partly explain differences in the ratios between different Laboratories. To understand in more detail, the reasons for the differences, an explicit exploration of the purpose for which the HPV test was performed has been examined here.

Exploration is ongoing into the potential reason for tests in the 'Other' category, as is the refinement of specifications for the analysis of purpose. Some possible explanations include follow-up of women previously treated for high-grade squamous abnormalities where these abnormalities occurred outside New Zealand, prior to the woman being enrolled on the NCSP Register, or prior to the inception of the NCSP Register. The latter may potentially explain why the proportion of 'Other' tests is higher in older women than in younger women (except for women aged 20-24). Synopses held on the NCSP Register of previous (self-reported) high-grade abnormalities have been used in this report to explore this possibility further (although these synopses do not distinguish between squamous abnormalities and glandular abnormalities; HPV testing is currently only recommended for the management of women with previous squamous abnormalities). The proportion associated with a synopsis reflecting a previous high-grade abnormality (cytological or historical) reported here (27.4%) is higher than that in the previous report (24.8%), and the number of tests in this category has decreased since the previous report (from 951 to 890). In a June 2015 newsletter, the NCSP reminded laboratories that women with a previous glandular lesion, or a high-grade synopsis code on their screening history but no confirmation that the previous abnormality was squamous, should remain on annual screening and HPV testing is not indicated for these women. In reports prior to Number 49 (July – December 2017), some HPV tests that were collected at colposcopy were incorrectly classified in the 'Other' category (generally within the sub-category of a recent high-grade abnormality that therefore did not meet the criteria for post-treatment management or historical testing). This was corrected in Report 49 and the increase in tests collected at colposcopy is explained by this change. The number of tests collected at colposcopy reduced in Report 50 but increased in Report 51 and this reporting period, and is now higher than Report 49 by number and proportion.

Figure 117 - Volume of HPV test samples received by laboratories during the monitoring period, by age

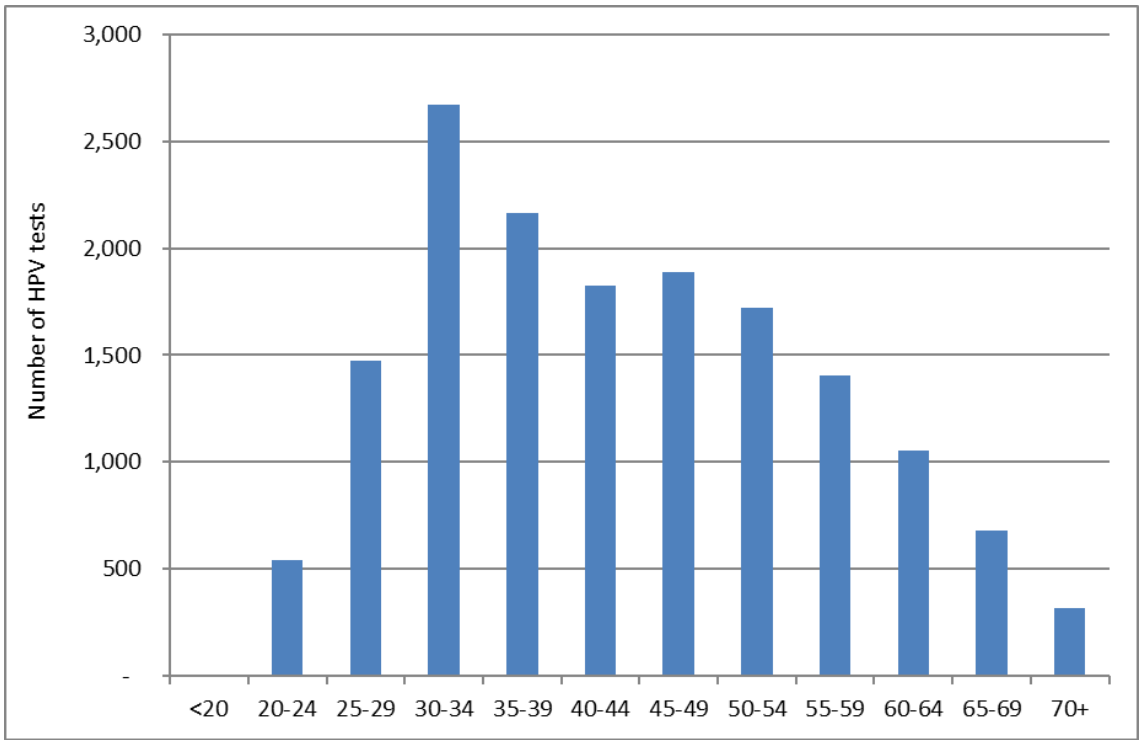


Figure 118 - Volume of HPV test samples received by laboratories during the monitoring period, by laboratory

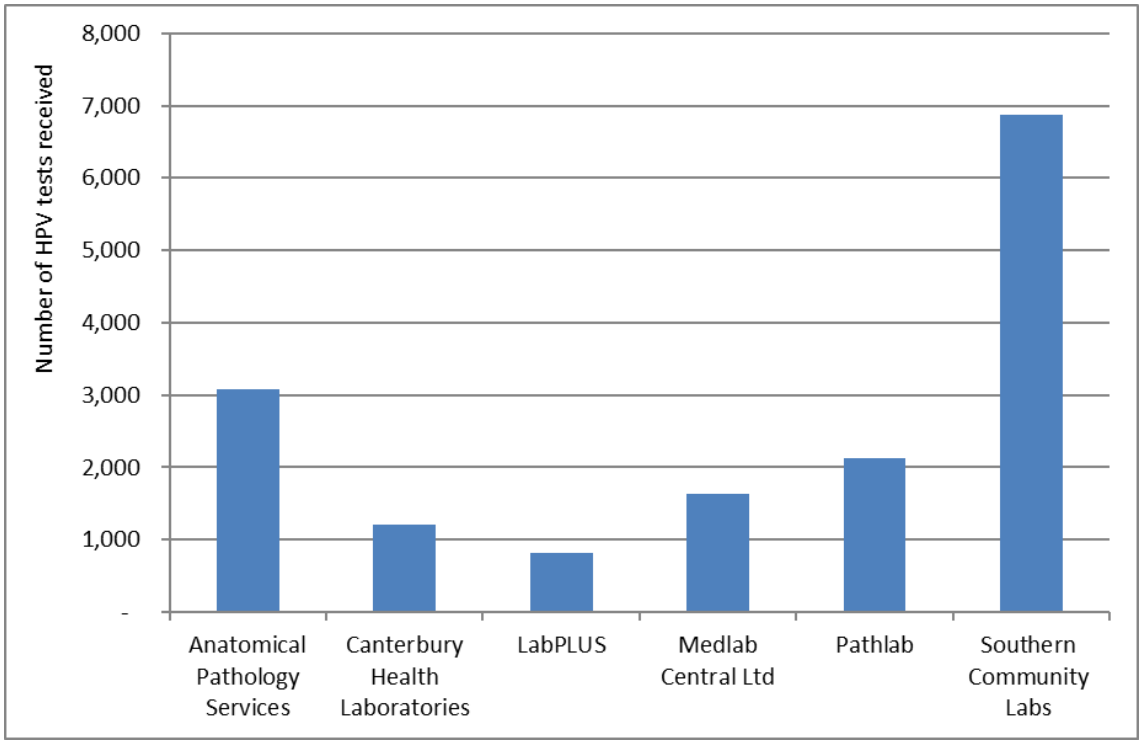
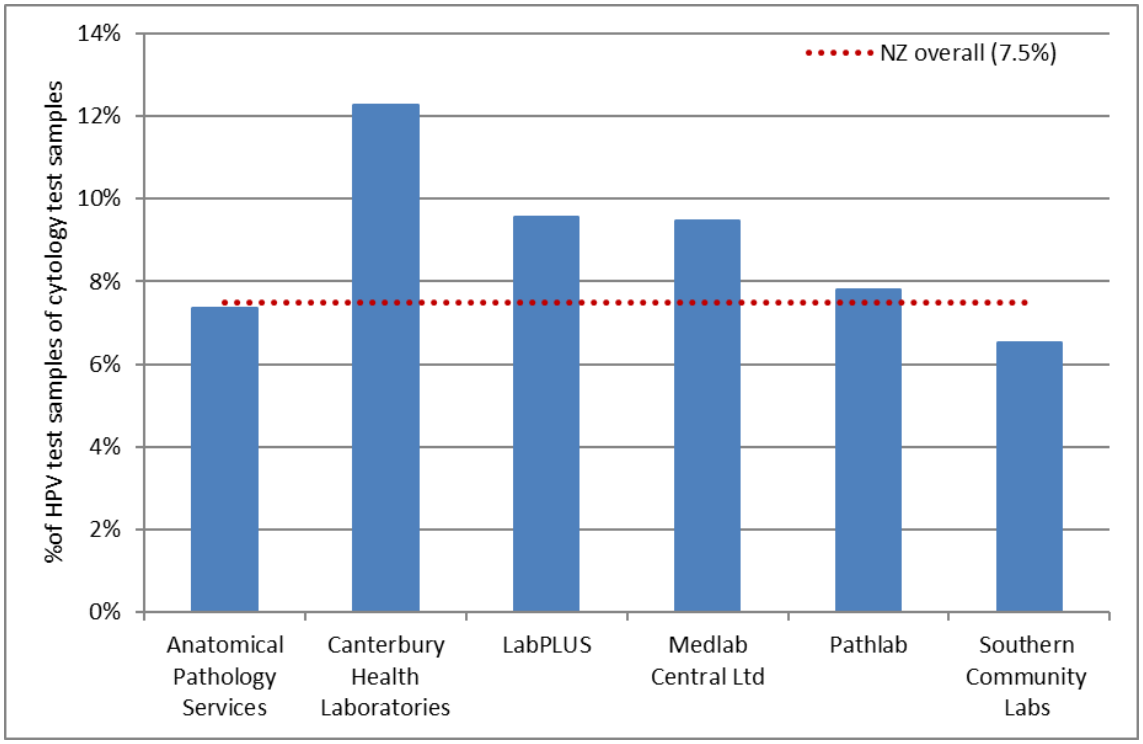


Figure 119 - HPV test samples as a percentage of cytology test samples received during the monitoring period, by laboratory



HPV tests/ colposcopy can be interpreted as the percentage of cytology tests which have an associated HPV test.

Figure 120 - Volume of HPV test samples received during the monitoring period, by purpose

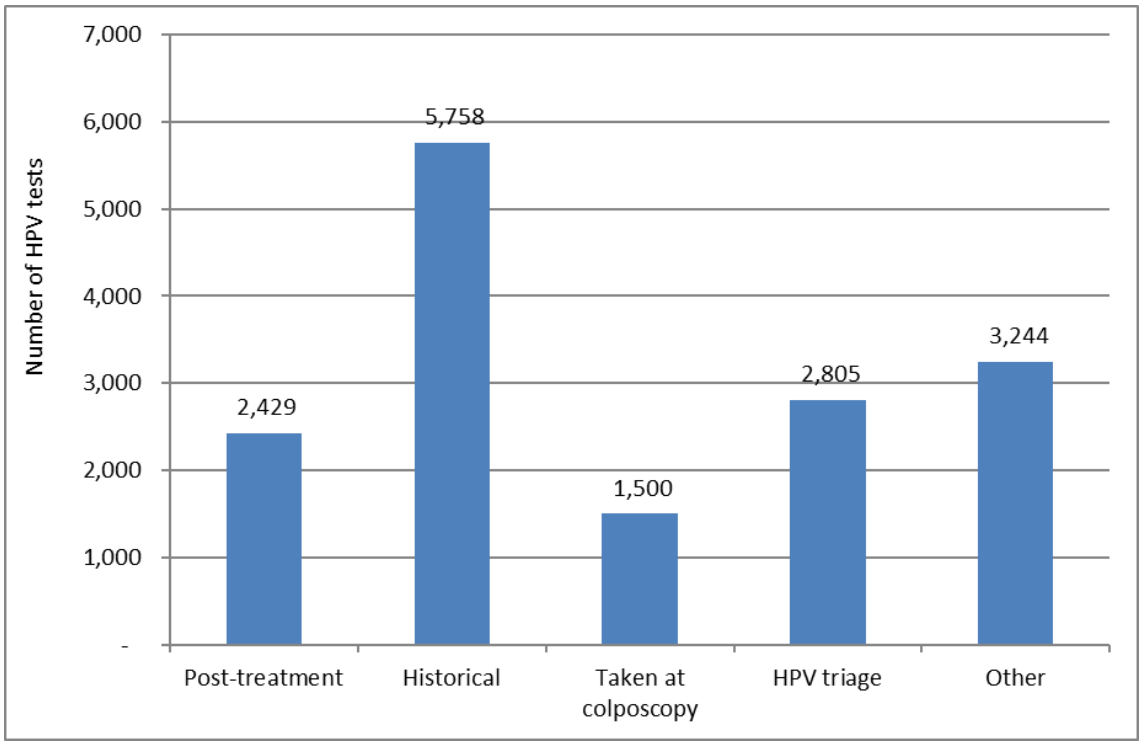


Figure 121 - HPV test samples received during the monitoring period, by purpose and age

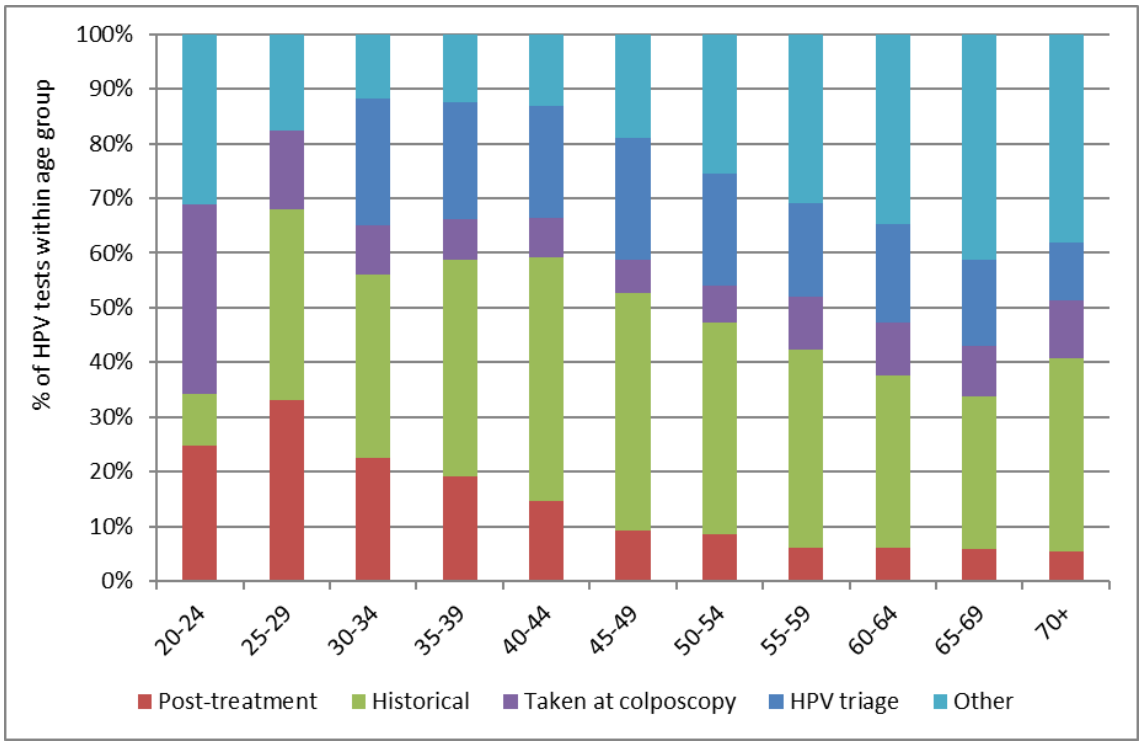


Figure 122 - HPV test samples received during the monitoring period, by purpose and laboratory

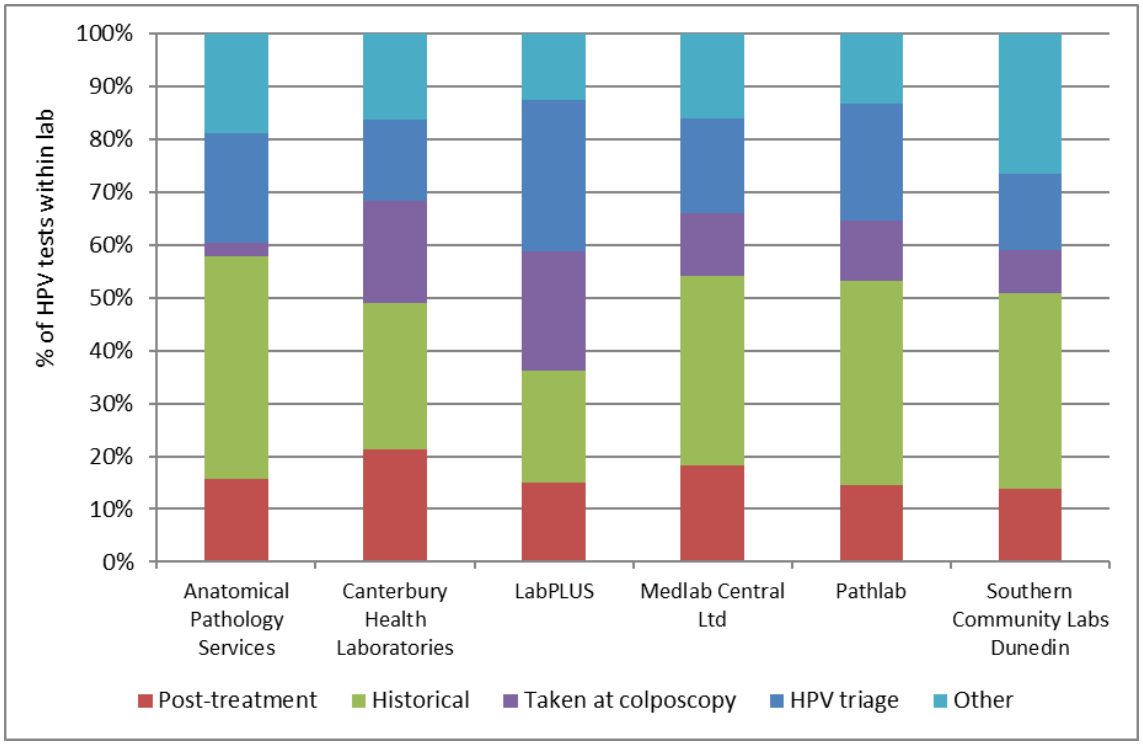
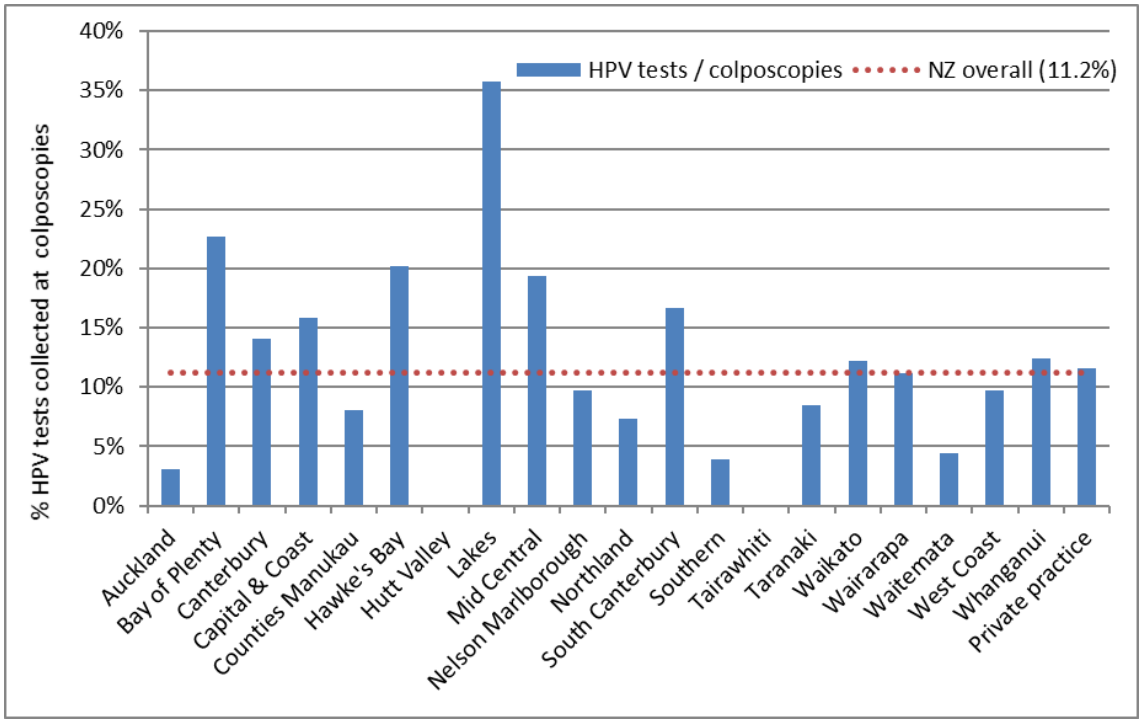


Figure 123 - HPV test samples collected at colposcopy, in relation to total colposcopies* performed in the period, by DHB



*HPV tests/ colposcopy can be interpreted broadly as the percentage of colposcopies within this DHB/ sector where a sample is collected for HPV testing. *the number of HPV tests here includes only HPV test samples where a colposcopy report record exists and is not inferred by a histology result.*

