National Screening Unit

National Cervical Screening Programme

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About the authors

The authors are based in the Cancer Epidemiology Unit at Cancer Council NSW (Sydney, Australia). They are part of a research group (led by A/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. Expert advisors to the group's research work include Professor Dame Valerie Beral (Director, Cancer Epidemiology Unit, University of Oxford) and Professor Bruce Armstrong (Professor of Public Health, University of Sydney). 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 31 December 2010.

Key points on performance/trends

Indicator 1

Coverage

Target: 75% of eligible women to have had a screening test within the previous three years

- Coverage target was met nationally (75.2% of women aged 25-69 years screened in the previous three years).
- Coverage target was met for specific five-year age groups between 35-59 years.
- Coverage target was met by 12 of 21 DHBs.
- Coverage targets were met for European/ Other women, but were not met for Māori, Pacific, or Asian women.
- Five-year coverage among women aged 25-69 years exceeds 80% in all DHBs, and in women in five-year age groups between 25-64 years.
- Coverage in women aged 20-24 years is likely to remain lower than for other ages because age is defined at the end of the monitoring period. Coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening.
- Undercounting of some ethnic groups may partially explain the disparities between ethnic groups.
- Three- and five-year coverage among women aged 25-69 years is similar overall to that reported in the previous monitoring report. Three-year coverage increased in 15 of the 21 DHBs and among Māori, Pacific, and Asian women.

Screens in women aged less than 20 years

Target: None

- In the three years to 31 December 2010, there were 16,263 women who had a cervical sample taken when they were aged less than 20 years. This is less than in the previous reporting period (17,671 women).
- This represents 1.7% of all women (of any age) who were screened in the three-year period (compared to 1.8% in previous reporting period).
- Most of these women (79%) were aged 18-19 years at the time of their cervical sample.

Indicator 2	First screening events **Target:** None • There were 21,359 women who had their first screening event during the current reporting period – slightly fewer than in the previous reporting period. • First screening events generally occur among young women (median age 25 years). • Asian women appear to have their first screening event at a later age (median age of Asian women with a first screening event 32 years) and women with a first screening event make up a higher proportion of all women screened for Asian women, compared to women in other ethnic groups.
Indicator 3	Withdrawal rates **Target:** Zero between ages 20-69 years • 52 women aged between 20-69 years withdrew from the NCSP Register during this six-month period (0.004% of within this age group who were enrolled at 30 June 2010). This is similar to the number of women in this age range who withdrew during the previous reporting period (47 women).
Indicator 4	Early re-screening **Target:** Not yet defined • Approximately 25% of a cohort of women with negative cytology results and a recommendation to return at the routine screening interval of three years had at least one cytology sample within 30 months of their index cytology sample. • Early re-screening varies widely between DHBs, from 12% in Taranaki to 37% in Waitemata. • Early re-screening occurs in all ethnic groups, but is most common among Asian women (29%), and least common among Pacific women (21%). • Early re-screening occurs in all age groups, but is most common in women aged 20-24 years at the end of the period (32%) and least common in women aged 65-69 years at the end of the period (18%). • Early re-screening has decreased since the previous report.
Indicator 5.1	Cytology reporting The proportion of cytology samples which are LBC has continued to increase since the previous reporting period, from 99.3% to 99.8%

Unsatisfactory cytology

Target: 1-5% for LBC; 1-8% for conventional cytology

- Percent LBC samples unsatisfactory target met by three of eight laboratories, but was not met nationally (0.6%). The rate of unsatisfactory samples has decreased for LBC since the previous report.
- Percent conventional cytology samples unsatisfactory target not met nationally, nor by any laboratory, however conventional cytology is now a very small and decreasing proportion of cytology processed.

Negative cytology

Target: No more than 96% of satisfactory cytology samples

- Percent of samples negative target met nationally and by all eight laboratories.
- Nationally, the percent of samples which are negative (91.8%) is very similar to that reported in the previous period (91.9%).

Abnormal cytology

Target: No more than 10% of satisfactory cytology samples

- Percent of samples abnormal target met nationally and by five of eight laboratories
- Nationally, the percent of samples which are abnormal (8.2%) is very similar to that reported in the previous period (8.1%).

HSIL cytology

Target: No less than 0.6% of satisfactory cytology samples

- Percent of samples HSIL target met nationally and by six of eight laboratories
- Percent of samples HSIL (0.8%) is unchanged since the previous report

Indicator 5.2

Cytology positive predictive value

HSIL + SC

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

- All nine laboratories met the minimum target for HSIL+SC of 65%.
- Six of nine laboratories met the maximum target for HSIL+SC of 85%.

- Nationally, the positive predictive value of HSIL+SC for this monitoring period was 80.9%, which is lower than in the previous report (83.5%).

Other cytological abnormalities

Target: None

- Nationally, the positive predictive value of ASC-H is similar to that in the previous report (51.3% in this report, 51.8% in the previous report).
- Nationally, the positive predictive value of the combination of ASC-H+HSIL+SC has decreased since the previous report, from 71.2% to 69.8%.
- Nationally, the positive predictive value of glandular abnormalities has increased since the previous report, from 42.9% to 51.6% (however this measure is generally based on a comparatively small number of samples; 159 with histology in the current report).