Figure 124 - Trends in volumes of HPV test samples received, by laboratory

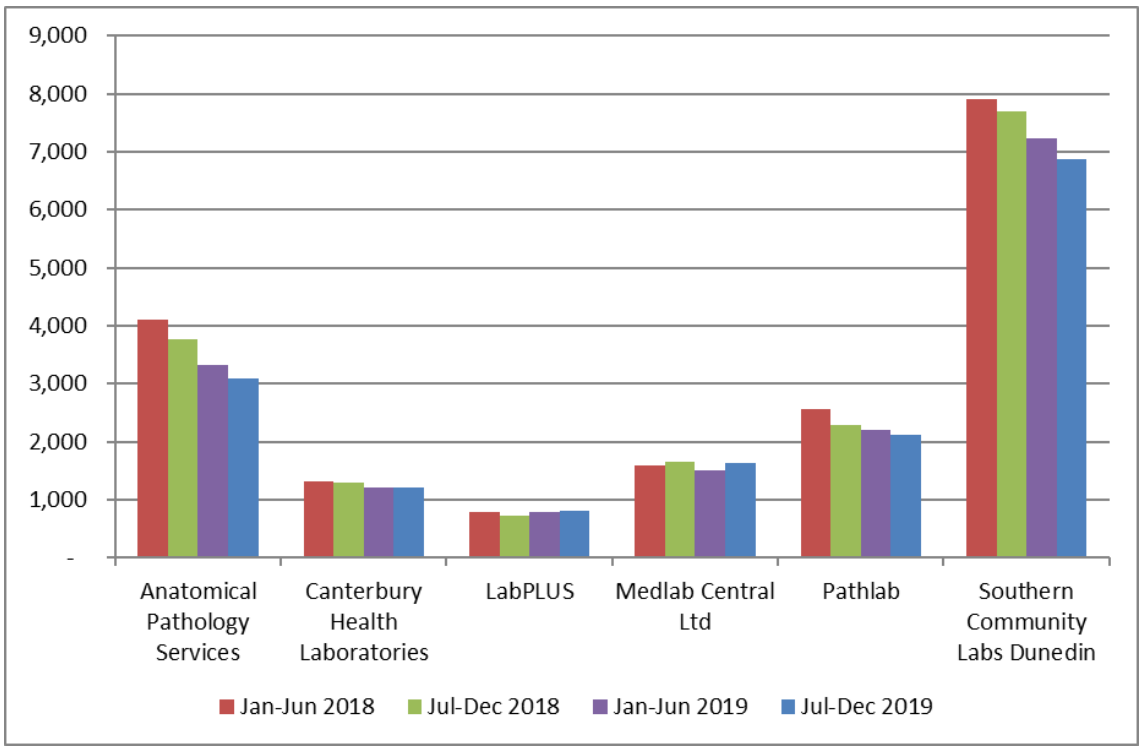


Figure 125 - Trends in volumes of HPV test samples received, by purpose

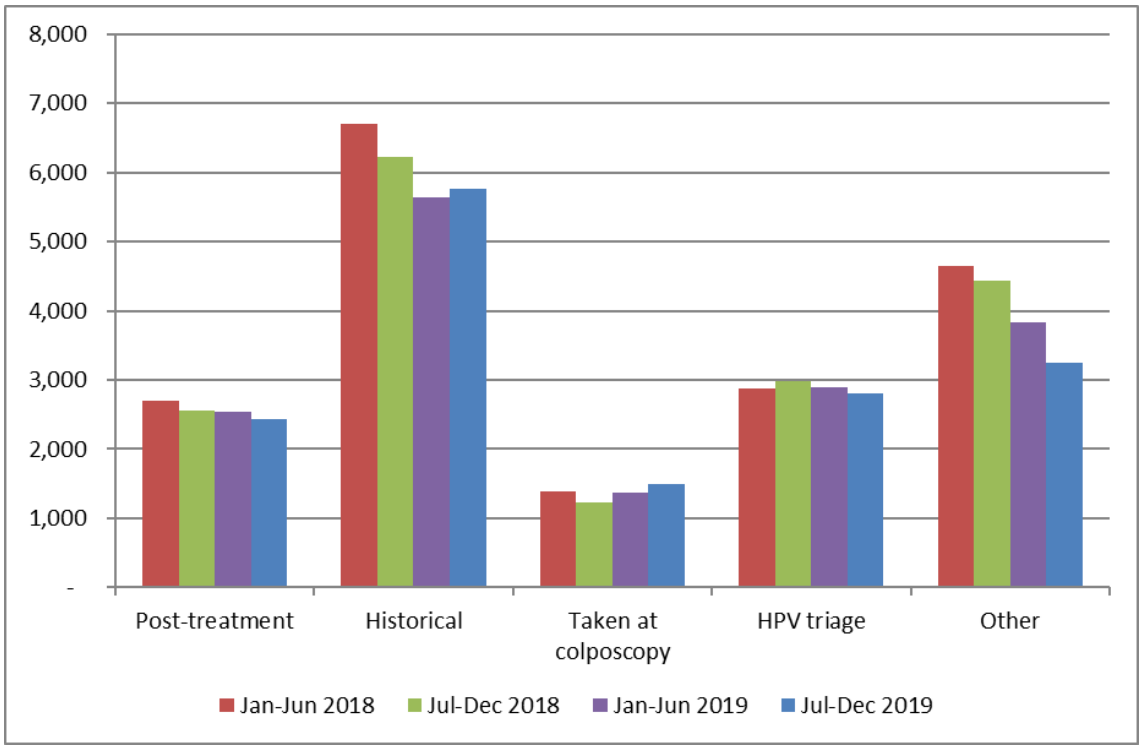
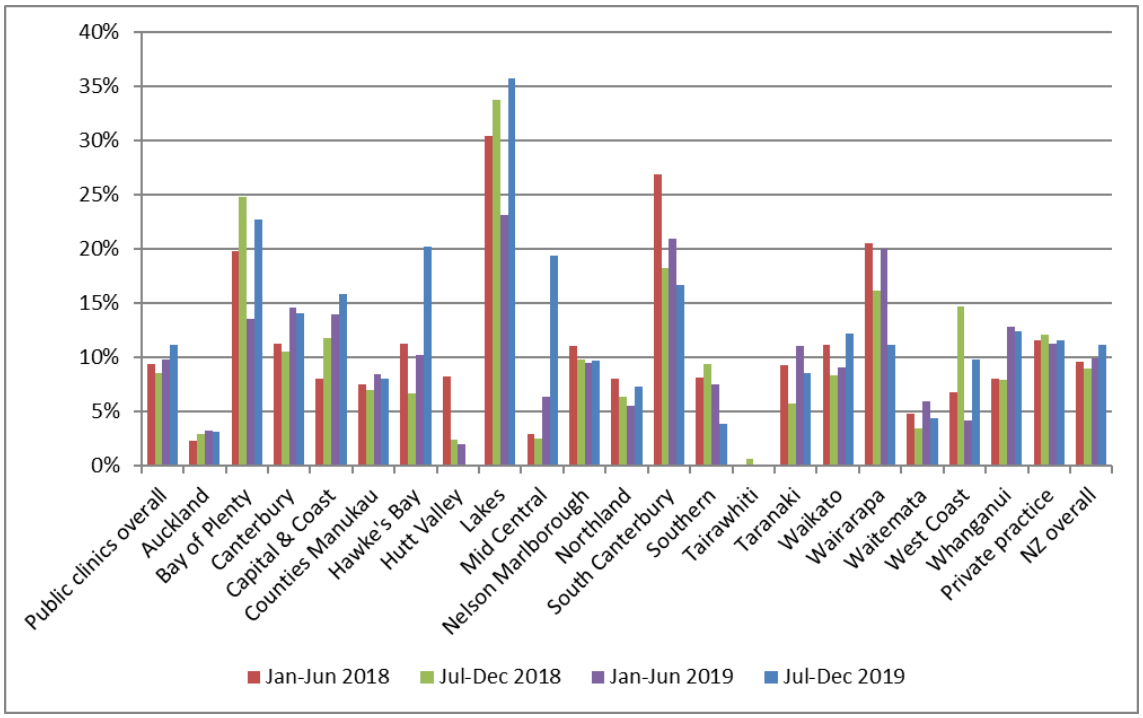


Figure 126 - Trends in HPV test samples collected at colposcopy, in relation to total colposcopies* performed in the period, by DHB



*HPV tests/ colposcopy can be interpreted broadly as the percentage of colposcopies within this DHB/ sector where a sample is collected for HPV testing. *the number of HPV tests here includes only HPV test samples where a colposcopy report record exists and is not inferred by a histology result.*

Indicator 8.3 – HPV tests for follow-up of women with a historical high-grade abnormality

Definition

NCSP Guidelines for Cervical Screening in New Zealand state that women with a previous high-grade squamous abnormality (ASC-H, HSIL, CIN 2/3) more than three years ago may benefit from two rounds of dual cytology and hrHPV testing ("historical testing"). If women test negative on both tests over two years, they can safely be screened according to the routine screening recommendations (cytology alone every three years until 70). HPV testing is not recommended for management of women with a historic non-squamous high-grade abnormality.

The purpose of this indicator is to examine the extent to which historical testing is being used for women who are eligible for it, and the outcomes of these tests.

Predominantly, women who are eligible for historical testing will be those who were eligible for it at the time it was introduced (1 October 2009), because women with more recent high-grade squamous abnormalities will be followed up with hrHPV testing in other ways (as part of standard post-treatment management and/ or use of hrHPV testing to assist in resolving discordant cytology and colposcopy/ histology). Women are considered to have been eligible for historical testing as at 1 October 2009 if:

i) They had a high-grade squamous abnormality (cytology or histology) more than three years prior to 1 October 2009, as per the definition of historical testing (i.e. prior to 1 October 2006) and

ii) They had no previous glandular abnormality (i.e. prior to 1 October 2009); and

iii) Between their historical high-grade squamous abnormality and 1 October 2009, they had *either* no cytology OR only negative cytology OR three consecutive negative cytology tests as their most recent cytology results; and

iv) They were alive on 1 October 2009.

Women were excluded, however, if they had been treated for a high-grade squamous abnormality within the three years prior to 1 October 2009, because this meant they met the criteria for *post-treatment women*, rather than *historical testing.* Note that this indicator also does not report on historical testing in any women who became eligible for it after 1 October 2009 (although as noted above, this should be a small group as women with more recent high-grade squamous abnormalities will be followed up with hrHPV testing in other ways).

Within the current report, Round 1 and Round 2 historical tests are only considered for women who were both eligible for historical testing on 1 October 2009 *and* who also remained eligible for it throughout the current monitoring period. Therefore, in the current report, women were excluded if:

i) They were not still alive at the end of the current monitoring period *(follow-up no longer possible)*; or

ii) They had a non-squamous high-grade abnormality between becoming eligible (on 1 October 2009) and the end of the current monitoring period *(no longer eligible for historical testing)*

HPV tests in these women from 1 October 2009 were retrieved. HPV tests which appeared to have been carried out for other recommended uses of HPV testing (such as HPV triage of low-grade cytology; HPV tests taken at colposcopy; or HPV tests performed to follow-up treatment of a high-grade squamous abnormality within the previous three years) were excluded since they were not performed for the purpose of historical testing. After excluding those tests, the first HPV test in each woman was defined as her Round 1 historical test. A Round 2 historical test was defined as the first HPV test which occurred at least 9 months after a Round 1 historical test.

Measures reported by age are based on the age of the women at the end of the current monitoring period (i.e. a woman's age at 31 December 2019). Measures reported by DHB are based on the geographic area relating to the woman's residence (or if this information is not available, that of her responsible health provider).

Target

Targets have not yet been set.

Current Situation

Overall women eligible for historical testing

There were 50,511 women who, at 1 October 2009, were eligible for HPV testing to follow-up a historical squamous high-grade abnormality ("historical testing"). Of these women, 48,896 are considered in the current report (the remaining women were excluded because they were no longer alive at the end of the current monitoring period or were no longer eligible for historical testing because they had a non-squamous high-grade abnormality since 1 October 2009). There were no women eligible for historical testing who were aged less than 25 years at the end of the current monitoring period; however, this is not unexpected, as women in this age group would have been aged less than 18 years old on 1 October 2009 and few women this age are screened or treated for high-grade abnormalities (Table 93).

HPV tests performed for historical reasons

Overall, 34,950 (71.5%) of the women eligible for historical testing have a Round 1 historical test recorded on the NCSP Register. There were 30,358 women who also have a Round 2 historical tests (62.1% of eligible women; 86.9% of those with a Round 1 test).

The proportion of women with historical tests varied by age. Among women aged 25 to 69 years at the end of the current monitoring period, the proportion of eligible women with a historical test varied from 60.0% (25-29 years) to 74.4% (60-64 years) for Round 1 tests, and from 40.0% (25-29 years) to 65.3% (65-69 years) for Round 2 tests (Figure 127, Table 93).

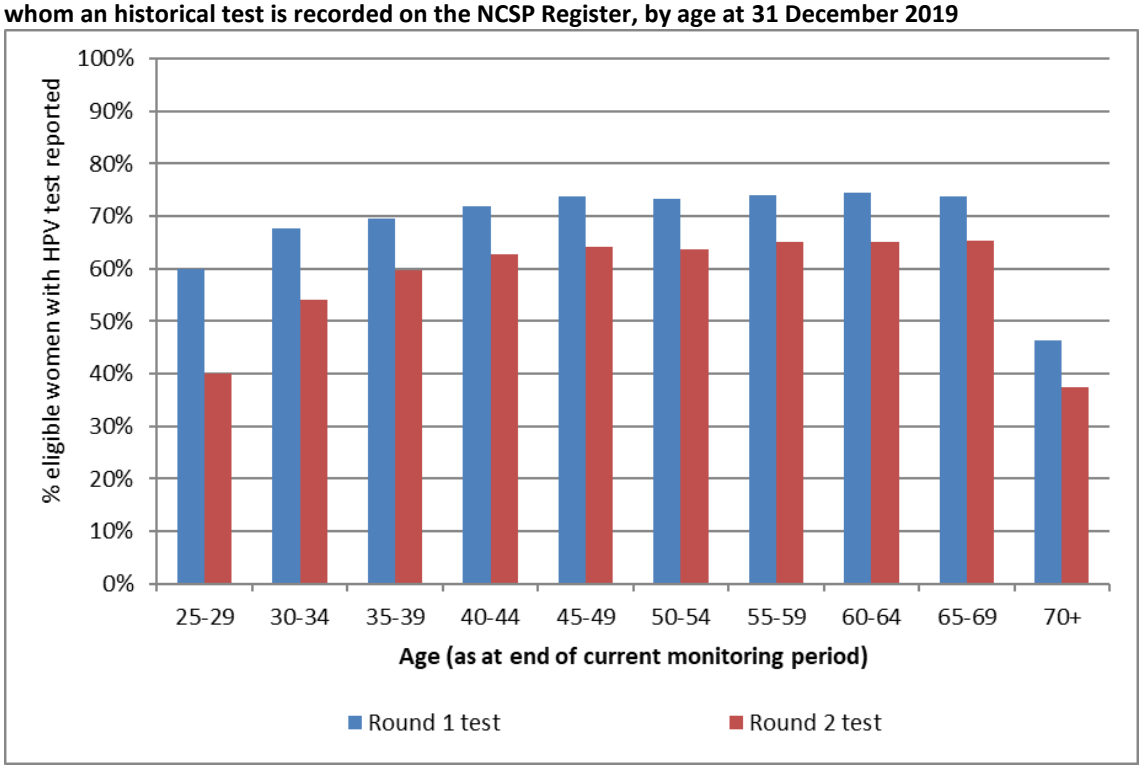
	The proportion of eligible women with historical tests also varied by DHB, from 61.2% (Auckland) to 82.2% (Nelson Marlborough) for Round 1 tests, and from 50.3% (Counties Manukau) to 75.0% (Nelson Marlborough) for Round 2 tests (Figure 128, Table 94). The number of women eligible for historical testing in a given DHB did not appear to have any relationship with the proportion who had received a historical test (Figure 135). The proportion of eligible women with Round 1 historical tests ranged from 54.9% in Pacific women to 73.3% in European/ Other women (Figure 129, Table 95). For Round 2 tests, this proportion ranged from 42.8% in Pacific women to 64.6% in European/ Other women. We explored whether the proportion of women with a historical HPV test was influenced by screening participation within the previous five years (asking the question does higher screening participation for any test, increase the likelihood of initiating a historical test). The variation in the proportion of women with historical tests recorded did not appear to be fully explained by variations in screening participation, either by DHB (Figure 136, Table 96) or by ethnicity (Figure 137).
Trends	As this Indicator is reporting on the cumulative proportion of women who were eligible for HPV testing for the management of a historical high-grade squamous lesion as at 1 October 2009, the proportion is generally expected to increase over time. The proportion of eligible women with an HPV test recorded is higher than in the previous report from 70.5% to 71.5% for Round 1 tests, and from 60.5% to 62.1% for Round 2 tests. It has also done so in every DHB (Figure 130), ethnicity (Figure 131) and age group (Figure 132) between this and the previous report.
Comments	This indicator currently only considers women who had a high-grade squamous abnormality more than three years prior to 1 October 2009. It is anticipated that women with more recent high-grade squamous abnormalities will be followed up via standard post-treatment management which also includes hrHPV testing. It was intended that future monitoring reports would also incorporate reporting on the use of hrHPV tests for the purpose of post-treatment management as a separate sub-indicator within Indicator 8. However, development of additional indicators has been suspended prior to the programme's planned transition to primary HPV screening, as indicators will be reviewed as part of the transition process. Planned future refinements include reporting on the proportion of the Round 1 and Round 2 historical tests where hrHPV was detected, and on how many women are able to be returned to routine screening after two rounds of negative cytology and hrHPV tests; considering women with a historical high-grade squamous abnormality who became eligible for historical testing after 1 October 2009; and taking into account whether women have attended for any screening test, since women who have not attended for any testing could not be offered historical testing. This last point has been partially explored within

the current report, by considering whether there was any relationship between the variations in women with Round 1 and Round 2 historical tests by DHB or ethnicity and the variations in screening participation within the previous five years by DHB or ethnicity. An extended period of five-years was examined for screening participation (rather than three, which is the usual measure), since it corresponds more closely than three-year participation during which we searched for HPV tests in this group of women (i.e. from 1 October 2009 to the time of the data download from NCSP Register used within this report, early March 2019). However, as women with a previous abnormality are recommended to re-attend for screening more frequently than the routine interval, the variations in overall attendance by DHB or by ethnicity may differ from the variations by DHB or ethnicity in this subgroup of women who have had a previous abnormality.

It is possible that in some cases eligible women were offered historical HPV testing, but did not consent to the test. It has not been possible to take this into account within the current report. While this affects Round 1 tests, this should be less of an issue for Round 2 tests, because in June 2015 the NCSP requested that laboratories prompt sample takers to add on an HPV test where this is indicated by the Guidelines, but was not requested by the sample taker. Additionally, for women who had already consented to the Round 1 HPV test, separate consent was not required for a Round 2 HPV test.

It is also possible that the reason some women underwent Round 1 tests, but not Round 2 tests, is because their concurrent cytology result indicated that other management (for example colposcopy referral) was required. This might be explored when this indicator is further refined to report on the test results in women who have undergone historical testing.

Figure 127 - Proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by age at 31 December 2019



No women aged less than 25 years at the end of the current monitoring period were eligible for historical testing on 1 October 2009.

Figure 128 - Proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by DHB at 31 December 2019

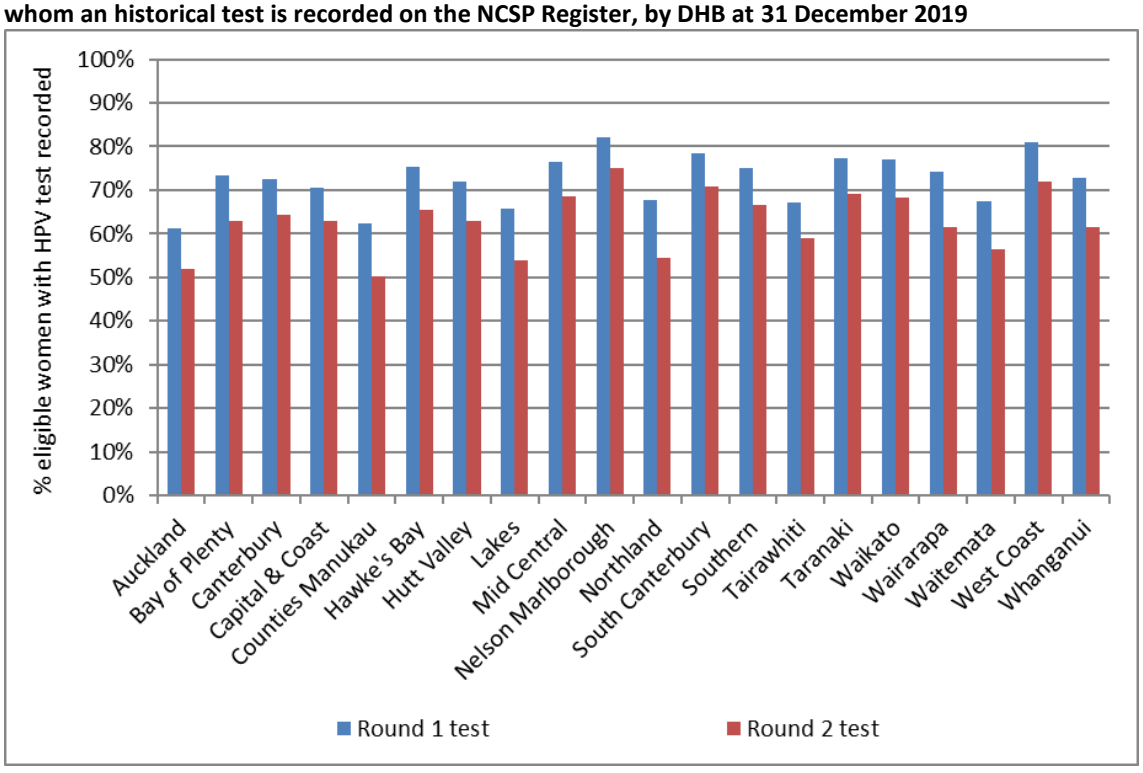


Figure 129 - Proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by ethnicity at 31 December 2019.

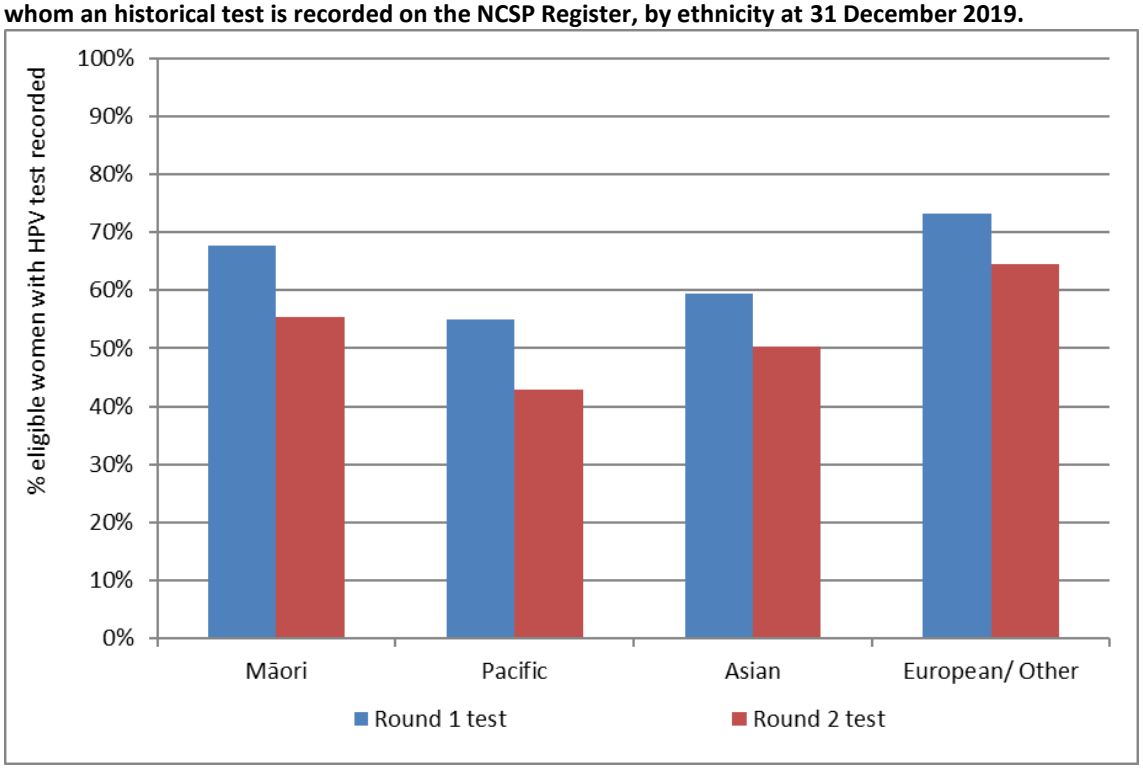


Figure 130 - Trends in the proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom a round 1 historical test is recorded on the NCSP Register, by DHB

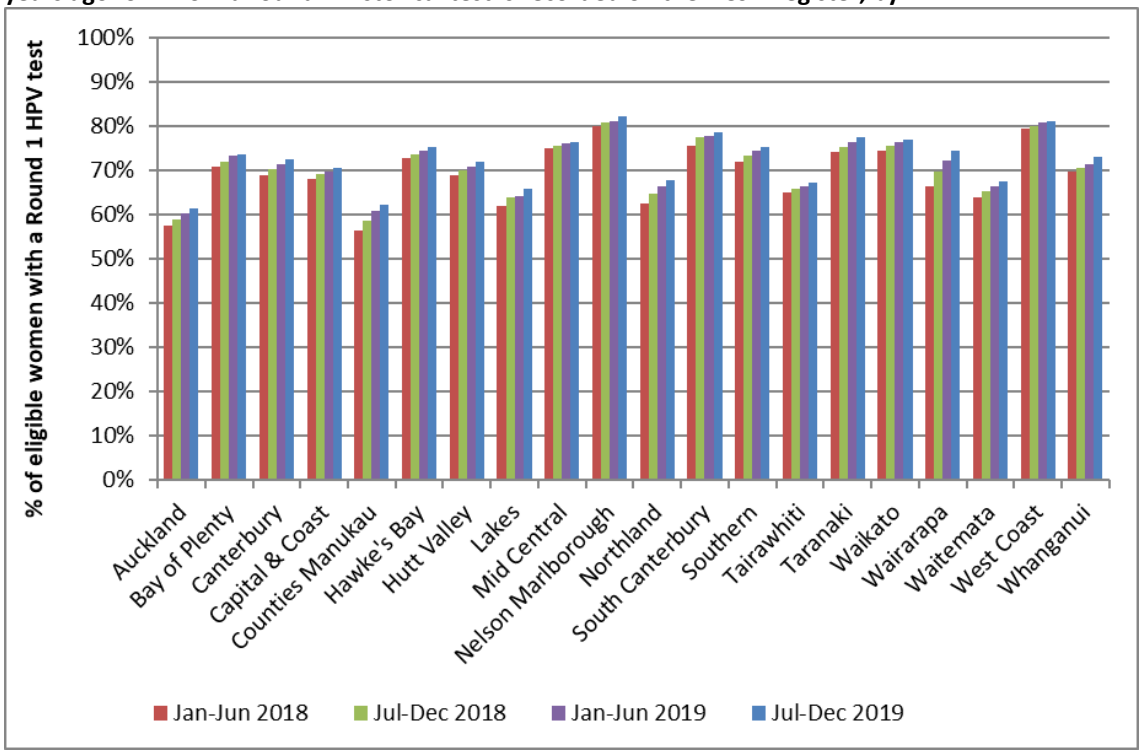


Figure 131 - Trends in the proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom a round 1 historical test is recorded on the NCSP Register, by ethnicity

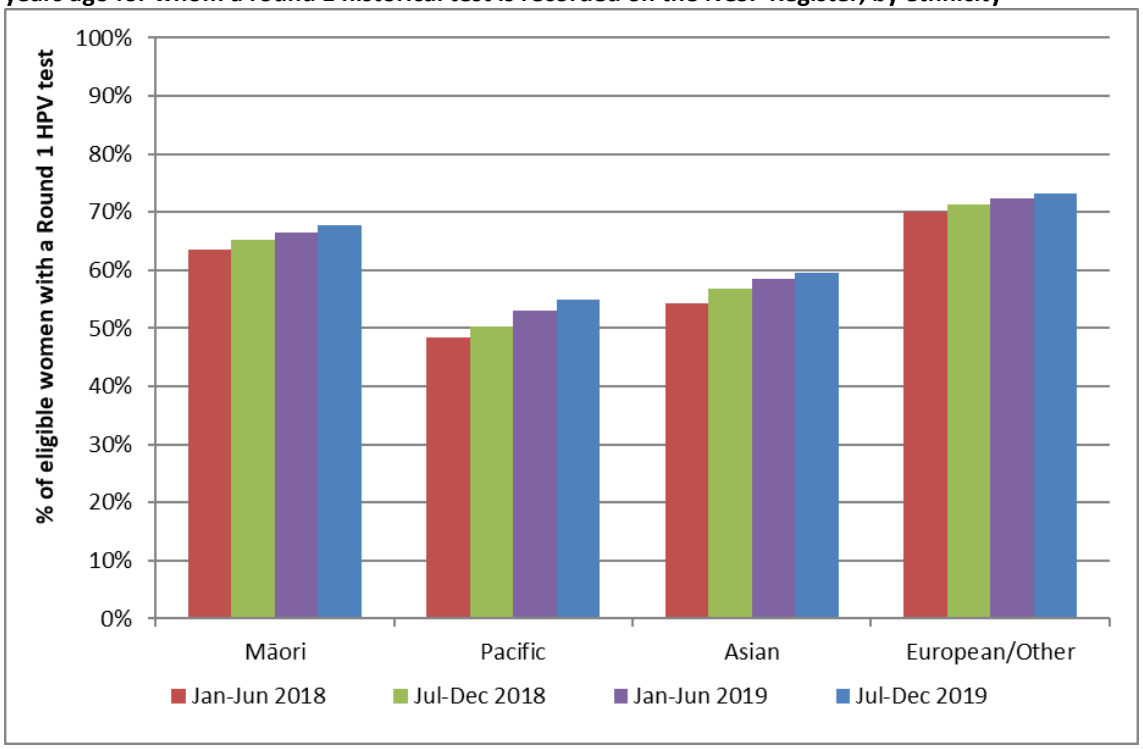
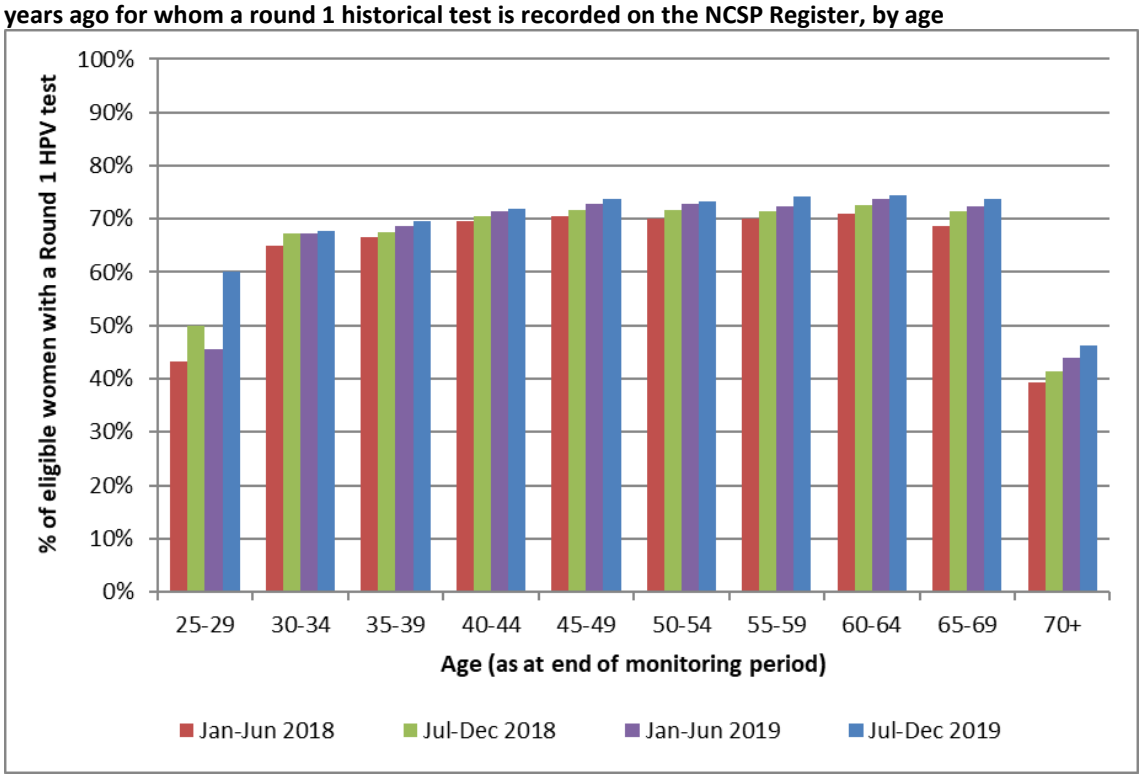


Figure 132 - Trends in the proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom a round 1 historical test is recorded on the NCSP Register, by age



No women aged less than 25 years at the end of the current monitoring period were eligible for historical testing on 1 October 2009.

Appendix A – Additional data

Indicator 1 - Coverage

Indicator 1.1 – Three-year coverage

Table 27 - Three-year coverage by DHB (women 25-69 years screened in the three years prior to 31 December 2019, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 3 years	
	N	N	%
Auckland	139,511	105,141	75.4
Bay of Plenty	66,385	49,365	74.4
Canterbury	151,430	109,262	72.2
Capital & Coast	87,395	66,957	76.6
Counties Manukau	148,405	100,187	67.5
Hawke's Bay	44,797	31,476	70.3
Hutt Valley	42,093	30,410	72.2
Lakes	30,170	21,886	72.5
Mid Central	46,976	33,053	70.4
Nelson Marlborough	41,922	31,535	75.2
Northland	48,417	32,216	66.5
South Canterbury	15,954	11,341	71.1
Southern	88,462	64,631	73.1
Tairawhiti	12,405	9,385	75.7
Taranaki	31,911	24,575	77.0
Waikato	110,200	79,907	72.5
Wairarapa	12,479	8,620	69.1
Waitemata	170,189	122,410	71.9
West Coast	8,644	6,287	72.7
Whanganui	17,146	12,035	70.2
Total	**1,314,891**	**950,679**	**72.3**

Table 28 - Three-year coverage by ethnicity (women 25-69 years screened in the three years prior 31 December 2019, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years)	
		N	%
Māori	185,951	109,177	58.7
Pacific	75,569	49,683	65.7
Asian	230,475	142,315	61.7
European/ Other	822,896	649,504	78.9
Total	**1,314,891**	**950,679**	**72.3**

Table 29 - Three-year coverage by age (women 20-69 years screened in the three years prior to 31 December 2019, hysterectomy adjusted)

Age	Hysterectomy adjusted population	Women screened in the last 3 years N	%
20-24	163,062	71,396	43.8
25-29	177,672	109,570	61.7
30-34	176,892	119,116	67.3
35-39	157,711	115,055	73.0
40-44	144,511	109,478	75.8
45-49	153,905	119,734	77.8
50-54	143,832	111,710	77.7
55-59	140,901	107,844	76.5
60-64	120,338	89,004	74.0
65-69	99,129	69,168	69.8
20-69	**1,477,953**	**1,022,075**	**69.2**

Table 30 – Three-year coverage (women aged 25-69 years screened in the three years prior to 31 December 2019, hysterectomy adjusted), by ethnicity and DHB

	Māori		Pacific		Asian		European/ Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	5,682	57.4	9,098	69.0	30,751	63.0	59,610	88.1
Bay of Plenty	9,134	61.0	637	66.3	3,146	63.8	36,448	80.1
Canterbury	6,200	52.6	2,301	67.2	12,369	57.8	88,392	77.0
Capital & Coast	5,351	60.7	3,537	63.9	9,090	64.0	48,979	83.2
Counties Manukau	11,626	55.0	18,644	64.8	29,444	62.2	40,473	79.2
Hawke's Bay	6,865	63.9	939	69.3	1,540	60.1	22,132	73.4
Hutt Valley	3,917	61.5	1,880	66.0	4,176	65.9	20,437	77.0
Lakes	6,215	61.9	479	73.8	1,679	57.3	13,513	81.7
Mid Central	5,287	62.9	818	69.8	2,467	62.7	24,481	73.1
Nelson Marlborough	2,419	63.7	414	75.8	1,607	64.4	27,095	77.2
Northland	8,597	55.2	434	49.9	1,380	60.4	21,805	73.4
South Canterbury	631	54.6	135	74.2	510	49.8	10,065	74.1
Southern	4,157	54.8	1,014	69.2	3,592	51.1	55,868	77.2
Tairawhiti	4,215	66.7	157	62.1	263	74.1	4,750	86.6
Taranaki	3,207	59.8	227	66.0	1,061	65.9	20,080	81.6
Waikato	13,546	58.8	1,863	64.1	8,431	65.0	56,067	78.6
Wairarapa	1,210	64.9	136	63.3	262	57.3	7,012	70.5
Waitemata	7,627	54.6	6,661	64.1	29,873	61.4	78,249	80.5
West Coast	548	59.4	58	61.1	224	54.6	5,457	75.6
Whanganui	2,743	65.2	251	67.1	450	63.1	8,591	72.5
NZ overall		**58.7**		**65.7**		**61.7**		**78.9**

Ethnicity-specific estimates for some DHBs exceed 100%. This is potentially due in part to limitations in the hysterectomy prevalence estimators which are used to adjust the eligible population.

Table 31 – Three-year coverage (women aged 25-69 years screened in the three years prior to 31 December 2019 hysterectomy adjusted), by ethnicity and age

	Māori		Pacific		Asian		European/ Other	
Age group	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
25-29	16,966	55.0	6,979	49.5	15,961	39.5	69,664	75.5
30-34	15,476	55.5	6,668	59.2	24,717	54.3	72,255	78.3
35-39	12,951	57.2	6,296	63.3	25,379	65.2	70,429	81.7
40-44	12,825	59.3	6,251	69.6	18,231	68.4	72,171	82.7
45-49	13,774	62.0	6,112	71.3	15,852	71.5	83,996	83.2
50-54	12,249	62.2	5,876	73.6	13,559	73.8	80,026	81.8
55-59	11,421	63.6	4,999	75.9	11,843	75.0	79,581	79.1
60-64	8,158	59.7	3,801	82.0	9,945	75.2	67,100	75.5
65-69	5,357	56.9	2,701	76.4	6,828	72.8	54,282	70.7
NZ overall		**58.7**		**65.7**		**61.7**		**78.9**

Table 32 - Coverage by DHB (women aged 25-69 years screened in the five years prior to 31 December 2019, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 5 years	
	N	N	%
Auckland	139,511	126,764	90.9
Bay of Plenty	66,385	57,550	86.7
Canterbury	151,430	128,728	85.0
Capital & Coast	87,395	79,543	91.0
Counties Manukau	148,405	124,483	83.9
Hawke's Bay	44,797	37,960	84.7
Hutt Valley	42,093	35,977	85.5
Lakes	30,170	25,737	85.3
Mid Central	46,976	38,903	82.8
Nelson Marlborough	41,922	36,717	87.6
Northland	48,417	39,036	80.6
South Canterbury	15,954	13,449	84.3
Southern	88,462	76,323	86.3
Tairawhiti	12,405	11,260	90.8
Taranaki	31,911	28,687	89.9
Waikato	110,200	93,707	85.0
Wairarapa	12,479	10,331	82.8
Waitemata	170,189	146,165	85.9
West Coast	8,644	7,441	86.1
Whanganui	17,146	14,264	83.2
Total	**1,314,891**	**1,133,025**	**86.2**

Table 33 - Coverage by ethnicity – women aged 25-69 years screened in the five years prior to 31 December 2019, hysterectomy adjusted

Ethnicity	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
Māori	185,951	136,694	73.5
Pacific	75,569	65,644	86.9
Asian	230,475	167,026	72.5
European/ Other	822,896	763,661	92.8
Total	**1,314,891**	**1,133,025**	**86.2**

Table 34 - Coverage by age (women 20-69 years screened in the five years prior to 31 December 2019, hysterectomy adjusted)

Age	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
20-24	163,062	76,448	46.9
25-29	177,672	134,047	75.4
30-34	176,892	143,731	81.3
35-39	157,711	137,784	87.4
40-44	144,511	130,303	90.2
45-49	153,905	142,225	92.4
50-54	143,832	132,528	92.1
55-59	140,901	126,750	90.0
60-64	120,338	104,238	86.6
65-69	99,129	81,419	82.1
20-69	**1,477,953**	**1,209,473**	**81.8**

Table 35 - Women aged 25-69 years screened in the five years prior to 31 December 2019, by ethnicity and DHB (hysterectomy adjusted)

DHB	Māori		Pacific		Asian		European/ Other	
	N	%	N	%	N	%	N	%
Auckland	7,190	72.6	12,075	91.5	36,728	75.3	70,771	104.6
Bay of Plenty	11,289	75.4	774	80.5	3,567	72.4	41,920	92.1
Canterbury	7,584	64.3	2,854	83.3	14,145	66.1	104,145	90.7
Capital & Coast	6,529	74.1	4,461	80.6	10,685	75.2	57,868	98.3
Counties Manukau	15,419	72.9	25,786	89.6	35,038	74.0	48,240	94.4
Hawke's Bay	8,762	81.6	1,191	87.9	1,783	69.6	26,224	87.0
Hutt Valley	4,835	75.9	2,327	81.7	4,839	76.4	23,976	90.3
Lakes	7,703	76.7	582	89.7	1,904	65.0	15,548	94.0
Mid Central	6,479	77.1	986	84.1	2,795	71.0	28,643	85.6
Nelson Marlborough	2,959	78.0	485	88.8	1,800	72.2	31,473	89.7
Northland	11,074	71.1	550	63.2	1,579	69.1	25,833	87.0
South Canterbury	752	65.1	161	88.5	600	58.5	11,936	87.8
Southern	5,026	66.2	1,253	85.5	4,153	59.1	65,891	91.0
Tairawhiti	5,238	82.9	203	80.2	303	85.4	5,516	100.6
Taranaki	3,967	74.0	268	77.9	1,257	78.0	23,195	94.3
Waikato	16,664	72.4	2,354	81.0	9,548	73.6	65,141	91.4
Wairarapa	1,514	81.3	180	83.7	311	68.1	8,326	83.7
Waitemata	9,665	69.2	8,774	84.4	35,215	72.4	92,511	95.2
West Coast	665	72.0	68	71.6	261	63.7	6,447	89.3
Whanganui	3,380	80.4	312	83.4	515	72.2	10,057	84.8
NZ OVERALL	**136,694**	**73.5**	**65,644**	**86.9**	**167,026**	**72.5**	**763,661**	**92.8**

Ethnicity-specific estimates for some DHBs exceed 100%. This is potentially due in part to limitations in the hysterectomy prevalence estimators which are used to adjust the eligible population.

Table 36 - Women under 20 years of age, and aged 15-19 years, screened in the three years prior to 31 December 2019, by DHB.

DHB	Number of women screened in last 3 years		% of population aged 15-19 years screened
	aged 10-20 years	aged 15-19 years	
Auckland	389	388	2.6
Bay of Plenty	189	189	2.7
Canterbury	771	770	4.5
Capital & Coast	326	325	2.9
Counties Manukau	299	298	1.5
Hawke's Bay	154	154	2.9
Hutt Valley	101	100	2.1
Lakes	78	77	2.2
Mid Central	123	123	2.1
Nelson Marlborough	120	118	2.8
Northland	68	67	1.3
South Canterbury	52	52	3.4
Southern	439	439	3.6
Tairawhiti	27	27	1.7
Taranaki	95	95	2.8
Waikato	309	308	2.3
Wairarapa	35	35	2.7
Waitemata	540	538	2.9
West Coast	25	25	3.2
Whanganui	39	38	1.9
Unspecified	-	-	-
Total	**4,179**	**4,166**	**2.7**

Table 37 - Women screened under 20 years of age, as a proportion of all women screened in the three years to 31 December 2019, by DHB

DHB	Number of women screened in last 3 years aged < 20 years	all ages	Proportion of women screened who were aged < 20 years (%)
Auckland	389	114,924	0.3
Bay of Plenty	189	54,270	0.3
Canterbury	771	122,187	0.6
Capital & Coast	326	75,530	0.4
Counties Manukau	299	109,381	0.3
Hawke's Bay	154	34,807	0.4
Hutt Valley	101	33,146	0.3
Lakes	78	23,961	0.3
Mid Central	123	36,869	0.3
Nelson Marlborough	120	34,506	0.3
Northland	68	35,249	0.2
South Canterbury	52	12,572	0.4
Southern	439	73,436	0.6
Tairawhiti	27	10,357	0.3
Taranaki	95	27,110	0.4
Waikato	309	89,142	0.3
Wairarapa	35	9,555	0.4
Waitemata	540	134,055	0.4
West Coast	25	6,828	0.4
Whanganui	39	13,255	0.3
Unspecified	-	-	
Total	**4,179**	**1,051,140**	**0.4**

Table 38 - Women screened under 20 years of age, and women aged 18-19 years when they were screened, in the three years to 31 December 2019, by DHB

DHB	Number of women screened in last 3 years		
	aged 10-19 years	aged 18-19 years	% aged 18-19 years
Auckland	389	354	91.0
Bay of Plenty	189	169	89.4
Canterbury	771	667	86.5
Capital & Coast	326	314	96.3
Counties Manukau	299	264	88.3
Hawke's Bay	154	130	84.4
Hutt Valley	101	90	89.1
Lakes	78	72	92.3
Mid Central	123	116	94.3
Nelson Marlborough	120	104	86.7
Northland	68	57	83.8
South Canterbury	52	42	80.8
Southern	439	398	90.7
Tairawhiti	27	23	85.2
Taranaki	95	88	92.6
Waikato	309	280	90.6
Wairarapa	35	31	88.6
Waitemata	540	473	87.6
West Coast	25	18	72.0
Whanganui	39	34	87.2
Unspecified	-	-	-
Total	**4,179**	**3,724**	**89.1**

Table 39 - Women (25-69 years) screened in the three years to 31 December 2019, as a percentage of the i) hysterectomy-adjustment NZ female population and ii) total NZ female population, by DHB

DHB	Women screened in the last 3 years (hysterectomy-adjusted)	Women screened in the last 3 years (no hysterectomy adjustment)
Auckland	75.4	69.8
Bay of Plenty	74.4	67.3
Canterbury	72.2	65.9
Capital & Coast	76.6	70.4
Counties Manukau	67.5	62.2
Hawke's Bay	70.3	63.5
Hutt Valley	72.2	66.1
Lakes	72.5	66.0
Mid Central	70.4	63.8
Nelson Marlborough	75.2	67.6
Northland	66.5	59.8
South Canterbury	71.1	64.1
Southern	73.1	66.5
Tairawhiti	75.7	68.6
Taranaki	77.0	69.9
Waikato	72.5	66.0
Wairarapa	69.1	62.0
Waitemata	71.9	66.0
West Coast	72.7	65.4
Whanganui	70.2	63.2
Total	**72.3**	**66.0**

Table 40 - Trends in three-year coverage by DHB (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

DHB	To 30 Jun 2018	To 31 Dec 2018	To 30 Jun 2019	To 31 Dec 2019
Auckland	67.6%	66.8%	65.5%	75.4%
Bay of Plenty	78.4%	78.6%	78.3%	74.4%
Canterbury	72.4%	72.7%	72.4%	72.2%
Capital & Coast	75.6%	75.7%	75.1%	76.6%
Counties Manukau	68.0%	67.4%	65.5%	67.5%
Hawke's Bay	73.0%	73.1%	72.9%	70.3%
Hutt Valley	73.4%	73.7%	73.2%	72.2%
Lakes	76.1%	76.1%	75.7%	72.5%
Mid Central	71.8%	72.1%	72.3%	70.4%
Nelson Marlborough	77.7%	77.8%	77.5%	75.2%
Northland	69.4%	69.8%	69.3%	66.5%
South Canterbury	75.1%	74.0%	73.2%	71.1%
Southern	75.3%	76.0%	75.4%	73.1%
Tairawhiti	73.7%	74.1%	75.3%	75.7%
Taranaki	78.8%	78.9%	78.1%	77.0%
Waikato	73.3%	73.9%	73.4%	72.5%
Wairarapa	71.1%	71.1%	71.1%	69.1%
Waitemata	70.0%	70.0%	69.3%	71.9%
West Coast	72.2%	72.0%	71.3%	72.7%
Whanganui	72.5%	72.2%	71.7%	70.2%
Total	**72.1%**	**72.1%**	**71.4%**	**72.3%**

Note: Coverage calculated using population projection at the date shown based on 2013 Census data. Updated population and hysterectomy 2013 Census population projection was used to calculate coverage for 31 December 2019..

Table 41 - Trends in three-year coverage by age (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

Age	To 30 Jun 2018	To 31 Dec 2018	To 30 Jun 2019	To 31 Dec 2019
20-24	45.9%	45.1%	44.5%	43.8%
25-29	58.9%	58.4%	57.6%	61.7%
30-34	67.6%	67.1%	66.1%	67.3%
35-39	74.1%	74.2%	73.4%	73.0%
40-44	77.2%	77.1%	76.6%	75.8%
45-49	78.3%	78.5%	78.0%	77.8%
50-54	77.9%	78.1%	77.4%	77.7%
55-59	76.2%	76.4%	75.8%	76.5%
60-64	73.6%	74.0%	73.4%	74.0%
65-69	68.9%	69.4%	68.9%	69.8%
Total	**69.0%**	**69.0%**	**68.3%**	**69.2%**

Note: Coverage calculated using population projection at the date shown based on 2013 Census data. Updated population and hysterectomy 2013 Census population projection was used to calculate coverage for 31 December 2019. Original population projection estimates were used to calculate coverage for 30 June 2017 and prior.

Table 42 - Trends in three-year coverage by ethnicity (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

Ethnicity	To 30 Jun 2018	To 31 Dec 2018	To 30 Jun 2019	To 31 Dec 2019
Māori	61.8%	62.1%	61.6%	58.7%
Pacific	68.6%	67.3%	65.1%	65.7%
Asian	59.1%	59.9%	59.8%	61.7%
European/ Other	78.0%	77.9%	77.2%	78.9%
Total	**72.1%**	**72.1%**	**71.4%**	**72.3%**

Note: Coverage calculated using population projection at the date shown based on 2013 Census data. Updated population and hysterectomy 2013 Census population projection was used to calculate coverage for 31 December 2019.

Indicator 1.2 – Regularity of screening

Table 43 - Routine (3-yearly) repeat screening interval (number of cytology tests), by ethnicity, 2015-2019

	Māori women			Pacific women			Asian women			European/ Other women		
Quarter	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late
Jan-Mar 2015	992	2,889	1,838	311	1,336	822	1,073	3,337	1,207	7,537	26,231	9,116
Apr-Jun 2015	1,000	3,291	2,076	311	1,541	988	1,147	3,869	1,454	7,710	28,461	9,852
Jul-Sep 2015	892	3,606	2,077	309	1,508	850	1,046	3,806	1,141	7,018	29,211	9,037
Oct-Dec 2015	864	3,343	1,944	323	1,509	916	939	3,619	1,150	6,760	27,721	9,109
Jan-Mar 2016	963	3,096	1,930	314	1,395	996	1,036	3,593	1,217	7,133	26,488	9,077
Apr-Jun 2016	900	3,359	2,174	311	1,557	1,070	1,030	4,073	1,383	7,009	28,308	9,561
Jul-Sep 2016	801	3,392	2,042	273	1,518	846	979	4,374	1,245	6,300	29,207	9,212
Oct-Dec 2016	672	2,855	1,758	230	1,312	724	779	3,492	1,147	5,682	25,657	8,468
Jan-Mar 2017	831	3,019	1,917	294	1,372	868	929	3,788	1,336	6,523	26,729	9,657
Apr-Jun 2017	785	3,306	2,027	277	1,483	913	953	4,164	1,466	6,111	27,850	9,824
Jul-Sep 2017	745	3,404	2,084	252	1,465	923	922	4,537	1,505	5,674	28,492	9,721
Oct-Dec 2017	608	3,107	2,050	241	1,324	815	735	3,990	1,376	5,123	27,153	9,475
Jan-Mar 2018	810	3,557	2,303	269	1,385	958	891	4,028	1,541	6,177	28,364	10,978
Apr-Jun 2018	834	3,798	2,338	271	1,504	1,080	919	4,668	1,697	5,828	30,238	10,807
Jul-Sep 2018	743	4,094	2,587	285	1,631	993	895	4,885	1,872	5,374	30,649	10,547
Oct-Dec 2018	597	3,521	2,063	210	1,435	891	823	4,288	1,622	4,952	28,394	9,659
Jan-Mar 2019	773	3,511	2,351	220	1,480	1,033	896	4,359	1,863	5,343	27,537	10,562
Apr-Jun 2019	677	3,609	2,204	268	1,492	1,010	894	4,594	1,861	5,479	28,906	10,619
Jul-Sep 2019	663	3,860	2,356	255	1,511	1,147	830	5,226	1,961	5,222	30,440	11,154
Oct-Dec 2019	570	3,220	2,186	199	1,405	992	805	4,447	1,686	4,719	27,469	10,180

Table 44 - Routine (3-yearly) repeat screening interval (number of cytology tests), by age, 2015-2019

	20-29			30-39			40-49			50-59			60-69		
Quarter	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late
Jan-Mar 2015	1,833	3,051	1,381	2,289	6,347	3,591	2,571	9,023	3,698	2,151	8,958	2,829	1,069	6,414	1,484
Apr-Jun 2015	1,709	3,158	1,415	2,379	6,778	3,846	2,717	10,003	4,131	2,239	9,983	3,151	1,124	7,240	1,827
Jul-Sep 2015	1,516	3,248	1,346	2,133	6,944	3,620	2,497	10,223	3,733	2,062	10,476	2,911	1,057	7,240	1,495
Oct-Dec 2015	1,446	3,230	1,368	1,934	6,366	3,521	2,417	9,678	3,724	2,054	9,711	2,979	1,035	7,207	1,527
Jan-Mar 2016	1,801	3,236	1,413	2,296	6,803	3,701	2,393	9,049	3,733	1,957	8,994	2,822	999	6,490	1,551
Apr-Jun 2016	1,571	3,324	1,454	2,196	6,803	3,768	2,466	9,684	4,015	2,027	9,964	3,220	990	7,522	1,731
Jul-Sep 2016	1,393	3,268	1,349	1,911	7,005	3,601	2,166	10,104	3,829	1,904	10,473	2,935	979	7,641	1,631
Oct-Dec 2016	1,202	2,845	1,221	1,616	5,954	3,211	1,959	8,548	3,307	1,704	9,071	2,757	882	6,898	1,601
Jan-Mar 2017	1,553	3,263	1,448	1,970	6,587	3,689	2,226	9,014	3,829	1,910	9,254	3,014	918	6,790	1,798
Apr-Jun 2017	1,381	3,320	1,445	1,853	6,820	3,696	2,171	9,434	3,951	1,790	9,921	3,243	931	7,308	1,895
Jul-Sep 2017	1,183	3,362	1,464	1,856	6,957	3,751	1,984	9,782	3,849	1,686	10,326	3,301	884	7,471	1,868
Oct-Dec 2017	1,056	3,122	1,375	1,433	6,333	3,652	1,811	8,954	3,775	1,583	9,630	3,128	824	7,535	1,786
Jan-Mar 2018	1,401	3,585	1,577	1,910	7,281	4,271	2,108	9,496	4,222	1,834	9,806	3,538	894	7,166	2,172
Apr-Jun 2018	1,272	3,666	1,558	1,803	7,527	4,040	2,107	10,198	4,338	1,784	10,688	3,679	886	8,129	2,307
Jul-Sep 2018	1,140	3,658	1,520	1,727	7,617	4,120	1,942	10,500	4,291	1,674	11,219	3,824	814	8,265	2,244
Oct-Dec 2018	990	3,319	1,401	1,476	6,889	3,541	1,728	9,333	3,840	1,577	10,235	3,430	811	7,862	2,023
Jan-Mar 2019	1,206	3,737	1,570	1,847	7,427	4,280	1,849	9,163	4,090	1,593	9,423	3,652	737	7,137	2,217
Apr-Jun 2019	1,139	3,609	1,519	1,758	7,334	4,050	1,910	9,537	4,066	1,613	10,224	3,680	898	7,897	2,379
Jul-Sep 2019	1,054	3,612	1,631	1,574	7,999	4,322	1,848	10,207	4,407	1,688	10,923	3,959	806	8,296	2,299
Oct-Dec 2019	1,009	3,102	1,424	1,479	6,816	3,872	1,601	8,878	3,978	1,455	9,928	3,492	749	7,817	2,278

Table 45 - 12 month repeat screening interval (number of cytology tests), by ethnicity, 2015-2019

	Māori women			Pacific women			Asian women			European/ Other women		
Quarter	**Early**	**On-time**	**Late**	**Early**	**On-time**	**Late**	**Early**	**On-time**	**Late**	**Early**	**On-time**	**Late**
Jan-Mar 2015	128	1,284	2,759	37	490	1,173	119	1,377	1,960	763	8,383	10,498
Apr-Jun 2015	114	1,400	2,706	43	528	1,291	113	1,538	2,118	692	8,527	10,248
Jul-Sep 2015	108	1,473	2,722	34	555	1,115	72	1,530	1,922	577	8,839	9,773
Oct-Dec 2015	109	1,355	2,713	28	580	1,308	77	1,455	1,870	562	8,408	9,466
Jan-Mar 2016	133	1,314	2,707	38	550	1,309	92	1,463	1,872	655	7,884	9,853
Apr-Jun 2016	125	1,445	2,646	41	607	1,255	100	1,540	1,963	613	8,388	9,372
Jul-Sep 2016	77	1,337	2,533	27	586	1,124	60	1,693	2,019	502	8,147	9,285
Oct-Dec 2016	70	1,197	2,318	26	481	952	53	1,407	1,744	444	7,336	8,368
Jan-Mar 2017	91	1,226	2,250	34	521	994	82	1,465	1,983	512	7,290	9,201
Apr-Jun 2017	79	1,202	2,427	28	489	1,066	77	1,581	2,063	460	7,236	8,708
Jul-Sep 2017	57	1,188	2,565	18	493	1,121	68	1,656	2,211	372	7,179	8,858
Oct-Dec 2017	62	1,022	2,485	17	373	981	60	1,430	1,984	348	6,409	8,512
Jan-Mar 2018	66	1,046	2,666	32	397	1,073	77	1,351	2,094	429	6,274	9,599
Apr-Jun 2018	68	1,100	2,597	22	413	1,083	64	1,530	2,096	427	6,304	9,172
Jul-Sep 2018	62	1,171	2,743	23	449	1,097	60	1,762	2,290	349	6,589	8,721
Oct-Dec 2018	52	1,073	2,331	19	387	985	62	1,546	2,037	325	6,171	7,979
Jan-Mar 2019	69	1,001	2,305	30	337	997	71	1,405	2,116	423	6,024	8,361
Apr-Jun 2019	79	1,042	2,182	24	374	960	52	1,642	2,045	376	6,248	8,029
Jul-Sep 2019	65	1,181	2,483	24	381	1,029	57	1,874	2,302	358	6,791	8,687
Oct-Dec 2019	40	1,042	2,069	10	363	934	61	1,671	2,102	289	5,877	7,695

Table 46 - 12 month repeat screening interval (number of cytology tests), by age, 2015-2019

	20-29			30-39			40-49			50-59			60-69		
Quarter	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late
Jan-Mar 2015	457	4,096	5,098	238	2,329	4,198	153	2,189	3,628	129	1,786	2,320	70	1,134	1,146
Apr-Jun 2015	398	4,103	4,830	220	2,488	4,135	170	2,351	3,654	106	1,876	2,506	68	1,175	1,238
Jul-Sep 2015	326	4,278	4,872	169	2,551	3,928	128	2,377	3,396	107	2,011	2,295	61	1,180	1,041
Oct-Dec 2015	341	4,134	4,728	160	2,301	4,019	120	2,267	3,219	101	1,915	2,278	54	1,181	1,113
Jan-Mar 2016	407	4,062	5,075	205	2,317	4,100	144	2,100	3,255	100	1,664	2,225	62	1,068	1,086
Apr-Jun 2016	384	4,184	4,644	182	2,480	4,012	153	2,313	3,183	105	1,793	2,232	55	1,210	1,165
Jul-Sep 2016	257	4,139	4,579	178	2,454	3,994	116	2,234	3,233	76	1,785	2,119	39	1,151	1,036
Oct-Dec 2016	223	3,690	4,091	149	2,178	3,493	105	1,919	2,830	69	1,597	1,969	47	1,037	999
Jan-Mar 2017	301	3,981	4,545	166	2,301	3,697	124	1,865	3,032	85	1,433	2,046	43	922	1,108
Apr-Jun 2017	266	3,897	4,457	157	2,283	3,776	114	1,797	2,792	69	1,507	2,112	38	1,024	1,127
Jul-Sep 2017	208	3,912	4,667	131	2,305	3,919	89	1,894	3,015	56	1,453	2,078	31	952	1,076
Oct-Dec 2017	195	3,539	4,505	117	1,956	3,584	89	1,566	2,737	47	1,334	2,023	39	839	1,113
Jan-Mar 2018	271	3,556	4,999	140	2,019	4,204	105	1,513	3,088	54	1,204	2,018	34	776	1,123
Apr-Jun 2018	238	3,576	4,587	136	2,138	4,124	96	1,539	2,986	68	1,254	2,003	43	840	1,248
Jul-Sep 2018	204	3,899	4,515	113	2,248	4,075	93	1,624	2,988	54	1,280	2,118	30	920	1,155
Oct-Dec 2018	172	3,599	4,082	104	2,015	3,715	90	1,540	2,630	52	1,208	1,847	40	815	1,058
Jan-Mar 2019	256	3,546	4,485	131	2,042	3,808	99	1,383	2,599	71	1,067	1,880	36	729	1,007
Apr-Jun 2019	206	3,654	4,277	136	2,191	3,555	86	1,534	2,557	67	1,145	1,809	36	782	1,018
Jul-Sep 2019	194	3,968	4,591	121	2,453	4,074	92	1,627	2,787	59	1,280	1,975	38	899	1,074
Oct-Dec 2019	145	3,389	3,816	104	2,110	3,618	50	1,461	2,431	76	1,196	1,883	25	797	1,052

Table 47 - Timeliness of re-attendance in 2015 and 2019 following a routine (3-year) repeat screening recommendation, by ethnicity

Ethnicity	2019			2015		
	Early	On-time	Late	Early	On-time	Late
Māori	10.3%	54.7%	35.0%	15.1%	52.9%	32.0%
Pacific	8.6%	53.5%	38.0%	11.7%	55.0%	33.3%
Asian	11.6%	63.3%	25.1%	17.7%	61.5%	20.8%
European/ Other	11.7%	64.4%	23.9%	16.3%	62.8%	20.9%

Table 48 - Timeliness of re-attendance in 2015 and 2019 following a routine (3-year) repeat screening recommendation, by age

Age group	2019			2015		
	Early	On-time	Late	Early	On-time	Late
20-29	17.9%	57.1%	25.0%	26.3%	51.4%	22.3%
30-39	12.6%	56.1%	31.3%	17.6%	53.1%	29.3%
40-49	11.7%	61.4%	26.9%	15.8%	60.4%	23.7%
50-59	10.3%	65.7%	24.0%	14.3%	65.8%	19.9%
60-69	7.3%	71.6%	21.1%	11.1%	72.6%	16.4%

Indicator 2 – First screening events

Table 49 - Age distribution of first screening events for period 1 July - 31 December 2019

Age	Women with first events	% of first events (ages 20-69 yrs) which occurred in that age group
20-24	7,004	33.2
25-29	4,689	22.2
30-34	3,793	18.0
35-39	2,209	10.5
40-44	1,220	5.8
45-49	781	3.7
50-54	468	2.2
55-59	345	1.6
60-64	320	1.5
65-69	262	1.2
20-69 yrs	**21,091**	**100.0**

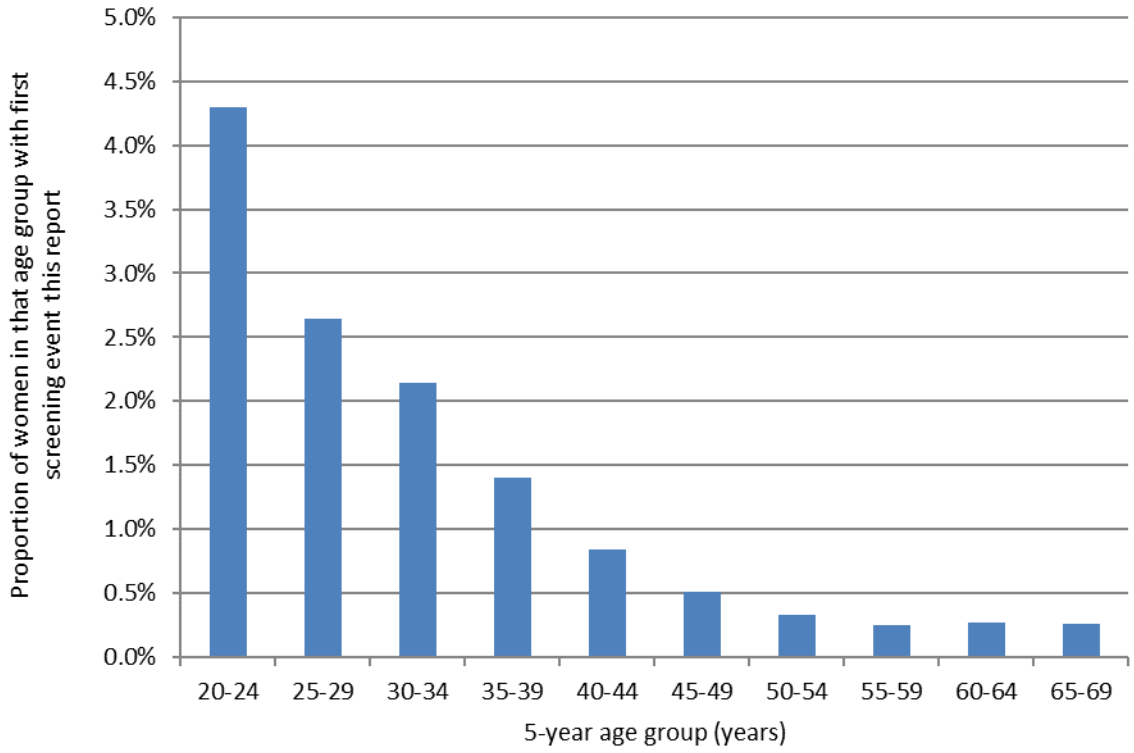
Percentage = number of first screens in age group divided by total number of first screens x 100.

Table 50 - Women (ages 20-69 years) with first screening events as a proportion of total number of women with screening events 31 December 2019

Age	Women with first events	As a proportion of women with a screening event	
		N	%
20-24	7,004	18,506	37.8
25-29	4,689	23,978	19.6
30-34	3,793	25,553	14.8
35-39	2,209	23,544	9.4
40-44	1,220	21,880	5.6
45-49	781	23,405	3.3
50-54	468	21,564	2.2
55-59	345	20,693	1.7
60-64	320	16,712	1.9
65-69	262	12,555	2.1
20-69 yrs	**21,091**	**208,390**	**10.1**

Percentage = number of first screens in age group divided by all women with a screening event within that age group (first or subsequent events) x 100.

Figure 133 - Proportion of population* in that age group with their first screening event during the monitoring period (women aged 20-69 years at 31 December 2019)



**Hysterectomy adjusted, 2013 Census data projected to 31 December 2019.*

Table 51 - Women (aged 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by DHB, for period 1 July - 31 December 2019.

DHB	Women with first events	As a proportion of women with a screening event		As a proportion of eligible population	
	N	N	%	N	%
Auckland	3,255	23,464	13.9	161,281	2.0
Bay of Plenty	798	10,676	7.5	72,274	1.1
Canterbury	2,445	24,568	10.0	170,235	1.4
Capital & Coast	1,689	14,704	11.5	101,683	1.7
Counties Manukau	2,583	21,433	12.1	168,661	1.5
Hawke's Bay	514	6,695	7.7	49,237	1.0
Hutt Valley	627	6,555	9.6	46,573	1.3
Lakes	398	4,543	8.8	33,290	1.2
Mid Central	529	7,155	7.4	53,260	1.0
Nelson Marlborough	472	6,757	7.0	45,232	1.0
Northland	465	6,595	7.1	52,742	0.9
South Canterbury	184	2,528	7.3	17,339	1.1
Southern	1,511	14,544	10.4	101,445	1.5
Tairawhiti	153	1,977	7.7	13,760	1.1
Taranaki	282	5,444	5.2	34,909	0.8
Waikato	1,672	17,529	9.5	123,952	1.3
Wairarapa	122	1,836	6.6	13,544	0.9
Waitemata	3,135	27,195	11.5	190,435	1.6
West Coast	57	1,394	4.1	9,322	0.6
Whanganui	200	2,798	7.1	18,779	1.1
Total	**21,091**	**208,390**	**10.1**	**1,477,953**	**1.4**

Note: Proportions shown are women with first screening event within a DHB, divided by i) all women with a screening event within that DHB (first or subsequent events) and ii) the hysterectomy-adjusted 2013 Census population projected to 31 December 2019 for that DHB, as a percent. Total women screened and women with first events exclude those for whom DHB could not be ascertained.

Table 52 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by ethnicity, for period 1 July - 31 December 2019

Ethnicity	Women with first events	As a proportion of women with a screening event[i]		As a proportion of eligible population[ii]	
		N	%	N	%
Māori	1,948	24,002	8.1	220,112	0.9
Pacific	1,375	10,463	13.1	91,188	1.5
Asian	7,123	32,182	22.1	260,943	2.7
European/ Other	10,645	141,743	7.5	905,710	1.2
Total	**21,091**	**208,390**	**10.1**	**1,477,953**	**1.4**

Note: Proportions shown are women with first screening event in an ethnicity group, divided by i) all women with a screening event within that ethnicity group (first or subsequent events) and ii) the hysterectomy-adjusted 2013 Census population projected to 31 December 2019 for that ethnicity group, as a percent.

Table 53 – 25th and 75th Percentile, median and mean age of women with a first screening event, by ethnicity, for period 1 July - 31 December 2019

Ethnic Group	25th Percentile	75th Percentile	Median Age	Mean Age
Māori	21	26	22	25.3
Pacific	22	36	27	30.8
Asian	27	38	32	34.0
European/ Other	21	34	26	29.4

Indicator 3 – Withdrawal rates

Table 54 - Number of women who withdrew from the NCSP Register 1 July – 31 December 2019 by age, and proportion of women who were enrolled at the start of the monitoring period who withdrew

Age group	Enrolled at start	Women withdrawn	
	N	N	%
<20	628	-	0
20-24	69,442	-	0.000
25-29	144,006	-	0.000
30-34	175,553	1	0.001
35-39	184,914	-	0.000
40-44	184,526	1	0.001
45-49	205,517	2	0.001
50-54	196,570	-	0.000
55-59	190,883	-	0.000
60-64	160,056	1	0.001
65-69	129,437	1	0.001
70+	312,827	-	0.000
Total (all ages)	**1,954,359**	**6**	**<0.001**
Total (20-69)	**1,640,904**	**6**	**<0.001**

** As a proportion of women enrolled at the start of the monitoring period.*

Table 55 - Number of women (aged 20-69 years) who withdrew from the NCSP Register Jan - 31 December 2019 by ethnicity, and proportion of women who were enrolled at the start of the monitoring period who withdrew

Ethnicity	Enrolled at start	Women withdrawn	
	N	N	%
Māori	208,585	1	<0.001
Pacific	105,489	-	-
Asian	217,172	-	-
European/ Other	1,109,658	5	<0.001
Total	**1,640,904**	6	**<0.001**

** As a proportion of women enrolled at the start of the monitoring period.*

Indicator 4 – Early re-screening

Table 56 - Early re-screening by five-year age group

Age group	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
20-24	1,179	173	14.7
25-29	4,350	534	12.3
30-34	4,979	585	11.7
35-39	5,443	616	11.3
40-44	5,638	584	10.4
45-49	6,495	720	11.1
50-54	5,917	648	11.0
55-59	5,725	535	9.3
60-64	4,723	351	7.4
65-69	3,544	280	7.9
All ages	**47,993**	**5,026**	**10.5**

Table 57 - Early re-screening by DHB

DHB	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
Auckland	5,329	680	12.8
Bay of Plenty	2,469	295	11.9
Canterbury	5,717	662	11.6
Capital & Coast	3,559	306	8.6
Counties Manukau	4,843	482	10.0
Hawke's Bay	1,561	149	9.5
Hutt Valley	1,587	119	7.5
Lakes	1,059	93	8.8
Mid Central	1,612	118	7.3
Nelson Marlborough	1,564	126	8.1
Northland	1,516	130	8.6
South Canterbury	587	68	11.6
Southern	3,262	311	9.5
Tairawhiti	432	33	7.6
Taranaki	1,202	89	7.4
Waikato	4,048	301	7.4
Wairarapa	491	69	14.1
Waitemata	6,286	908	14.4
West Coast	324	39	12.0
Whanganui	545	48	8.8
Unspecified	-	-	-
Total	**47,993**	**5,026**	**10.5**

Table 58 - Early re-screening by ethnicity

Ethnicity	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
Māori	5,000	509	10.2
Pacific	2,364	191	8.1
Asian	6,100	584	9.6
European/ Other	34,529	3,742	10.8
Total	**47,993**	**5,026**	**10.5**

Indicator 5 – Laboratory indicators

Indicator 5.1 – Laboratory cytology reporting

Table 59 - Age-standardised percentage of satisfactory cytology samples reported as HSIL, by laboratory

Laboratory	% satisfactory cytology samples reported as HSIL	
	Age-standardised rate* (20-69 years)	Crude rate
Anatomical Pathology Services	0.47%	0.48%
Canterbury Health Laboratories	0.76%	0.75%
LabPLUS	2.09%	2.16%
Medlab Central Ltd.	0.91%	0.87%
Pathlab	0.44%	0.43%
Southern Community Laboratories	0.76%	0.75%
Total	**0.73%**	**0.72%**

** Age-standardised to the NZ 2013 Census population (females, ages 20-69 years).*

Indicator 5.2 – Accuracy of cytology predicting HSIL

Table 60 - Positive predictive value of a report of HSIL + SC cytology by laboratory

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Canterbury Health Laboratories	36	94.7	29	80.6	2	5.3	38
Anatomical Pathology Services	210	92.9	163	77.6	16	7.1	226
LabPLUS	24	96.0	22	91.7	1	4.0	25
Medlab Central Ltd	98	91.6	86	87.8	9	8.4	107
Pathlab	96	97.0	77	80.2	3	3.0	99
Southern Community Labs Dunedin	555	90.7	438	78.9	57	9.3	612
Total	**1,019**	**92.1**	**815**	**80.0**	**88**	**7.9**	**1,107**

Target: 65% - 85%.

Table 61 - Positive predictive value of a report of ASC-H cytology by laboratory

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Canterbury Health Laboratories	43	87.8	20	46.5	6	12.2	49
Anatomical Pathology Services	114	82.0	47	41.2	25	18.0	139
LabPLUS	61	81.3	22	36.1	14	18.7	75
Medlab Central Ltd	76	87.4	53	69.7	11	12.6	87
Pathlab	91	91.0	59	64.8	9	9.0	100
Southern Community Labs Dunedin	178	76.1	82	46.1	56	23.9	234
Total	**563**	**82.3**	**283**	**50.3**	**121**	**17.7**	**684**

Table 62 - Positive predictive value of a report of ASC-H + HSIL + SC cytology by laboratory

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Canterbury Health Laboratories	79	90.8	49	62.0	8	9.2	87
Anatomical Pathology Services	324	88.8	210	64.8	41	11.2	365
LabPLUS	85	85.0	44	51.8	15	15.0	100
Medlab Central Ltd	174	89.7	139	79.9	20	10.3	194
Pathlab	187	94.0	136	72.7	12	6.0	199
Southern Community Labs Dunedin	733	86.6	520	70.9	113	13.4	846
Total	**1,582**	**88.3**	**1,098**	**69.4**	**209**	**11.7**	**1,791**

Indicator 5.4 – Histology Reporting

Figure 134 - Trends in histologically-confirmed HSIL as a percentage of all women with histology (To 1 July 2011 – 31 December 2019).

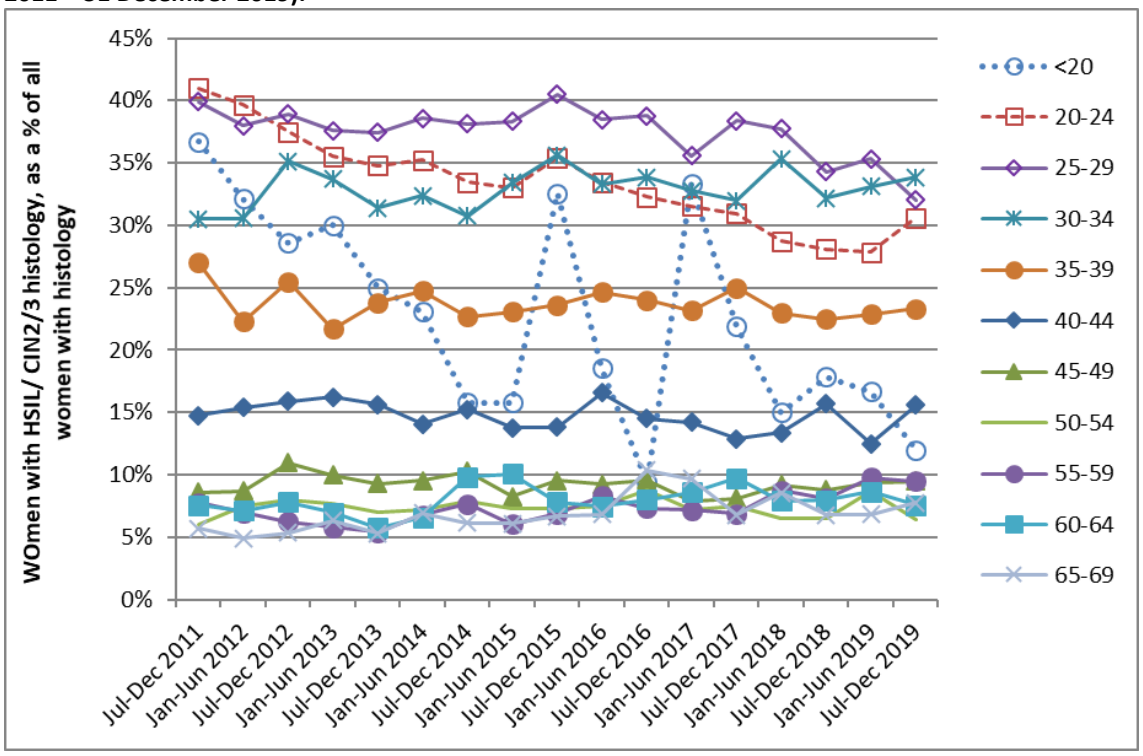


Table 63 - Rate of women with CIN 2/3 per 1,000 women screened, by age and ethnicity and for NZ overall, National Cervical Screening Programme Monitoring Report Number 52

Age	Ethnicity				
	Māori	Pacific	Asian	European/ Other	NZ overall
<20	19.2	0.0	0.0	7.3	8.6
20-24	21.3	6.9	8.9	16.8	16.4
25-29	20.4	10.4	6.3	20.2	17.2
30-34	25.4	11.1	10.3	20.5	18.3
35-39	12.2	14.4	7.8	13.0	11.8
40-44	15.0	4.8	10.0	7.9	8.9
45-49	5.9	4.3	6.8	6.1	6.1
50-54	4.7	1.8	2.7	3.1	3.2
55-59	3.8	3.4	5.2	3.6	3.8
60-64	1.3	3.0	5.2	2.4	2.6
65-69	3.2	2.0	3.1	2.1	2.3
70+	0.0	0.0	6.0	6.2	5.7
ASR (20-69 years)^	**13.4**	**7.1**	**7.2**	**11.4**	**10.6**

^Age Standardised to the WHO population (ages 20-69 years)[12].

Table 64 - Rate of women, per 1,000 women screened, with CIN 2/3 histology, by age and ethnicity, July-Dec 2007 to Jul-Dec 2019

		Period																							
	Age	Jul-Dec 2007	Jan-Jun 2008	Jul-Dec 2008	Jan-Jun 2009	Jul-Dec 2009	Jan-Jun 2010	Jul-Dec 2010	Jan-Jun 2011	Jul-Dec 2011	Jan-Jun 2012	Jul-Dec 2012	Jan-Jun 2013	Jul-Dec 2013	Jan-Jun 2014	Jul-Dec 2014	Jan-Jun 2015	Jul-Dec 2015	Jan-Jun 2016	Jul-Dec 2016	Jan-Jun 2017	Jul-Dec 2017	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019
Māori	<20	15.2	14.6	18.4	20.9	22.9	8.5	18.9	13.7	23.8	22.8	16.1	4.6	0.0	0.0	13.6	6.8	7.8	7.4	0.0	20.2	0.0	10.3	0.0	0.0	19.2
	20-24	29.1	28.1	25.7	29.9	32.1	24.3	28.1	23.8	32.0	32.2	28.8	27.1	30.1	25.5	24.3	20.2	21.4	21.8	20.8	20.7	18.0	15.4	12.7	12.5	21.3
	25-29	32.4	25.8	31.2	32.6	31.3	28.5	27.7	30.9	34.3	33.5	42.9	37.9	39.0	38.3	40.3	31.8	32.5	27.5	35.0	26.0	28.5	21.2	23.7	16.7	20.4
	30-34	18.1	26.7	26.6	20.5	18.2	24.2	30.4	25.9	21.7	27.4	34.3	30.0	29.6	29.5	25.7	31.2	31.3	23.4	31.3	27.8	28.1	23.3	23.6	21.5	25.4
	35-39	12.7	11.8	13.8	16.4	16.3	19.7	17.5	15.3	17.1	16.5	13.7	18.8	21.0	16.8	17.1	16.9	22.3	18.1	19.7	21.0	19.9	12.2	13.7	13.1	12.2
	40-44	9.7	9.6	10.4	9.7	9.2	10.7	9.9	12.1	11.1	11.0	9.9	10.3	12.8	10.5	13.2	12.6	11.2	15.3	15.5	14.5	9.6	8.7	12.9	11.0	15.0
	45-49	10.6	6.5	6.5	11.5	9.8	5.0	8.1	6.4	6.6	6.3	5.9	9.4	7.3	7.5	9.0	9.0	10.6	5.4	8.3	5.9	7.2	7.3	6.3	9.2	5.9
	50-54	3.4	4.2	7.6	6.5	2.4	3.9	5.0	4.5	2.2	7.5	8.8	5.9	3.9	5.0	7.6	7.9	4.2	4.9	7.7	4.0	4.8	4.1	4.5	12.0	4.7
	55-59	6.0	6.6	5.1	3.3	5.2	0.7	4.1	2.0	8.4	5.8	4.9	3.7	1.8	3.5	2.9	3.2	3.0	4.7	3.8	3.8	3.9	6.0	4.1	4.1	3.8
	60-64	2.6	2.3	5.8	4.9	2.2	4.6	2.8	2.0	4.0	3.9	2.7	3.7	2.7	5.2	10.1	8.5	4.6	6.0	3.8	2.4	3.7	2.7	6.5	3.4	1.3
	65-69	2.0	2.1	6.0	1.9	3.8	5.6	1.7	1.7	3.4	0.0	6.5	6.4	1.6	1.4	1.4	2.5	5.0	3.7	11.0	1.2	0.0	1.1	2.2	3.3	3.2
	70+	7.3	7.5	8.6	0.0	0.0	0.0	0.0	0.0	7.9	7.5	7.4	8.5	17.5	13.3	0.0	0.0	7.8	8.9	0.0	0.0	7.8	14.4	17.1	13.2	0.0
Pacific	<20	7.2	4.2	10.8	11.9	7.4	7.5	0.0	0.0	0.0	10.2	0.0	0.0	25.0	20.4	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0
	20-24	11.2	11.0	11.0	11.1	12.2	14.2	16.1	12.2	11.9	15.1	18.1	14.0	13.4	8.2	9.1	9.5	14.4	8.3	10.1	7.7	6.4	9.3	9.6	9.1	6.9
	25-29	6.9	7.9	11.0	6.2	7.4	8.8	16.9	15.1	14.3	14.9	15.1	12.5	13.2	15.6	24.4	18.8	13.5	13.7	16.4	16.8	16.0	12.4	10.4	12.5	10.4
	30-34	2.3	7.4	10.5	9.3	10.7	11.9	10.4	10.7	6.3	18.9	18.6	11.1	13.0	13.6	17.4	16.0	13.8	13.7	18.2	16.1	14.7	14.8	12.2	15.6	11.1
	35-39	9.0	10.5	4.8	8.9	7.3	7.2	9.5	6.4	7.4	8.8	13.6	13.4	11.7	10.0	12.4	8.8	8.5	6.6	11.4	7.0	11.6	10.6	10.0	7.6	14.4
	40-44	6.3	5.6	8.1	5.3	3.0	4.2	4.8	5.3	8.3	7.4	10.3	6.5	7.4	7.0	10.0	5.3	3.5	8.4	12.1	8.4	5.5	3.2	8.9	9.4	4.8
	45-49	7.9	3.4	7.5	7.8	4.1	3.3	4.7	4.2	4.8	7.3	8.1	5.6	3.7	4.6	5.5	4.3	5.1	5.8	6.8	3.3	4.3	5.0	4.4	1.7	4.3
	50-54	0.0	6.1	4.4	1.3	2.4	1.1	6.0	3.2	2.0	5.7	7.1	8.0	2.7	3.9	1.8	5.2	5.1	5.0	2.7	2.5	5.9	3.7	1.7	6.5	1.8
	55-59	1.8	1.5	2.8	1.6	4.3	1.4	2.7	1.4	1.5	2.7	2.8	6.5	6.4	5.3	3.3	2.1	1.2	1.1	3.5	4.7	5.5	6.7	2.3	2.2	3.4
	60-64	0.0	4.7	2.4	2.3	4.1	2.1	5.6	8.2	3.8	5.2	3.6	1.7	1.6	0.0	3.3	1.5	1.5	2.9	2.9	3.2	4.5	6.2	3.1	3.0	3.0
	65-69	0.0	0.0	3.6	0.0	0.0	0.0	0.0	3.2	3.1	2.8	0.0	2.6	5.1	2.4	2.5	2.3	0.0	2.2	7.0	7.0	4.7	2.2	0.0	0.0	2.0
	70+	0.0	0.0	0.0	15.9	15.6	15.6	13.2	0.0	0.0	0.0	0.0	0.0	17.2	0.0	0.0	15.4	0.0	0.0	12.5	15.2	14.1	14.9	12.7	12.7	0.0
Asian	<20	0.0	10.5	0.0	13.7	19.2	0.0	20.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20-24	8.9	7.7	7.8	4.9	8.8	5.7	6.1	7.2	6.6	9.0	13.5	10.7	10.3	7.8	12.0	5.9	10.6	12.2	11.9	9.8	5.3	7.4	5.8	6.8	8.9
	25-29	10.2	8.0	8.4	9.0	6.3	6.0	6.8	8.9	10.7	7.5	12.8	9.8	8.4	8.4	11.4	7.3	14.0	12.0	11.1	4.7	7.7	5.7	7.1	6.6	6.3
	30-34	10.0	7.1	6.9	6.5	6.6	9.0	7.8	9.5	14.5	9.4	11.5	9.7	10.0	9.4	7.4	9.4	10.9	12.3	11.2	8.8	9.9	7.9	9.4	11.1	10.3
	35-39	9.0	8.4	8.0	8.7	6.7	7.5	10.5	9.4	10.9	7.7	12.5	7.8	10.4	10.3	8.3	8.6	6.6	7.7	9.4	7.2	6.7	9.5	8.6	7.9	7.8
	40-44	8.2	2.2	7.4	5.3	4.1	8.1	8.8	5.4	5.8	8.7	11.4	9.3	9.5	4.9	9.8	5.2	7.8	9.3	8.5	5.7	4.5	7.2	5.3	3.4	10.0
	45-49	7.5	6.7	5.0	4.3	4.8	3.4	6.2	4.4	5.6	2.2	9.9	6.0	4.3	6.5	6.4	4.4	6.3	5.2	4.7	4.3	4.6	4.9	4.6	6.4	6.8
	50-54	2.6	1.7	3.3	1.1	3.6	3.2	2.5	3.5	2.4	3.8	5.0	3.5	5.8	3.0	3.6	4.2	6.3	4.7	5.6	4.4	4.5	4.0	2.9	3.6	2.7
	55-59	3.0	2.8	0.0	3.5	2.4	4.0	1.5	6.4	6.3	3.8	4.2	2.3	3.2	2.8	3.8	3.3	1.0	2.0	4.2	1.9	3.2	4.2	2.2	5.6	5.2
	60-64	1.8	0.0	8.8	4.4	1.2	1.2	2.2	5.5	4.1	5.2	2.8	4.3	3.0	3.1	4.2	2.6	1.3	5.7	2.8	4.1	3.8	2.2	2.0	2.2	5.2
	65-69	0.0	0.0	5.1	0.0	2.3	2.2	8.3	0.0	3.8	3.9	0.0	1.6	0.0	3.0	1.3	0.0	3.7	3.1	6.3	6.0	1.9	4.8	2.6	4.2	3.1
	70+	0.0	17.2	12.5	0.0	10.4	0.0	0.0	0.0	0.0	0.0	10.8	9.5	28.6	0.0	0.0	9.3	8.4	0.0	0.0	0.0	0.0	7.4	0.0	0.0	6.0
European	<20	23.1	13.9	23.4	18.7	22.9	7.3	11.6	11.8	19.8	18.9	16.5	20.9	16.8	12.0	7.0	8.8	25.0	6.8	10.4	16.8	18.1	4.7	15.2	8.4	7.3
	20-24	28.9	23.5	27.5	28.1	26.1	24.8	25.7	28.4	27.2	31.2	28.6	26.8	24.2	23.2	22.1	20.2	21.2	20.0	20.5	18.3	17.4	14.7	15.4	15.3	16.8
	25-29	27.2	23.3	27.2	27.5	25.6	25.1	27.1	27.2	30.1	29.2	30.2	31.2	32.9	29.9	29.9	28.0	31.0	30.4	28.4	24.1	23.6	21.8	21.2	21.5	20.2
	30-34	17.1	14.5	16.1	16.5	18.0	16.5	20.4	19.8	17.7	18.1	22.6	22.5	21.1	21.3	21.4	19.4	22.2	21.7	22.1	19.7	18.6	19.9	18.4	19.0	20.5

	Period																								
Age	Jul-Dec 2007	Jan-Jun 2008	Jul-Dec 2008	Jan-Jun 2009	Jul-Dec 2009	Jan-Jun 2010	Jul-Dec 2010	Jan-Jun 2011	Jul-Dec 2011	Jan-Jun 2012	Jul-Dec 2012	Jan-Jun 2013	Jul-Dec 2013	Jan-Jun 2014	Jul-Dec 2014	Jan-Jun 2015	Jul-Dec 2015	Jan-Jun 2016	Jul-Dec 2016	Jan-Jun 2017	Jul-Dec 2017	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019
35-39	10.8	8.6	10.4	10.5	9.8	10.0	11.9	11.0	12.2	11.8	14.3	10.5	12.8	12.9	13.3	11.5	12.2	13.2	13.3	11.3	14.6	10.9	11.7	13.2	13.0
40-44	6.5	6.0	6.4	5.8	5.9	6.5	7.3	7.5	7.0	7.9	8.5	9.3	8.6	8.2	8.8	7.3	7.3	8.4	7.5	7.1	7.3	7.4	8.9	7.5	7.9
45-49	4.2	4.0	5.0	3.7	3.8	4.5	4.6	3.4	4.5	4.6	5.5	5.2	5.9	5.2	6.0	4.5	5.0	5.7	5.9	4.1	4.2	5.1	5.1	5.1	6.1
50-54	2.2	2.8	2.6	2.5	2.4	2.7	3.2	2.2	2.8	2.8	2.8	3.6	3.2	3.1	3.6	2.4	3.1	3.5	4.3	3.2	3.5	2.9	3.1	2.9	3.1
55-59	1.7	1.7	1.9	1.2	1.2	1.9	1.9	1.7	1.9	2.1	1.9	1.9	1.7	2.1	2.6	1.9	2.8	3.2	2.8	2.7	2.3	2.4	3.0	3.3	3.6
60-64	1.8	1.6	2.0	2.2	1.7	0.7	1.5	1.2	1.7	1.7	2.2	2.0	1.4	1.7	2.6	2.6	2.4	1.4	2.4	2.6	2.7	2.1	2.0	2.5	2.4
65-69	2.3	1.7	1.4	1.8	1.3	0.9	2.2	1.6	1.1	1.2	1.5	1.6	1.7	1.8	1.7	2.0	1.8	1.8	2.4	2.7	2.3	2.4	2.1	1.8	2.1
70+	4.6	3.0	2.1	4.9	2.4	2.6	5.0	3.8	2.0	3.0	1.7	7.9	5.1	1.8	3.6	1.9	4.5	7.6	2.6	4.3	5.9	6.2	4.8	2.8	6.2

Table 65 - Number of women screened, by age and ethnicity, July-Dec 2007 to Jan-Jun 2019

	Age Group	Period																								
		Jul-Dec 2007	Jan-Jun 2008	Jul-Dec 2008	Jan-Jun 2009	Jul-Dec 2009	Jan-Jun 2010	Jul-Dec 2010	Jan-Jun 2011	Jul-Dec 2011	Jan-Jun 2012	Jul-Dec 2012	Jan-Jun 2013	Jul-Dec 2013	Jan-Jun 2014	Jul-Dec 2014	Jan-Jun 2015	Jul-Dec 2015	Jan-Jun 2016	Jul-Dec 2016	Jan-Jun 2017	Jul-Dec 2017	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019
Māori	<20	789	820	653	623	437	473	371	365	294	307	248	219	158	160	147	146	129	135	107	99	73	97	84	86	52
	20-24	3848	4200	4167	4385	4486	4641	4763	4842	4782	4622	4765	4613	4625	4506	4356	4498	4618	4454	3988	4010	3895	4015	3863	3682	3096
	25-29	3211	3528	3145	3405	3132	3335	3363	3522	3270	3340	3283	3327	3461	3419	3421	3580	3813	3821	3430	3499	3434	3724	3671	3475	3376
	30-34	3211	3296	3086	3268	3023	3101	3161	3166	3037	3064	2973	2764	2835	2813	2764	2984	2940	3075	2684	2694	2881	3216	3131	3072	3029
	35-39	3235	3376	3253	3163	3130	3203	3316	3208	3093	2904	2928	2768	2716	2741	2629	2783	2875	2766	2535	2520	2510	2788	2702	2527	2466
	40-44	2882	3012	2991	2886	2934	2891	3029	3142	3057	2993	3129	2903	2880	2758	2947	2943	3029	2804	2639	2613	2499	2763	2716	2445	2407
	45-49	2549	2782	2770	2690	2765	2801	2846	2796	2735	2701	2707	2555	2599	2658	2657	2786	2838	2762	2636	2557	2623	2876	2837	2506	2735
	50-54	1748	1891	1964	1856	2100	2041	2201	2212	2282	2257	2379	2353	2328	2380	2493	2392	2609	2468	2326	2272	2298	2432	2431	2257	2329
	55-59	1166	1210	1378	1229	1334	1405	1479	1520	1553	1563	1617	1604	1649	1717	1712	1859	2020	1929	1858	1865	2026	2150	2200	2178	2112
	60-64	757	853	855	817	910	876	1063	986	1011	1021	1104	1082	1104	1149	1192	1294	1308	1335	1326	1273	1342	1474	1532	1454	1515
	65-69	507	469	496	517	521	531	600	594	586	642	620	629	633	696	726	800	798	802	821	845	859	916	913	909	937
	70+	137	133	116	118	117	129	134	118	126	134	135	118	114	150	124	134	128	112	144	128	129	139	175	151	146
Pacific	<20	278	238	185	168	136	133	108	126	91	98	53	60	40	49	41	37	30	28	25	20	20	10	14	7	10
	20-24	1340	1448	1458	1446	1478	1550	1736	1641	1687	1727	1545	1642	1639	1586	1540	1581	1597	1808	1479	1426	1398	1297	1356	1213	1012
	25-29	1313	1517	1449	1453	1349	1469	1418	1387	1400	1473	1323	1441	1437	1471	1432	1546	1624	1678	1467	1429	1372	1447	1443	1445	1350
	30-34	1321	1478	1523	1511	1401	1432	1533	1401	1434	1481	1293	1357	1308	1328	1320	1436	1453	1604	1262	1240	1291	1348	1307	1279	1347
	35-39	1334	1430	1453	1465	1366	1388	1471	1402	1358	1364	1327	1264	1283	1306	1286	1369	1405	1519	1233	1279	1207	1318	1304	1190	1179
	40-44	1260	1431	1473	1318	1319	1417	1468	1328	1324	1344	1266	1234	1358	1290	1296	1323	1427	1422	1237	1185	1097	1247	1239	1172	1248
	45-49	1007	1171	1194	1156	1205	1210	1286	1200	1261	1231	1231	1240	1355	1303	1262	1384	1371	1381	1172	1213	1170	1205	1145	1165	1168
	50-54	787	820	914	799	840	897	993	934	989	1060	982	996	1113	1032	1124	1156	1183	1191	1093	1182	1024	1080	1161	1071	1105
	55-59	554	646	712	611	701	700	748	690	677	743	708	774	780	748	897	933	866	949	859	856	911	895	882	916	894
	60-64	372	430	418	427	485	477	531	485	525	573	563	586	624	602	602	677	656	700	678	634	666	647	648	677	669
	65-69	249	274	276	279	289	270	294	315	318	363	361	378	396	420	405	435	460	458	428	426	427	450	469	454	491
	70+	63	76	56	63	64	64	76	58	58	44	55	58	58	64	65	65	78	77	80	66	71	67	79	79	79
Asian	<20	96	95	86	73	52	63	49	58	41	44	35	27	32	25	20	34	24	25	15	19	20	21	21	25	14
	20-24	1682	1696	1668	1628	1480	1591	1466	1398	1517	1549	1552	1596	1645	1667	1666	1699	1696	1728	1678	1730	1701	1748	1713	1769	1460
	25-29	2549	2891	2986	3209	3179	3307	3229	3252	3173	3341	3195	3168	3217	3103	3340	3569	3490	3827	3506	3634	3915	4041	4250	3937	4310
	30-34	2403	2681	2601	2772	2862	3015	3070	3166	3241	3522	3637	3900	4093	4167	4332	4913	4673	5032	4835	5141	5064	5337	5409	5503	5737
	35-39	2775	2868	2999	2871	3000	2944	2950	2988	2847	2970	2885	2953	3086	3110	3270	3719	3639	3885	3952	4175	4445	4737	5096	5033	5483

	Age Group	Period																								
		Jul-Dec 2007	Jan-Jun 2008	Jul-Dec 2008	Jan-Jun 2009	Jul-Dec 2009	Jan-Jun 2010	Jul-Dec 2010	Jan-Jun 2011	Jul-Dec 2011	Jan-Jun 2012	Jul-Dec 2012	Jan-Jun 2013	Jul-Dec 2013	Jan-Jun 2014	Jul-Dec 2014	Jan-Jun 2015	Jul-Dec 2015	Jan-Jun 2016	Jul-Dec 2016	Jan-Jun 2017	Jul-Dec 2017	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019
Eur/Other	40-44	2673	2750	2840	2819	2901	2839	2967	2957	2930	3004	2906	3018	3050	3066	3073	3260	3073	3321	3188	3181	3298	3322	3594	3579	3815
	45-49	2265	2390	2583	2583	2693	2625	2735	2708	2675	2715	2735	2679	2821	2778	2798	2967	2850	2890	3003	3038	3076	3075	3290	3126	3224
	50-54	1542	1716	1811	1743	1937	1859	1972	1977	2092	2101	2206	2258	2403	2326	2507	2595	2538	2543	2481	2480	2458	2515	2780	2535	2602
	55-59	1000	1080	1131	1128	1270	1265	1355	1416	1577	1575	1672	1712	1885	1787	2082	2112	2020	2017	2130	2055	2181	2140	2223	2302	2315
	60-64	558	582	685	684	802	851	909	911	971	962	1065	1164	1313	1274	1434	1545	1561	1577	1766	1712	1844	1790	1970	1819	1939
	65-69	326	373	395	394	435	454	480	498	526	516	568	638	713	659	768	886	820	971	955	1000	1039	1033	1158	1180	1297
	70+	75	58	80	86	96	93	103	87	100	99	93	105	105	111	113	108	119	93	127	132	134	135	165	139	167
	<20	2298	2583	1970	1981	1443	1507	1210	1267	1058	1006	850	812	653	664	573	565	519	584	384	475	386	422	328	359	274
	20-24	17351	18610	17725	18591	17759	18441	18713	18792	19079	18744	18605	18517	18484	17994	17802	18283	17713	18014	16283	16615	15780	16275	15357	15430	12938
	25-29	15155	16595	15148	16543	14606	15761	14921	15147	14961	15217	14676	15120	14935	15150	14972	15905	15621	16220	14809	15705	14858	16314	14699	15838	14942
	30-34	17473	18681	16811	17788	15692	16857	15756	15693	15405	15658	14964	15264	14735	14660	14407	15150	14519	15147	14175	14676	14210	16021	14802	15627	15440
	35-39	21065	22534	20633	21651	19722	20103	19410	18707	17978	17956	16803	16581	15669	15585	14807	15458	14918	15219	14216	14382	13723	14906	13967	14590	14416
	40-44	20777	21464	20485	20624	19954	20321	20380	19836	20264	19909	19487	18786	18900	18190	17910	18463	17372	16693	15850	15576	14563	15700	14684	14444	14410
	45-49	20173	20850	20741	20211	20603	19927	20207	19104	19407	18633	18764	17759	17952	17069	17594	17631	17803	17350	16803	16756	16775	17478	16946	16268	16278
	50-54	16140	16615	16614	16490	17061	16789	17555	16921	17821	17490	17675	17110	17724	16675	17314	17304	17306	16169	15865	15422	15515	15863	15780	14888	15528
	55-59	13157	13387	13499	13079	13911	13560	13916	13408	14084	13983	14216	13566	14384	13885	14436	14456	15095	14416	14495	14650	14739	15340	15509	14519	15372
	60-64	10057	10418	10822	10655	11435	11409	11640	11233	11944	11326	11586	11071	11679	11071	11871	11721	11972	11680	11542	11573	11856	12241	12647	11948	12589
	65-69	7031	7091	7325	7192	7595	7633	7643	7393	7932	8174	8621	8578	9072	8928	9571	9741	9762	9562	9449	9298	9506	10049	9888	9597	9830
	70+	2396	2351	2402	2250	2486	2337	2382	2355	2462	2357	2327	2158	2341	2192	2248	2162	2200	2229	2351	2352	2382	2586	2477	2479	2599

Indicator 5.5 – Laboratory turnaround time

Table 66 - Timeliness of cytology reporting by laboratory, 31 December 2019

Laboratory	Laboratory turnaround time - cytology								
	Within 7 days		8-15 days		Total within 15 days		More than 15 days		Total
	N	%	N	%	N	%	N	%	N
Canterbury Health Laboratories	8,975	91.0	810	8.2	9,785	99.2	76	0.8	9,861
Anatomical Pathology Services	40,239	95.9	1,620	3.9	41,859	99.7	115	0.3	41,974
LabPLUS	7,881	92.9	498	5.9	8,379	98.8	103	1.2	8,482
Medlab Central Ltd	16,228	94.2	716	4.2	16,944	98.4	279	1.6	17,223
Pathlab	26,900	98.8	253	0.9	27,153	99.8	64	0.2	27,217
Southern Community Labs Dunedin	101,926	96.7	2,618	2.5	104,544	99.2	848	0.8	105,392
Total	**202,149**	**96.2**	**6,515**	**3.1**	**208,664**	**99.3**	**1,485**	**0.7**	**210,149**

Target: 90% within seven working days and 98% within 15 working days.

Note: total samples reported on for this Indicator is different from that reported in Indicator 5.1. Here, 'total samples' refers to all cytology samples received by laboratories within the monitoring period. Indicator 5.1 shows the total number of cytology samples taken during the period.

Table 67 - Timeliness of histology reporting by laboratory, 31 December 2019

Laboratory	Laboratory turnaround time - histology								
	Within 10 days		10-15 days		Total within 15 days		More than 15 days		Total
	N	%	N	%	N	%	N	%	N
Canterbury Health Laboratories	1,222	87.4	148	10.6	1,370	98.0	28	2.0	1,398
Anatomical Pathology Services	1,367	89.9	132	8.7	1,499	98.6	21	1.4	1,520
LabPLUS	708	86.2	70	8.5	778	94.8	43	5.2	821
Medlab Central Ltd	993	96.1	7	0.7	1,000	96.8	33	3.2	1,033
Memorial Hospital Hastings Lab	65	84.4	5	6.5	70	90.9	7	9.1	77
Middlemore Hospital Laboratory	617	72.2	106	12.4	723	84.7	131	15.3	854
Nelson Hospital Laboratory	103	98.1	2	1.9	105	100.0	-	0.0	105
North Shore Hospital Laboratory	827	84.7	47	4.8	874	89.5	102	10.5	976
Northland DHB Laboratory	124	53.7	63	27.3	187	81.0	44	19.0	231
Pathlab	928	84.7	91	8.3	1,019	93.0	77	7.0	1,096
Southern Community Labs Dunedin	2,857	98.2	50	1.7	2,907	99.9	2	0.1	2,909
Southern Community Labs Wellington	1,003	96.5	32	3.1	1,035	99.6	4	0.4	1,039
Taranaki Medlab	371	100.0	-	0.0	371	100.0	-	0.0	371
Waikato Hospital Laboratory	181	82.6	11	5.0	192	87.7	27	12.3	219
Total	**11,366**	**89.9**	**764**	**6.0**	**12,130**	**95.9**	**519**	**4.1**	**12,649**

Target: 90% within ten working days and 98% within 15 working days of receipt of the sample.
Note: total histology samples reported on for this Indicator is different from that reported in Indicator 5.4. Indicator 5.5 includes all histology samples received by laboratories within the monitoring period, while 5.4 includes all histology samples taken within the monitoring period.

Table 68 - Timeliness of reporting for cytology with associated HPV testing by laboratory, 31 December 2019

Laboratory	Laboratory turnaround time - cytology with HPV testing				
	Within 15 days		More than 15 days		Total
	N	%	N	%	N
Canterbury Health Laboratories	184	94.4	11	5.6	195
Anatomical Pathology Services	649	99.5	3	0.5	652
LabPLUS	245	98.0	5	2.0	250
Medlab Central Ltd	319	98.5	5	1.5	324
Pathlab	512	99.6	2	0.4	514
Southern Community Labs	1,050	99.5	5	0.5	1,055
Total	**2,959**	**99.0**	**31**	**1.0**	**2,990**

Indicator 6 – Follow-up of women with high-grade cytology

Table 69 - Women with a histology report within 90 days of a high-grade cytology report, by DHB and age

DHB	<20		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Total
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Auckland	-	-	17	81.0	39	86.7	44	83.0	25	89.3	13	81.3	11	61.1	7	77.8	10	76.9	2	22.2	2	40.0	2	66.7	172
Bay of Plenty	-	-	5	83.3	19	95.0	15	93.8	6	75.0	3	60.0	8	72.7	4	66.7	2	40.0	0	0.0	1	33.3	0	0.0	63
Canterbury	-	-	28	96.6	43	89.6	41	97.6	21	84.0	14	100.0	10	76.9	12	66.7	8	72.7	7	63.6	4	57.1	2	50.0	190
Capital & Coast	-	-	15	88.2	17	81.0	13	92.9	19	90.5	8	100.0	11	84.6	5	83.3	2	40.0	2	66.7	3	75.0	2	40.0	97
Counties Manukau	0	0.0	10	45.5	10	34.5	21	72.4	9	40.9	10	55.6	7	43.8	3	33.3	6	35.3	2	15.4	1	16.7	2	66.7	81
Hawke's Bay	-	-	4	66.7	10	76.9	15	88.2	9	90.0	5	55.6	4	50.0	1	50.0	4	100.0	2	33.3	-	-	0	0.0	54
Hutt Valley	-	-	4	100.0	10	100.0	9	90.0	9	90.0	4	100.0	4	66.7	5	71.4	1	50.0	1	25.0	2	100.0	2	100.0	51
Lakes	-	-	3	100.0	8	100.0	4	100.0	8	80.0	3	100.0	2	100.0	5	100.0	2	100.0	1	100.0	3	100.0	1	100.0	40
Mid Central	-	-	17	85.0	15	75.0	10	83.3	10	100.0	9	90.0	2	100.0	1	50.0	2	66.7	-	-	1	33.3	1	50.0	68
Nelson Marlborough	-	-	5	83.3	5	83.3	12	92.3	2	100.0	4	100.0	7	100.0	3	75.0	2	66.7	1	16.7	-	-	2	100.0	43
Northland	-	-	7	87.5	5	71.4	6	100.0	6	100.0	3	100.0	4	57.1	1	50.0	2	40.0	1	25.0	0	0.0	2	66.7	37
South Canterbury	-	-	2	100.0	3	100.0	9	90.0	-	-	3	100.0	2	100.0	-	-	1	100.0	3	60.0	-	-	0	0.0	23
Southern	-	-	18	100.0	30	93.8	36	92.3	19	86.4	12	92.3	10	90.9	5	71.4	6	100.0	5	62.5	2	100.0	1	33.3	144
Tairawhiti	-	-	3	75.0	7	87.5	6	100.0	5	100.0	1	100.0	1	50.0	-	-	4	100.0	1	100.0	-	-	-	-	28
Taranaki	-	-	7	77.8	11	84.6	13	100.0	7	87.5	4	100.0	3	100.0	2	50.0	3	100.0	1	100.0	1	50.0	1	100.0	53
Waikato	-	-	19	100.0	18	94.7	28	100.0	21	91.3	10	100.0	4	80.0	7	87.5	15	75.0	2	28.6	4	80.0	1	33.3	129
Wairarapa	-	-	-	-	2	100.0	4	80.0	4	100.0	-	-	-	-	2	100.0	1	50.0	2	100.0	-	-	-	-	15
Waitemata	-	-	37	82.2	36	81.8	37	94.9	30	90.9	22	84.6	17	73.9	10	90.9	14	82.4	6	75.0	6	100.0	2	50.0	217
West Coast	-	-	2	100.0	1	50.0	0	0.0	-	-	-	-	-	-	1	100.0	1	50.0	1	100.0	-	-	-	-	6
Whanganui	-	-	4	100.0	2	66.7	7	100.0	2	100.0	4	100.0	2	100.0	1	100.0	1	50.0	3	100.0	1	100.0	0	0.0	27
Total	0	0.0	207	84.5	291	82.4	330	90.7	212	85.1	132	85.2	109	72.2	75	72.1	87	68.5	43	45.7	31	62.0	21	52.5	1,538

'– ' indicates there were no women in this sub-category with a high-grade cytology report.

Table 70 - Women with a histology report within 180 days of a high-grade cytology report, by DHB and age

DHB	<20		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Total
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Auckland	-	-	18	85.7	40	88.9	46	86.8	26	92.9	14	87.5	13	72.2	8	88.9	10	76.9	4	44.4	2	40.0	2	66.7	183
Bay of Plenty	-	-	6	100.0	19	95.0	15	93.8	8	100.0	4	80.0	11	100.0	6	100.0	2	40.0	1	100.0	3	100.0	0	0.0	75
Canterbury	-	-	28	96.6	43	89.6	42	100.0	21	84.0	14	100.0	12	92.3	14	77.8	8	72.7	9	81.8	6	85.7	4	100.0	201
Capital & Coast	-	-	15	88.2	18	85.7	13	92.9	19	90.5	8	100.0	12	92.3	5	83.3	2	40.0	3	100.0	3	75.0	2	40.0	100
Counties Manukau	0	0.0	20	90.9	21	72.4	27	93.1	19	86.4	16	88.9	10	62.5	5	55.6	12	70.6	9	69.2	2	33.3	2	66.7	143
Hawke's Bay	-	-	5	83.3	13	100.0	15	88.2	9	90.0	6	66.7	5	62.5	1	50.0	4	100.0	3	50.0	-	-	0	0.0	61
Hutt Valley	-	-	4	100.0	10	100.0	10	100.0	9	90.0	4	100.0	5	83.3	5	71.4	1	50.0	1	25.0	2	100.0	2	100.0	53
Lakes	-	-	3	100.0	8	100.0	4	100.0	8	80.0	3	100.0	2	100.0	5	100.0	2	100.0	1	100.0	3	100.0	1	100.0	40
Mid Central	-	-	19	95.0	17	85.0	12	100.0	10	100.0	10	100.0	2	100.0	1	50.0	2	66.7	-	-	2	66.7	2	100.0	77
Nelson	-	-	5	83.3	5	83.3	12	92.3	2	100.0	4	100.0	7	100.0	3	75.0	2	66.7	6	100.0	-	-	2	100.0	48
Marlborough	-	-	8	100.0	6	85.7	6	100.0	6	100.0	3	100.0	5	71.4	1	50.0	4	80.0	2	50.0	0	0.0	2	66.7	43
Northland	-	-	2	100.0	3	100.0	10	100.0	-	-	3	100.0	2	100.0	-	-	1	100.0	4	80.0	-	-	0	0.0	25
South Canterbury	-	-	18	100.0	30	93.8	39	100.0	20	90.9	12	92.3	10	90.9	6	85.7	6	100.0	5	62.5	2	100.0	1	33.3	149
Southern	-	-	3	75.0	8	100.0	6	100.0	5	100.0	1	100.0	2	100.0	-	-	4	100.0	1	100.0	-	-	-	-	30
Tairawhiti	-	-	8	88.9	11	84.6	13	100.0	7	87.5	4	100.0	3	100.0	3	75.0	3	100.0	1	100.0	1	50.0	1	100.0	55
Taranaki	-	-	19	100.0	19	100.0	28	100.0	22	95.7	10	100.0	4	80.0	8	100.0	15	75.0	3	42.9	4	80.0	1	33.3	133
Waikato	-	-	-	-	2	100.0	4	80.0	4	100.0	-	-	-	-	2	100.0	1	50.0	2	100.0	-	-	-	-	15
Wairarapa	-	-	42	93.3	37	84.1	37	94.9	32	97.0	23	88.5	18	78.3	10	90.9	14	82.4	7	87.5	6	100.0	2	50.0	228
Waitemata	-	-	2	100.0	1	50.0	1	100.0	-	-	-	-	-	-	1	100.0	1	50.0	1	100.0	-	-	-	-	7
West Coast	-	-	4	100.0	2	66.7	7	100.0	2	100.0	4	100.0	2	100.0	1	100.0	2	100.0	3	100.0	1	100.0	1	100.0	29
Whanganui	-	-	4	100.0	2	66.7	7	100.0	2	100.0	4	100.0	2	100.0	1	100.0	2	100.0	3	100.0	1	100.0	1	100.0	29
Total	**0**	**0.0**	**229**	**93.5**	**313**	**88.7**	**347**	**95.3**	**229**	**92.0**	**143**	**92.3**	**125**	**82.8**	**85**	**81.7**	**96**	**75.6**	**66**	**70.2**	**37**	**74.0**	**25**	**62.5**	**1,695**

' – ' indicates there were no women in this sub-category with a high-grade cytology report.

Indicator 7 – Colposcopy indicators

Indicator 7.1 – Timeliness of colposcopic assessment – high-grade cytology

Table 71 - Women with high-grade cytology (including cytological suspicion of invasive disease), by DHB

DHB	HG women	HG women with referral recorded on the NCSP Register
	N	N
Auckland	155	136
Bay of Plenty	73	63
Canterbury	191	178
Capital & Coast	109	95
Counties Manukau	150	134
Hawke's Bay	71	64
Hutt Valley	46	41
Lakes	42	37
Mid Central	75	70
Nelson Marlborough	47	42
Northland	47	42
South Canterbury	26	24
Southern	146	136
Tairawhiti	31	30
Taranaki	56	52
Waikato	126	123
Wairarapa	14	11
Waitemata	196	184
West Coast	8	8
Whanganui	30	29
Private practice	294	188
Total	**1,933**	**1,687**

Table 72 - Women with a high-grade cytology report (no suspicion of invasive disease), accepted referral and a colposcopy visit within 20 and 40 working days, by ethnicity

Ethnicity	HG women	Accepted referrals recorded on NCSP Register	Women seen within 20 working days		Women seen within 40 working days	
	N	N	N	%	N	%
Māori	255	241	150	62.2	191	79.3
Pacific	94	78	27	34.6	38	48.7
Asian	215	191	126	66.0	157	82.2
European/ Other	1,299	1,140	876	76.8	1,038	91.1
Total	**1,863**	**1,650**	**1,179**	**71.5**	**1,424**	**86.3**

Table 73 - Women with a high-grade cytology report (no suspicion of invasive disease), accepted referral and a colposcopy visit within 20 and 40 working days, by DHB

DHB	HG women	Accepted referrals recorded on NCSP Register	Women seen within 20 working days		Women seen within 40 working days	
	N	N	N	%	N	%
Public clinics overall	1,576	1,466	1,057	72.1	1,282	87.4
Auckland	148	134	106	79.1	122	91.0
Bay of Plenty	69	61	52	85.2	58	95.1
Canterbury	185	173	141	81.5	163	94.2
Capital & Coast	105	95	77	81.1	92	96.8
Counties Manukau	143	131	6	4.6	25	19.1
Hawke's Bay	69	63	35	55.6	57	90.5
Hutt Valley	45	41	28	68.3	38	92.7
Lakes	36	33	28	84.8	31	93.9
Mid Central	73	69	36	52.2	61	88.4
Nelson Marlborough	47	42	30	71.4	39	92.9
Northland	44	40	32	80.0	40	100.0
South Canterbury	26	24	19	79.2	22	91.7
Southern	144	135	107	79.3	131	97.0
Tairawhiti	28	28	21	75.0	23	82.1
Taranaki	56	52	35	67.3	47	90.4
Waikato	119	117	107	91.5	112	95.7
Wairarapa	14	11	10	90.9	11	100.0
Waitemata	189	181	152	84.0	175	96.7
West Coast	8	8	7	87.5	7	87.5
Whanganui	28	28	28	100.0	28	100.0
Private Practice	287	184	122	66.3	142	77.2
Total	**1,863**	**1,650**	**1,179**	**71.5**	**1,424**	**86.3**

Table 74 - Women with cytological suspicion of invasive disease, by cytology result subcategory

Cytology result sub-category	Total women	Accepted referrals recorded on NCSP Register*
	N	N
HS2	21	18
SC	15	10
AC1-AC5	24	3
R10, R14	10	6
Total	**70**	**37**

** Referral accepted date no later than four weeks prior to the end of the current monitoring period, in order to allow at least four weeks of follow-up time available.*

Indicator 7.2 – Timeliness of colposcopic assessment – low-grade cytology

Table 75 - Follow-up of women with persistent low-grade cytology/ low-grade cytology and positive hrHPV test, by DHB

DHB	LG women	Women with subsequent referral recorded		Women with subsequent colposcopy visit recorded		Women with colposcopy subsequent to referral recorded		Women with colposcopy subsequent to referral recorded AND referral:colposcopy interval <= 26 weeks	
	N	N	%*	N	% *	N	% †	N	% †
Auckland	415	380	91.6	364	87.7	359	94.5	315	82.9
Bay of Plenty	225	201	89.3	210	93.3	192	95.5	133	66.2
Canterbury	270	256	94.8	255	94.4	249	97.3	247	96.5
Capital & Coast	147	138	93.9	133	90.5	133	96.4	104	75.4
Counties Manukau	350	334	95.4	307	87.7	301	90.1	287	85.9
Hawke's Bay	94	83	88.3	80	85.1	76	91.6	7	8.4
Hutt Valley	61	59	96.7	59	96.7	58	98.3	58	98.3
Lakes	81	75	92.6	74	91.4	69	92.0	46	61.3
Mid Central	169	164	97.0	159	94.1	156	95.1	51	31.1
Nelson Marlborough	72	68	94.4	66	91.7	66	97.1	57	83.8
Northland	86	83	96.5	79	91.9	77	92.8	65	78.3
South Canterbury	22	22	100.0	22	100.0	22	100.0	21	95.5
Southern	144	140	97.2	133	92.4	133	95.0	85	60.7
Tairawhiti	44	43	97.7	40	90.9	39	90.7	23	53.5
Taranaki	62	55	88.7	60	96.8	55	100.0	55	100.0
Waikato	321	308	96.0	290	90.3	284	92.2	270	87.7
Wairarapa	15	15	100.0	15	100.0	15	100.0	15	100.0
Waitemata	414	379	91.5	361	87.2	354	93.4	331	87.3
West Coast	16	15	93.8	16	100.0	15	100.0	15	100.0
Whanganui	71	68	95.8	67	94.4	64	94.1	60	88.2
Private practice	658	329	50.0	624	94.8	295	89.7	291	88.4
Total	**3,737**	**3,215**	**86.0**	**3,414**	**91.4**	**3,012**	**93.7**	**2,536**	**78.9**

LG women = women with persistent LG/ who are LG & hrHPV positive.

** Percentage of women with persistent LG/ who are LG & hrHPV positive; † percentage of women with a referral.*

Table 76 - Follow-up of women with persistent low-grade cytology/ low-grade cytology and positive hrHPV test, by ethnicity

Ethnicity	LG women	Women with subsequent referral recorded		Women with subsequent colposcopy visit recorded		Women with colposcopy subsequent to referral recorded		Women with colposcopy subsequent to referral recorded AND referral: colposcopy interval <= 26 weeks	
	N	N	%*	N	% *	N	% †	N	% †
Māori	418	378	90.4	362	86.6	335	88.6	268	70.9
Pacific	184	164	89.1	151	82.1	140	85.4	126	76.8
Asian	484	404	83.5	428	88.4	373	92.3	334	82.7
European/ Other	2,651	2,269	85.6	2,473	93.3	2,164	95.4	1,808	79.7
Total	**3,737**	**3,215**	**86.0**	**3,414**	**91.4**	**3,012**	**93.7**	**2,536**	**78.9**

LG women = women with persistent LG/ who are LG & hrHPV positive.

** Percentage of women with persistent LG/ who are LG & hrHPV positive; † percentage of women with a referral.*

Indicator 7.3 – Adequacy of documenting colposcopic assessment

Table 77 - Completion of colposcopic assessment fields, by DHB

DHB	Total colposcopies N	% of colposcopies performed where items are completed					
		SCJ visibility[(i)]	Presence/ absence lesion[(ii)]	Opinion re abnormality grade[(iii)]	Follow-up type	Follow-up timeframe	Items i, ii, & iii complete
Public clinics overall	10,819	97.3	100.0	92.2	92.6	92.0	92.9
Auckland	939	97.3	100.0	91.8	97.9	97.0	93.2
Bay of Plenty	573	97.2	100.0	84.6	96.0	95.6	87.3
Canterbury	1,509	97.0	100.0	94.5	93.2	93.0	93.9
Capital & Coast	726	99.2	100.0	94.7	96.8	96.1	96.4
Counties Manukau	833	97.4	100.0	93.4	98.3	97.8	93.3
Hawke's Bay	425	96.5	100.0	93.4	70.4	70.4	93.2
Hutt Valley	274	97.8	100.0	91.3	93.8	93.1	93.1
Lakes	266	98.5	100.0	88.8	92.1	92.1	91.0
Mid Central	774	96.8	100.0	94.2	99.1	98.3	93.7
Nelson Marlborough	290	98.3	100.0	92.7	54.8	54.8	93.8
Northland	300	97.0	100.0	88.2	98.0	96.7	91.3
South Canterbury	168	92.3	100.0	84.3	93.5	91.1	85.7
Southern	797	96.7	100.0	85.1	96.6	95.2	87.7
Tairawhiti	182	99.5	100.0	97.4	97.8	97.3	97.8
Taranaki	389	96.1	100.0	94.3	99.2	99.2	94.1
Waikato	632	98.1	100.0	96.0	96.7	96.5	95.6
Wairarapa	99	97.0	100.0	94.9	96.0	93.9	93.9
Waitemata	1,375	97.2	100.0	93.1	82.8	82.1	93.8
West Coast	82	97.6	100.0	85.9	97.6	96.3	86.6
Whanganui	186	96.8	100.0	93.9	97.3	96.8	92.5
Private practice	1,327	97.7	100.0	94.9	89.4	88.3	94.9
Total	**12,146**	**97.3**	**100.0**	**92.5**	**92.2**	**91.6**	**93.1**

Table 78 - Summary of colposcopic appearance findings, by DHB

DHB	Total colposcopies	SCJ visible*	Colposcopic appearance (as % of colposcopies where items are completed)	Total colposcopies
	N	N	Abnormal	Inconclusive
Public clinics overall	10,819	10,525	55.3	4.7
Auckland	939	914	54.7	4.9
Bay of Plenty	573	557	54.8	9.9
Canterbury	1,509	1,464	58.6	3.4
Capital & Coast	726	720	53.9	3.0
Counties Manukau	833	811	58.2	4.1
Hawke's Bay	425	410	50.1	3.5
Hutt Valley	274	268	57.7	5.5
Lakes	266	262	59.8	7.5
Mid Central	774	749	57.1	3.5
Nelson Marlborough	290	285	57.2	4.5
Northland	300	291	42.3	5.7
South Canterbury	168	155	41.7	7.7
Southern	797	771	52.9	9.3
Tairawhiti	182	181	62.6	1.6
Taranaki	389	374	55.5	3.3
Waikato	632	620	60.6	2.5
Wairarapa	99	96	56.6	3.0
Waitemata	1,375	1,337	50.3	3.7
West Coast	82	80	67.1	11.0
Whanganui	186	180	66.7	4.3
Private practice	1,327	1,297	52.9	2.9
Total	**12,146**	**11,822**	**55.1**	**4.5**

** Field has been completed*

Table 79 - Biopsies by colposcopic appearance and DHB

DHB	Colposcopic appearance								
	Abnormal			Inconclusive			Normal		
	Total	Biopsy taken		Total	Biopsy taken		Total	Biopsy taken	
	N	N	%	N	N	%	N	N	%
Public clinics overall	5,985	5,543	92.6	508	167	32.9	4,326	860	19.9
Auckland	514	462	89.9	46	15	32.6	379	56	14.8
Bay of Plenty	314	272	86.6	57	17	29.8	202	24	11.9
Canterbury	885	832	94.0	52	21	40.4	572	137	24.0
Capital & Coast	391	355	90.8	22	6	27.3	313	87	27.8
Counties Manukau	485	464	95.7	34	12	35.3	314	41	13.1
Hawke's Bay	213	195	91.5	15	8	53.3	197	34	17.3
Hutt Valley	158	149	94.3	15	4	26.7	101	30	29.7
Lakes	159	142	89.3	20	4	20.0	87	21	24.1
Mid Central	442	410	92.8	27	5	18.5	305	51	16.7
Nelson Marlborough	166	154	92.8	13	5	38.5	111	37	33.3
Northland	127	119	93.7	17	2	11.8	156	34	21.8
South Canterbury	70	63	90.0	13	5	38.5	85	6	7.1
Southern	422	399	94.5	74	33	44.6	301	92	30.6
Tairawhiti	114	111	97.4	3	2	66.7	65	22	33.8
Taranaki	216	203	94.0	13	2	15.4	160	35	21.9
Waikato	383	362	94.5	16	10	62.5	233	48	20.6
Wairarapa	56	54	96.4	3	2	66.7	40	15	37.5
Waitemata	691	625	90.4	51	12	23.5	633	79	12.5
West Coast	55	51	92.7	9	1	11.1	18	4	22.2
Whanganui	124	121	97.6	8	1	12.5	54	7	13.0
Private practice	702	600	85.5	38	24	63.2	587	129	22.0
Total	6,687	6,143	91.9	546	191	35.0	4,913	989	20.1

Indicator 7.5 – Timely discharge of women after treatment

Table 80 - Follow-up of treated women with colposcopy and cytology in the period up to nine months post-treatment, and discharge of eligible women

DHB	Total treatments	Eligible for discharge*		Women discharged appropriately	
	N	N	% of women treated	N	% of eligible
Auckland	104	59	56.7	55	93.2
Bay of Plenty	57	38	66.7	20	52.6
Canterbury	152	101	66.4	78	77.2
Capital & Coast	49	39	79.6	36	92.3
Counties Manukau	113	64	56.6	62	96.9
Hawke's Bay	45	32	71.1	28	87.5
Hutt Valley	27	21	77.8	21	100.0
Lakes	35	25	71.4	20	80.0
Mid Central	76	62	81.6	53	85.5
Nelson Marlborough	37	27	73.0	26	96.3
Northland	46	33	71.7	24	72.7
South Canterbury	12	11	91.7	6	54.5
Southern	90	67	74.4	63	94.0
Tairawhiti	25	17	68.0	13	76.5
Taranaki	38	29	76.3	25	86.2
Waikato	92	69	75.0	69	100.0
Wairarapa	11	10	90.9	10	100.0
Waitemata	104	70	67.3	50	71.4
West Coast	9	7	77.8	7	100.0
Whanganui	43	34	79.1	30	88.2
Private practice	103	85	82.5	46	54.1
Total	**1,268**	**900**	**71.0**	**742**	**82.4**

** Based on advice from the NCSP Advisory Group, women were defined as eligible for discharge if they had a cytology test following their treatment, and their cytology result was negative.*

Table 81 - Follow-up of treated women in the period up to nine months post-treatment

DHB	Total treatments	Colposcopy within 9 months post-treatment		Colposcopy & cytology within 9 months post-treatment	
	N	N	%	N	%
Auckland	104	92	88.5	91	87.5
Bay of Plenty	57	15	26.3	15	26.3
Canterbury	152	73	48.0	70	46.1
Capital & Coast	49	38	77.6	38	77.6
Counties Manukau	113	45	39.8	42	37.2
Hawke's Bay	45	26	57.8	25	55.6
Hutt Valley	27	25	92.6	24	88.9
Lakes	35	25	71.4	25	71.4
Mid Central	76	64	84.2	64	84.2
Nelson Marlborough	37	35	94.6	33	89.2
Northland	46	35	76.1	34	73.9
South Canterbury	12	9	75.0	9	75.0
Southern	90	61	67.8	59	65.6
Tairawhiti	25	16	64.0	16	64.0
Taranaki	38	26	68.4	26	68.4
Waikato	92	82	89.1	81	88.0
Wairarapa	11	7	63.6	6	54.5
Waitemata	104	91	87.5	90	86.5
West Coast	9	7	77.8	7	77.8
Whanganui	43	37	86.0	37	86.0
Private practice	103	75	72.8	74	71.8
Total	**1,268**	**884**	**69.7**	**866**	**68.3**

Indicator 8 – HPV tests

Indicator 8.1 – Triage of low-grade cytology

Table 82 - Triage testing of women with ASC-US cytology

Laboratory	Total ASC-US results		Women with an HPV test			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
	N	N	N	%	N	%
Canterbury Health Laboratories	32	130	0	0.0	126	96.9
Anatomical Pathology Services	114	300	2	1.8	296	98.7
LabPLUS	64	154	0	0.0	148	96.1
Medlab Central Ltd	80	225	2	2.5	210	93.3
Pathlab	105	280	0	0.0	273	97.5
Southern Community Labs	183	432	2	1.1	424	98.1
Total	**578**	**1,521**	**6**	**1.0**	**1,477**	**97.1**

** Where the laboratory which performed the cytology test differs from the laboratory which performed the HPV test, classification is according to the laboratory which performed the cytology test.*

Table 83 - Triage testing of women with LSIL cytology

Laboratory	Total LSIL results		Women with an HPV test			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
	N	N	N	%	N	%
Canterbury Health Laboratories	89	64	1	1.1	64	100.0
Anatomical Pathology Services	407	357	1	0.2	351	98.3
LabPLUS	91	96	1	1.1	91	94.8
Medlab Central Ltd	132	116	1	0.8	111	95.7
Pathlab	260	247	0	0.0	243	98.4
Southern Community Labs	759	664	12	1.6	644	97.0
Total	**1,738**	**1,544**	**16**	**0.9**	**1,504**	**97.4**

** Where the laboratory which performed the cytology test differs from the laboratory which performed the HPV test, classification is according to the laboratory which performed the cytology test*

Table 84 - Histological outcomes within 12 months in women with ASC-US cytology and positive HPV triage test

Laboratory	Women with ASC-US cytology & positive HPV triage test	Triage -positive women who attended colposcopy		Triage -positive women with histology recorded		Triage -positive women with CIN 2+ histology		
	N	N	%*	N	%*	N	%†	%‡
Anatomical Pathology Services	86	80	93.0	57	66.3	13	16.3	22.8
Canterbury Health Laboratories	20	19	95.0	14	70.0	2	10.5	14.3
LabPLUS	26	24	92.3	19	73.1	5	20.8	26.3
Medlab Central Ltd	53	47	88.7	27	50.9	7	14.9	25.9
Pathlab	69	61	88.4	40	58.0	9	14.8	22.5
Southern Community Labs	136	127	93.4	87	64.0	17	13.4	19.5
Total	**390**	**358**	**91.8**	**244**	**62.6**	**53**	**14.8**	**21.7**

** % of women with ASC-US cytology and positive triage test † expressed as a percentage of women with colposcopy ‡ expressed as a percentage of women with histology. Results are for ASC-US cytology collected in the 6-month period 12 months prior to the current monitoring period (i.e. in 1 July – 31 December 2018), to allow for sufficient follow-up time for colposcopy/ histology.*

Table 85 - Histological outcomes within 12 months in women with LSIL cytology and positive HPV triage test

Laboratory	Women with LSIL cytology & positive HPV triage test	Triage -positive women who attended colposcopy		Triage -positive women with histology recorded		Triage -positive women with CIN 2+ histology		
	N	N	%*	N	%*	N	%†	%‡
Anatomical Pathology Services	210	194	92.4	143	68.1	22	11.3	15.4
Canterbury Health Laboratories	35	34	97.1	30	85.7	3	8.8	10.0
LabPLUS	33	27	81.8	22	66.7	3	11.1	13.6
Medlab Central Ltd	76	72	94.7	53	69.7	16	22.2	30.2
Pathlab	166	152	91.6	96	57.8	20	13.2	20.8
Southern Community Labs	400	371	92.8	260	65.0	49	13.2	18.8
Total	**920**	**850**	**92.4**	**604**	**65.7**	**113**	**13.3**	**18.7**

** % of women with LSIL cytology and positive triage test † expressed as a percentage of women with colposcopy ‡ expressed as a percentage of women with histology. Results are for ASC-US cytology collected in the 6-month period 12 months prior to the current monitoring period (i.e. in 1 July – 31 December 2018), to allow for sufficient follow-up time for colposcopy/ histology.*

Indicator 8.2 – HPV test volumes

Table 86 - Volume of HPV test samples received during the monitoring period, by laboratory

Laboratory	HPV tests received		Ratio HPV tests: cytology samples received (%)
	N	% of national total	
Anatomical Pathology Services	3,085	19.6	7.3
Canterbury Health Laboratories	1,209	7.7	12.3
LabPLUS	812	5.2	9.6
Medlab Central Ltd	1,629	10.4	9.5
Pathlab	2,122	13.5	7.8
Southern Community Labs	6,879	43.7	6.5
Total	**15,736**	**100.0**	**7.5**

Table 87 - Invalid HPV tests, by laboratory

Laboratory	Total	Valid		Invalid	
	N	N	%	N	%
Anatomical Pathology Services	3,085	3,085	100.0	-	0.00
Canterbury Health Laboratories	1,209	1,209	100.0	-	0.00
LabPLUS	812	811	99.9	1	0.12
Medlab Central Ltd	1,629	1,629	100.0	-	0.00
Pathlab	2,122	2,122	100.0	-	0.00
Southern Community Labs	6,879	6,876	100.0	3	0.04
Total	**15,736**	**15,732**	**100.0**	**4**	**0.03**

Table 88 - Validity of HPV triage tests, by test technology

Test technology	Total HPV tests		Valid		Invalid	
	N	%	N	%	N	%
Abbott RealTime High Risk HPV	8,088	51.4	8,085	100.0	3	0.04
BD Onclarity	2,122	13.5	2,122	100.0	-	0.00
Roche COBAS 4800 HPV	5,526	35.1	5,525	100.0	1	0.02
Total	**15,736**	**100.0**	**15,732**	**100.0**	**4**	**0.03**

Table 89 - Volume of HPV test samples received during the monitoring period, by purpose and ethnicity

Ethnicity	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
	N	%	N	%	N	%	N	%	N	%	N
Māori	382	16.5	1,020	44.0	166	7.2	327	14.1	421	18.2	2,316
Pacific	81	13.5	204	34.0	49	8.2	156	26.0	110	18.3	600
Asian	226	15.8	366	25.7	139	9.7	469	32.9	226	15.8	1,426
European/ Other	1,740	15.3	4,168	36.6	1,146	10.1	1,853	16.3	2,487	21.8	11,394
Total	**2,429**	**15.4**	**5,758**	**36.6**	**1,500**	**9.5**	**2,805**	**17.8**	**3,244**	**20.6**	**15,736**

Table 90 - Volume of HPV test samples received during the monitoring period, by purpose and age

Age	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
	N	%	N	%	N	%	N	%	N	%	N
<20	-	0.0	-	-	-	0.0	-	0.0	3	100.0	3
20-24	133	24.7	52	9.6	186	34.5	-	0.0	168	31.2	539
25-29	487	33.1	512	34.8	213	14.5	-	0.0	259	17.6	1,471
30-34	600	22.5	897	33.6	237	8.9	623	23.4	311	11.7	2,668
35-39	415	19.2	856	39.5	163	7.5	463	21.4	268	12.4	2,165
40-44	267	14.6	812	44.5	134	7.3	373	20.4	238	13.0	1,824
45-49	173	9.2	819	43.4	116	6.1	423	22.4	356	18.9	1,887
50-54	148	8.6	667	38.7	116	6.7	351	20.4	440	25.6	1,722
55-59	84	6.0	511	36.4	135	9.6	241	17.2	433	30.8	1,404
60-64	65	6.2	331	31.3	103	9.8	190	18.0	367	34.8	1,056
65-69	40	5.9	189	27.8	63	9.3	108	15.9	280	41.2	680
70+	17	5.4	112	35.3	34	10.7	33	10.4	121	38.2	317
Total	**2,429**	**15.4**	**5,758**	**36.6**	**1,500**	**9.5**	**2,805**	**17.8**	**3,244**	**20.6**	**15,736**

Table 91 - Volume of HPV test samples received during the monitoring period, by purpose and laboratory

Laboratory	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
	N	%	N	%	N	%	N	%	N	%	N
Anatomical Pathology Services	485	15.7	1,300	42.1	80	2.6	643	20.8	577	18.7	1,209
Canterbury Health Laboratories	258	21.3	334	27.6	236	19.5	184	15.2	197	16.3	3,085
LabPLUS	121	14.9	173	21.3	184	22.7	233	28.7	101	12.4	812
Medlab Central Ltd.	299	18.4	583	35.8	192	11.8	293	18.0	262	16.1	1,629
Pathlab	307	14.5	823	38.8	244	11.5	466	22.0	282	13.3	2,122
Southern Community Laboratories	959	13.9	2,545	37.0	564	8.2	986	14.3	1,825	26.5	6,879
Total	**2,429**	**15.4**	**5,758**	**36.6**	**1,500**	**9.5**	**2,805**	**17.8**	**3,244**	**20.6**	**15,736**

Table 92 - HPV test samples collected at colposcopy, in relation to total colposcopies performed in the period, by DHB

DHB	HPV tests N	Colposcopies N	HPV tests / colposcopies %
Public clinics overall	1,205	10,819	11.1
Auckland	29	939	3.1
Bay of Plenty	130	573	22.7
Canterbury	212	1,509	14.0
Capital & Coast	115	726	15.8
Counties Manukau	67	833	8.0
Hawke's Bay	86	425	20.2
Hutt Valley	-	274	-
Lakes	95	266	35.7
Mid Central	150	774	19.4
Nelson Marlborough	28	290	9.7
Northland	22	300	7.3
South Canterbury	28	168	16.7
Southern	31	797	3.9
Tairawhiti	-	182	-
Taranaki	33	389	8.5
Waikato	77	632	12.2
Wairarapa	11	99	11.1
Waitemata	60	1,375	4.4
West Coast	8	82	9.8
Whanganui	23	186	12.4
Private practice	154	1,327	11.6
Total	**1,359**	**12,146**	**11.2**

HPV tests/ colposcopy can be interpreted broadly as the percentage of colposcopies within this DHB/ sector where a sample is collected for HPV testing. Consistent with the count of colposcopies column, the number of HPV tests here includes only HPV test samples where a colposcopy report record exists.

Indicator 8.3 –HPV tests for follow-up of women with a historical high-grade abnormality

Table 93 - Women eligible for and proportion who have received HPV testing for a historical high-grade abnormality, by age at 31 December 2019

Age group	Number of women eligible for testing as at 1 Oct 2009		Round 1 test recorded		Round 2 test recorded	
	All	In current report*	N	%	N	%
<20	-	-	-	0.0	-	0.0
20-24	-	-	-	0.0	-	0.0
25-29	5	5	3	60.0	2	40.0
30-34	751	747	506	67.7	404	54.1
35-39	4,558	4,526	3,146	69.5	2,700	59.7
40-44	8,432	8,349	6,008	72.0	5,233	62.7
45-49	11,084	10,953	8,074	73.7	7,028	64.2
50-54	8,962	8,788	6,445	73.3	5,602	63.7
55-59	6,655	6,445	4,776	74.1	4,203	65.2
60-64	4,218	4,047	3,010	74.4	2,634	65.1
65-69	2,548	2,378	1,752	73.7	1,554	65.3
70+	3,298	2,658	1,230	46.3	998	37.5
Total	**50,511**	**48,896**	**34,950**	**71.5**	**30,358**	**62.1**

** Women are not followed up in the current report if they are no longer alive at the end of the current monitoring period; or if they have since had a non-squamous high-grade abnormality (no longer eligible for HPV testing to follow-up historical high-grade abnormality).*

Table 94 - Women eligible for and proportion who have received historical HPV testing, by DHB

DHB	Number of women eligible for historical testing as at 1 Oct 2009		Round 1 test recorded		Round 2 test recorded	
	All	In current report*	N	%	N	%
Auckland	3,915	3,833	2,345	61.2	1,993	52.0
Bay of Plenty	3,037	2,933	2,155	73.5	1,842	62.8
Canterbury	6,050	5,878	4,257	72.4	3,779	64.3
Capital & Coast	2,760	2,707	1,909	70.5	1,705	63.0
Counties Manukau	3,499	3,374	2,101	62.3	1,698	50.3
Hawke's Bay	2,264	2,176	1,637	75.2	1,425	65.5
Hutt Valley	1,528	1,477	1,061	71.8	930	63.0
Lakes	1,615	1,563	1,027	65.7	842	53.9
Mid Central	2,267	2,180	1,664	76.3	1,497	68.7
Nelson Marlborough	1,933	1,866	1,534	82.2	1,400	75.0
Northland	1,963	1,878	1,273	67.8	1,021	54.4
South Canterbury	828	797	625	78.4	565	70.9
Southern	4,762	4,623	3,472	75.1	3,084	66.7
Tairawhiti	914	870	583	67.0	514	59.1
Taranaki	2,230	2,138	1,652	77.3	1,479	69.2
Waikato	4,063	3,934	3,028	77.0	2,691	68.4
Wairarapa	530	512	380	74.2	315	61.5
Waitemata	5,058	4,911	3,312	67.4	2,773	56.5
West Coast	435	426	345	81.0	307	72.1
Whanganui	848	810	590	72.8	498	61.5
Unspecified	12	10	-	0.0	-	0.0
Total	**50,511**	**48,896**	**34,950**	**71.5**	**30,358**	**62.1**

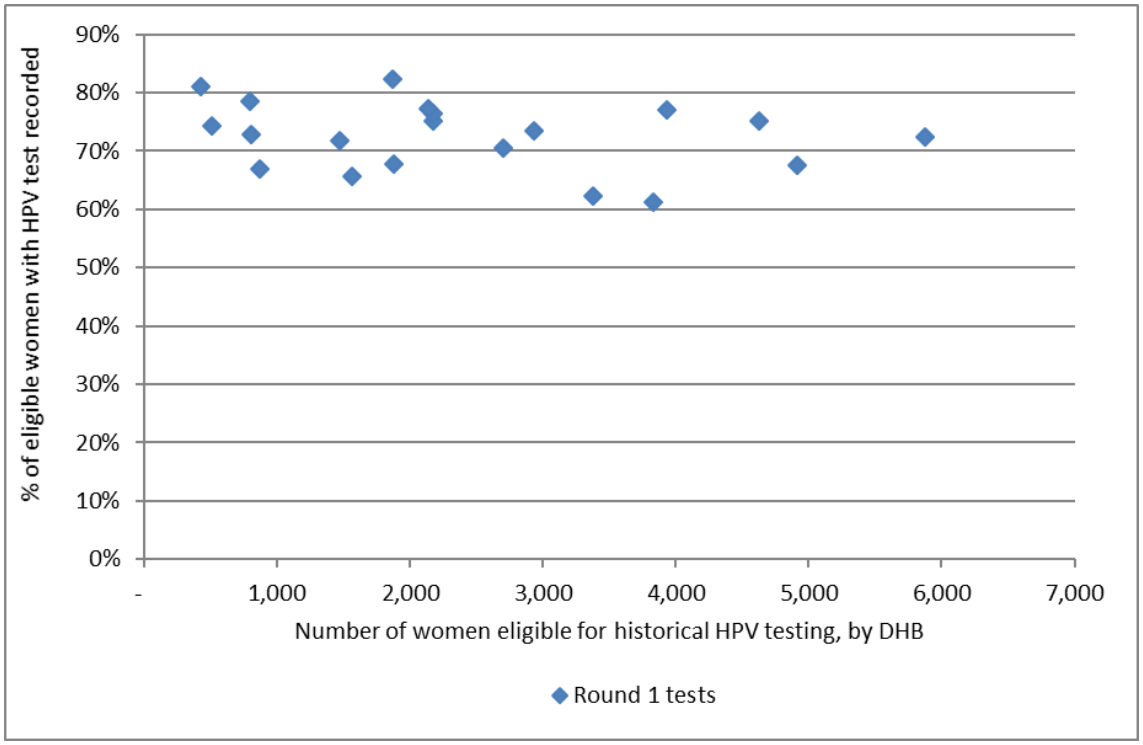
** Women are not followed up in the current report if they are no longer alive at the end of the current monitoring period; or if they have since had a non-squamous high-grade abnormality (no longer eligible for historical HPV testing).*

Table 95 - Women eligible for and proportion who have received historical HPV testing, by ethnicity

Ethnicity	Number of women eligible for historical testing as at 1 Oct 2009		Round 1 test recorded		Round 2 test recorded	
	All	In current report*	N	%	N	%
Māori	8,041	7,663	5,197	67.8	4,241	55.3
Pacific	1,242	1,199	658	54.9	513	42.8
Asian	1,708	1,681	1,000	59.5	845	50.3
European/ Other	39,520	38,353	28,095	73.3	24,759	64.6
Total	**50,511**	**48,896**	**34,950**	**71.5**	**30,358**	**62.1**

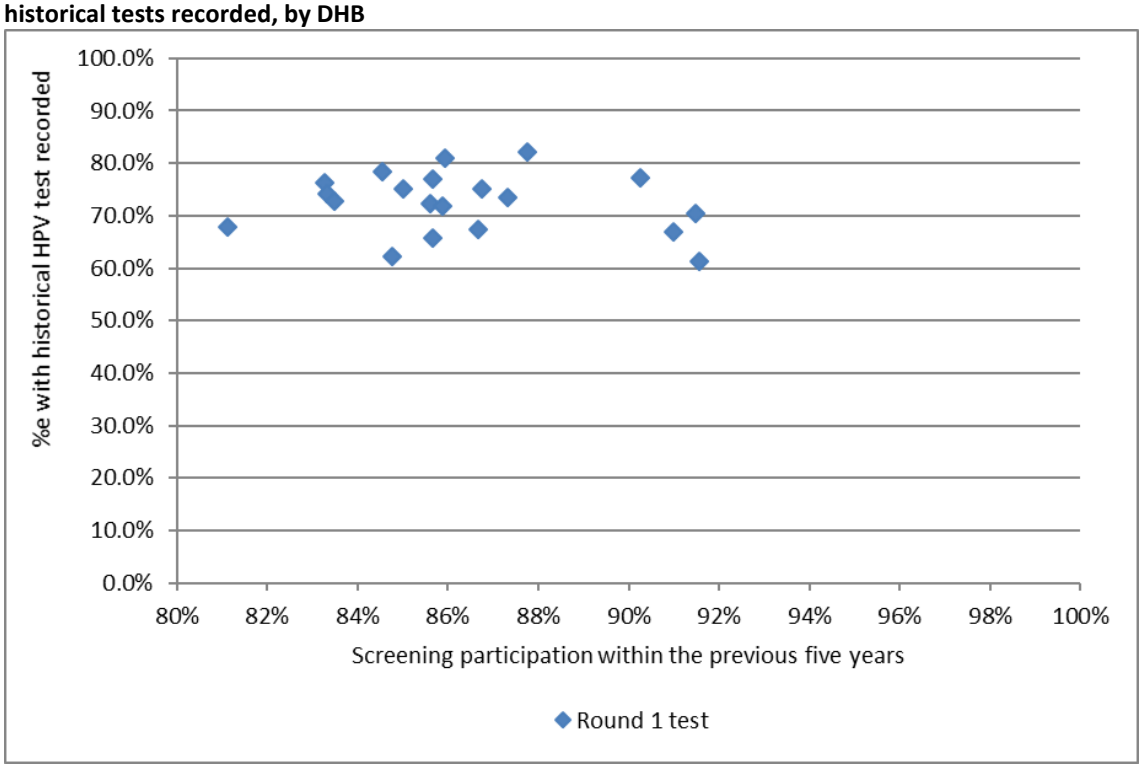
** Women are not followed up in the current report if they are no longer alive at the end of the current monitoring period; or if they have since had a non-squamous high-grade abnormality (no longer eligible for historical HPV testing).*

Figure 135 - Number of women eligible for historical testing within a DHB versus the percentage with a Round 1 historical HPV test recorded



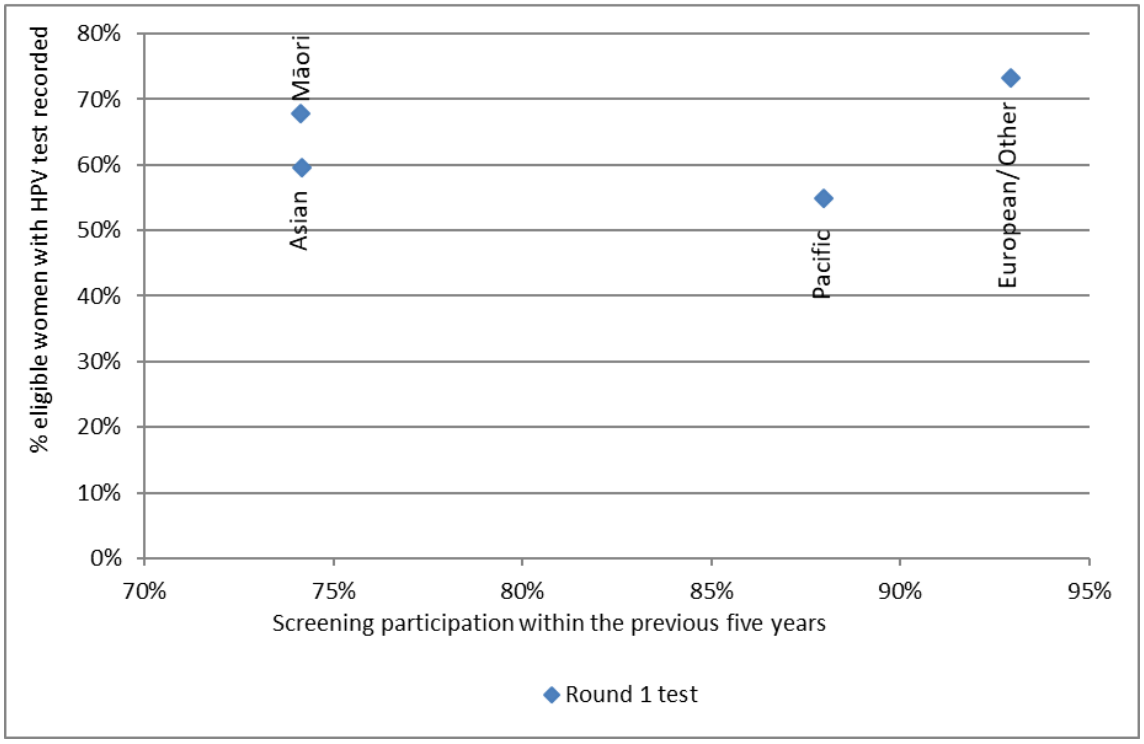
Each dot represents a DHB.
This chart does not suggest that there is any relationship between the number of women eligible for testing and percent of women who have been tested, therefore this does not seem a likely explanation for the variation in women tested in different DHBs.

Figure 136 - Relationship between women screened in the previous five years and proportion of women with historical tests recorded, by DHB



Each dot represents a DHB. See also Table 96.

Figure 137 - Relationship between women screened in the previous five years and proportion of women with historical tests recorded, by ethnicity



Each dot represents an ethnicity.

Table 96 - Women screened in the previous five years and proportion of women with historical round 1 and 2 tests recorded, by DHB

DHB	Women screened in the last 5 years %	Round 1 test recorded %	Round 2 test recorded %
Auckland	91.6%	61.2%	52.0%
Bay of Plenty	87.3%	73.5%	62.8%
Canterbury	85.6%	72.4%	64.3%
Capital & Coast	91.5%	70.5%	63.0%
Counties Manukau	84.8%	62.3%	50.3%
Hawke's Bay	85.0%	75.2%	65.5%
Hutt Valley	85.9%	71.8%	63.0%
Lakes	85.7%	65.7%	53.9%
Mid Central	83.3%	76.3%	68.7%
Nelson Marlborough	87.8%	82.2%	75.0%
Northland	81.1%	67.8%	54.4%
South Canterbury	84.6%	78.4%	70.9%
Southern	86.7%	75.1%	66.7%
Tairawhiti	91.0%	67.0%	59.1%
Taranaki	90.3%	77.3%	69.2%
Waikato	85.7%	77.0%	68.4%
Wairarapa	83.3%	74.2%	61.5%
Waitemata	86.7%	67.4%	56.5%
West Coast	85.9%	81.0%	72.1%
Whanganui	83.5%	72.8%	61.5%

Appendix B – Bethesda 2001 New Zealand Modified

TBS code	Descriptor
Specimen type	
CPS	Conventional pap cytology sample
LBC	Liquid based cytology
COM	Combined (conventional and liquid based)
Specimen site	
T	Vault
R	Cervical
V	Vaginal
Adequacy	
S1	The specimen is satisfactory for evaluation (optional free text)
S2	The specimen is satisfactory for evaluation (optional free text). No endocervical/ transformation zone component present
UA	The specimen is unsatisfactory for evaluation because of insufficient squamous cells
UB	The specimen is unsatisfactory for evaluation because of poor fixation/preservation
UC	The specimen is unsatisfactory for evaluation because foreign material obscures the cells
UD	The specimen is unsatisfactory for evaluation because inflammation obscures the cells
UE	The specimen is unsatisfactory for evaluation because blood obscures the cells
UF	The specimen is unsatisfactory for evaluation because of cytolysis/autolysis
UG	The specimen is unsatisfactory for evaluation because … (free text)
General	
G1	Negative for intraepithelial lesion or malignancy
G2	Epithelial cell abnormality: See interpretation/result
G3	Other: See interpretation/result
Interpretation	
O1	There are organisms consistent with Trichomonas species
O2	There are fungal organisms morphologically consistent with Candida species
O3	There is a shift in microbiological flora that may represent bacterial vaginosis
O4	There are bacteria morphologically consistent with Actinomyces species
O5	There are cellular changes consistent with Herpes simplex virus
OT1	There are reactive cellular changes present (optional free text)
OT2	There are endometrial cells present in a woman over the age of 40 years
OT3	There are atrophic cellular changes present
ASL	There are atypical squamous cells of undetermined significance (ASC-US) present
ASH	There are atypical squamous cells present. A high-grade squamous intraepithelial lesion cannot be excluded (ASC-H)
LS	There are abnormal squamous cells consistent with a low-grade squamous intraepithelial lesion (LSIL; CIN1/HPV)
HS1	There are abnormal squamous cells consistent with a high-grade squamous intraepithelial lesion (HSIL). The features are consistent with CINII or CINIII
HS2	There are abnormal squamous cells consistent with a high-grade squamous intraepithelial lesion (HSIL) with features suspicious for invasion

TBS code	Descriptor
SC	There are abnormal squamous cells showing changes consistent with squamous cell carcinoma
AG1	There are atypical endocervical cells present
AG2	There are atypical endometrial cells present
AG3	There are atypical glandular cells present
AG4	There are atypical endocervical cells favouring a neoplastic process
AG5	There are atypical glandular cells favouring a neoplastic process
AIS	There are abnormal endocervical cells consistent with adenocarcinoma in-situ (AIS)
AC1	There are abnormal glandular cells consistent with endocervical adenocarcinoma
AC2	There are abnormal glandular cells consistent with endometrial adenocarcinoma
AC3	There are abnormal glandular cells consistent with extrauterine adenocarcinoma
AC4	There are abnormal glandular cells consistent with adenocarcinoma
AC5	There are abnormal cells consistent with a malignant neoplasm
Recommendation	
R1	The next cytology sample should be taken in three years, based on the information held on the NCSP Register
R2	Please repeat the cytology sample within three months
R3	Please repeat the cytology sample within three months of the end of pregnancy
R4	Please repeat the cytology sample in three months
R5	Please repeat the cytology sample in six months
R6	Please repeat the cytology sample in 12 months
R7	Because a previous cytology sample showed atypical squamous cells or low-grade changes, please repeat the cytology sample in 12 months
R8	Annual cytology samples are indicated because of previous high-grade abnormality
R9	Referral for specialist assessment is indicated
R10	Urgent referral for specialist assessment is indicated
R11	[not in use]
R12	Please repeat the cytology sample shortly after a course of oestrogen treatment
R13	Under specialist care
R14	In view of the abnormal clinical history provided, urgent referral for assessment is recommended regardless of cytological findings

Appendix C – SNOMED categories for histological samples

Adequacy of specimen		**1986 Code**	**1993 Code**		
Insufficient or unsatisfactory material for diagnosis		M09000	M09010		
There is no code for satisfactory materials.					
Site (topography) of specimen		**1986 Code**	**1993 Code**		
Vagina		T81	T82000		
Cervix (includes endocervix and exocervix)		T83	T83200		
Summary diagnosis	**Code stored on register**	**1986 Code**	**1993 Code**	**Diagnostic category**	**Rank***
There will be a maximum of four M codes transmitted to the register.					
Negative result - normal tissue		M00100	M60000	Negative/benign	1
Inflammation		M40000	M40000	Negative/benign	2
Microglandular hyperplasia		M72480	M72480	Negative/benign	3
Squamous Metaplasia		M73000	M73000	Negative/benign	4
Polyp		M76800	M76800	Negative/benign	5
Other (Morphologic abnormality, not dysplastic or malignant)		M01000	M01000	Negative/benign	6
Atypia		M69700	M67000	CIN 1	7
Benign glandular atypia		M81400	M67030	Negative/benign	8
HPV, koilocytosis, condyloma (NOS) Condyloma acuminatum	M76700	M76700 M76720	M76700 M76720	HPV	9
CIN I (LSIL) (VAIN I when used with T81/ T82000)		M74006	M67016	CIN 1	10
Dysplasia / CIN NOS		M74000	M67015	CIN 1	11
Glandular dysplasia		M81401	M67031	Glandular dysplasia	12
CIN II (HSIL) (VAIN II when used with T81/ T82000)		M74007		CIN 2	13
HSIL NOS		M67017	M67017	HSIL	14
CIN III (HSIL) (VAIN III when used with T81/ T82000) Carcinoma in situ		M74008 M80102 M80702	 M80102 M80702	CIN 3	17 15 16
Adenocarcinoma in situ		M81402	M81402	Adenocarc. in situ	18
Microinvasive squamous cell carcinoma		M80765	M80763	Micro-invasive	19
Invasive squamous cell carcinoma		M80703	M80703	Invasive SCC	20
Adenocarcinoma (endocervical type)		M83843	M83843	Adenocarcinoma (endocervical type)	21
Adenosquamous carcinoma		M85603	M85603	Adenosquamous carcinoma	22
Invasive adenocarcinoma (not endocervical type)		M81403	M81403	Invasive adenocarcinoma (not endocervical type)	23
Metastatic tumour		M80006	M80006	Other cancer	29
Undifferentiated carcinoma		M80203	M80203	Other cancer	24
Sarcoma		M88003	M88003	Other cancer	25
Other codes accepted	**Code stored on register**	**1986 Code**	**1993 Code**	**Diagnostic category**	**Rank**
Carcinosarcoma	M88003	M89803	M89803	Other cancer	26
Choriocarcinoma	M80003	M91003	M91003	Other cancer	27
Miscellaneous primary tumour	M80003	M80003	M80003	Other cancer	28
Small cell carcinoma	M80003	M80413	M80413	Other cancer	30
Malignant tumour, Small cell type	M80003	M80023	M80023	Other cancer	31

Other codes accepted	Code stored on register	1986 Code	1993 Code	Diagnostic category	Rank
Melanoma	M80003	M87203	M87203	Other cancer	32
Other primary epithelial malignancy	M80003	M80103	M80103	Other cancer	33

Appendix D – Indicator Definitions Targets and Reporting Details

Positive predictive value calculations

Table 97 - Definition used for positive predictive value calculations

Histology Diagnosis	G1	Squamous (G2)					Glandular (G2)			Other (G3)	Total
	G1	ASL	LS	ASH	HS1/2	SC	AG1-5	AIS	AC1-4	AC5	
Negative				q	y	y	a	a	a		
Squam-Atypia NOS				q	y	y	a	a	a		
Squam-Low-grade/CIN1/HPV				q	y	y	a	a	a		
Squam-High-grade/CIN 2-3				p	x	x	b	b	b		
Squam Microinvasive SCC				p	x	x	b	b	b		
Squam-Invasive SCC				p	x	x	b	b	b		
Gland-Benign Atypia				q	y	y	a	a	a		
Gland-Dyplasia				p	x	x	b	b	b		
Gland-AIS				p	x	x	b	b	b		
Gland-Invasive Adeno				p	x	x	b	b	b		
Other Malignant Neoplasm				p	x	x	b	b	b		

PPV% (ASC-H)= sum(p) / (sum(p)+sum(q))
PPV% (HSIL)= sum(x) / (sum(x)+sum(y))
PPV% (ASC-H + HSIL + SC)= (sum(p) + sum(x))/ (sum(p)+sum(q) +sum(x) + sum(y)

Appendix E – DHB assignment for colposcopy clinics

Where results in Indicator 7 (colposcopy indicators) are provided by DHB, the clinics included in each DHB are as listed below. Assignment of individual facilities to specific DHBs was provided by the NCSP. All other colposcopy clinics were grouped together as "Private practice".

DHB	Colposcopy clinics included*
Auckland	Ward 97 - Gynae Inpatient Auckland City Hospital
	General Surgery – Auckland City Hospital
	Colposcopy Clinic - Greenlane Clinical Centre
	Gynae Outpatient Clinic – Greenlane Clinical Centre
	Short Stay Surgical Unit – Greenlane Clinical Centre
	Emergency Medicine – North Shore Hospital
Bay of Plenty	Whakatane Hospital (G)
	Opotiki Hospital Outpatients' Department
	Tauranga Hospital (G)
Canterbury	Ashburton Hospital
	Christchurch Hospital
	Christchurch Sexual Health Centre
	Christchurch Women's Hospital - Colposcopy
	Christchurch Women's Hospital - Gynaecology
Capital & Coast	Colposcopy Clinic – Wellington Women's Hospital Outpatients Department
	Kenepuru Women's Outpatients' Department
	Women's Clinic – Wellington Regional Hospital
Counties Manukau	Manukau Super Clinic
	Gynaecology Clinic – [Middlemore Hospital]
	Colposcopy Clinic – Manukau Super Clinic
Hawke's Bay	Chatham Islands Health Centre
	Outpatients Dept – Napier Health Centre
	Villa 4, Gynaecology, Hawke's Bay Hospital
	Hawkes Bay Regional Hospital
	Wairoa Cervical Screening
	Wairoa Hospital
Hutt Valley	Women's Health Clinic – Hutt Hospital
	Gynaecology Clinic - Hutt Hospital
Lakes	Rotorua Hospital (Gynae Dept)
	Taupo Hospital
Mid Central	Colposcopy Clinic – Palmerston North Hospital
	Gynaecology Clinic - Palmerston North Hospital
	Gynaecology Clinic Horowhenua Hospital
Nelson Marlborough	Marlborough Maternity & Gynae
	Nelson Outpatients Department
Northland	Colposcopy Clinic Whangarei Hospital
	Kaitaia Hospital Colp Outpatients' Department
	Bay Of Islands Hospital Outpatients' Department
	Gynaecology Clinic Whangarei Hospital
South Canterbury	Timaru Hospital - Colp/Gynae
Southern	General Gynae Department – Dunedin Hospital

DHB	Colposcopy clinics included*
	Dunedin Public Hospital
	Dunedin Colposcopy Clinic
	Southland Hospital Gynaecology
Tairawhiti	Gisborne Hospital
Taranaki	Taranaki Health Base Hospital - Outpatients Department
	Hawera Outpatients
Waikato	Te Kuiti Hospital
	Womens Outpatient Services – Waikato Hospital
	Tokoroa Hospital - Bev Thorn
Wairarapa	Gynaecology Clinic – Wairarapa Hospital
Waitemata	Colposcopy Clinic- Waitakere Hospital
	Gynaecology Clinic –North Shore Hospital
	Colposcopy Clinic- North Shore Hospital
	Peri-Operative Department - North Shore Hospital
West Coast	Greymouth Hospital
	Gynaecology Clinic Greymouth
Whanganui	Wanganui Hospital
	Gynaecology Clinic – Good Health Wanganui

** Assignment of specific facilities to a DHB was provided by the NCSP, in order to distinguish between DHB clinics and private practice, because the NCSP Register records geographic DHB and does not record public vs private clinic.*

Appendix F – Glossary

Term	Definition
AGC	Atypical glandular cells
AIS	Adenocarcinoma in situ. High-grade changes to the glandular (endocervical) cells of the cervix
ASC-H	Atypical squamous cells of undetermined significance, cannot exclude high-grade
ASC-US	Atypical squamous cells of undetermined significance
ASR	Age standardised rate
CI	Confidence interval
CIN	Cervical intra-epithelial neoplasia; CINI: low-grade; CIN 2 or 3: high-grade
CIS	Carcinoma in situ. An older classification of CIN 3. Abnormal cells that are confined to the surface epithelium of the cervix.
CPS	Conventional Pap (Papanicolaou) Cytology sample
DHB	District Health Board
European/ Other	European women and women from non-Māori, non-Pacific, and non-Asian ethnic groups
HPV	Human papillomavirus
HPV test	Testing for a high risk (oncogenic) subtype of human papillomavirus
hrHPV	A high risk (oncogenic) subtype of human papillomavirus
HSIL	High-grade squamous intra-epithelial lesion
ISC	Invasive squamous carcinoma
LBC	Liquid based cytology
LSIL	Low-grade squamous intra-epithelial lesion
NCSP	National Cervical Screening Programme
NHI	National Health Index
NILM	Negative for intraepithelial lesion or malignancy (a negative cytology report)
NSU	National Screening Unit of the Ministry of Health
NPV	Negative predictive value. The proportion of the screened population with negative test results who do not have the disease being tested for.
OR	Odds ratio
PCR	Polymerase chain reaction. A technique in molecular genetics used in many types of HPV testing
PPV	Positive predictive value. The proportion of the screened population with positive test results who have the disease being tested for.
RR	Relative risk
SC	Squamous cell carcinoma (TBS 2001)
SCC	Squamous cell carcinoma
SNOMED	Systematised Nomenclature of Medicine. A systematically organised collection of medical terminology including histopathological diagnoses.
TBS 2001 (New Zealand Modified)	The Bethesda System 2001 NZ Modified. A management system based on categorising the cytological interpretation of cellular abnormality as negative, low-grade or high-grade.
TZ	Transformation zone. The region of the cervix where the glandular precursor cells change to squamous cells

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