Notes

- The number of laboratories reported on in this indicator (nine) differs from that in Indicators 5.1 and 5.5 (eight). This is because Southern Community Labs – Christchurch ceased reporting on cytology at the end of the previous monitoring period, however Indicator 5.2 relates to cytology collected in the *previous* six month period, when there were still nine laboratories reporting on cytology.

Indicator 5.3 — Accuracy of negative cytology reports

Not assessed

Indicator 5.4 — Histology reporting

Target: None

- 11,949 histology samples were taken during the current reporting period; 296 (2.5%) were insufficient for diagnosis.
- Results for the most severe histology from 10,152 women are presented
- 49.3% of women had histology samples which were negative or benign
- 23.1% of women had high grade squamous histology results.
- 51 (0.5%) women had ISCC histology results, 38 (0.4%) women had invasive adenocarcinoma histology results, and three (<0.05%) had adenosquamous carcinoma histology results.

Indicator 5.5 Turnaround times

Cytology

Target: 90% within seven working days; 100% within 15 working days

- The seven-working-days target for cytology was not met nationally (78.6% samples were reported within seven working-days), but was met by two of eight laboratories.
- The 15-working-days target was not met nationally (96.5% samples were reported within 15 working-days), but was met by one of eight laboratories.
- Six of the eight laboratories had reported on at least 95% of samples within 15 days; two of the eight had reported on more than 99% of samples.
- Performance against the seven-working-days target has declined since the previous report, both in terms of the overall proportion of cytology reported on (from 84.4% to 78.6%), and the number of labs meeting the target (from four to two).
- The overall proportion of cytology samples reported within 15-working-days has declined since the previous report (from 99.1% to 96.5%), but the number of labs meeting the target has stayed the same (one).

Histology

Target: 90% within 5 working days; 99% within 15 working days

- Turnaround times for histology were below the target nationally (80.9% samples were reported within five working days, 96.1% within 15 working days), but targets were met by five of 17 laboratories (five-day target) and seven of 17 laboratories (15-day target).
- 12 of the 17 laboratories had reported on at least 95% of samples within 15 days.
- The overall proportion of histology samples reported within five and 15 days has decreased since the previous reporting period (from 81.9% to 80.9% within five days, and from 97.9% to 96.1% within 15 days), as has the number of laboratories meeting the five-day target (from six to five), and the 15-day target (from 15 to seven).

Cytology with associated HPV triage testing

Target: 100% within 15 working days

- There were 3,434 cytology samples with associated HPV triage testing in the current reporting period.
- Turnaround time was below target: 87.0% were reported on

	within 15 working days. • Target met by one laboratory • Proportion reported within 15 days is lower for this subgroup of cytology (87.0%) than for cytology overall (96.5%), particularly at Aotea Pathology, Canterbury Health Laboratories, and Southern Community Labs. *Notes* • Turnaround time performance may be an underestimate due to limitations in the report date recorded on NCSP Register.
Indicator 6	<u>Follow-up of women with high grade cytology – 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). • 78.5% of women had a histology report within 90 days of their high grade cytology report; 84.9% of women had a histology report within 180 days of their high grade cytology report. • One DHB met both targets for histological follow-up within 90 days and within 180 days. • Nationally, the proportion of women with histological follow-up within 90 days has increased slightly since the previous reporting period (from 78.2% to 78.5%), and the proportion with follow-up within 180 days is very similar (84.9% during the current reporting period, compared to 85.0% during the previous reporting period). • The proportion of women with follow-up histology within 90 days decreased compared to the previous reporting period for Pacific and Asian women, and increased slightly for European/Other women. Among Māori women the proportion with follow-up histology within 90 days was approximately the same as in the previous reporting period • The proportion of women with follow-up histology within 180 days decreased compared to the previous reporting period for Pacific, Asian and Māori women, whereas the proportion of European/Other women with follow-up histology increased. • The proportion of women with histological follow-up at 90 and 180 days increased for women aged 25-29 years, 35-39 years and 50-54 years, but decreased for women aged 20-24, 60-64 years and 65-69 years. In other age groups, changes varied at 90 and 180 days, or were relatively unchanged.

	Any follow-up tests **Target:** None • Nationally, 153 (7.0%) women have no follow-up test report (colposcopy, subsequent cytology, histology, or an HPV test) within 180 days of their cytology report. • Nationally, the proportion of women with no record of a follow-up test report at 180 days has increased since the previous reporting period (from 6.7% to 7.0%). • Compared to the previous reporting period, the proportion of women with no follow-up test at 180 days has increased for Māori, Pacific and Asian women, and remained the same for European/ Other women. • The proportion of women with no follow-up at 360 days will no longer be included in biannual reports, as not all women will have follow-up information as far as 360 days.
Indicator 7	<u>Colposcopy indicators</u> Not assessed (indicators are in development).
Indicator 8	<u>HPV tests</u> *HPV triage of low grade cytology* **Target:** None set. • Nationally, 91.7% of women aged 30 years or more with an ASC-US cytology result, and 88.0% of women aged 30 years or more with an LSIL cytology result are recorded as having a subsequent HPV triage test (this estimate excludes women with abnormal cytology in the five years preceding their low grade cytology). • Among women aged 30 years or more with valid HPV triage test results, 27% of women with ASC-US results and 57% of women with LSIL results were positive for high risk HPV. • Positivity for high risk HPV varied by laboratory (from 9% to 53% for ASC-US, and from 48% to 71% for LSIL) • Positivity for high risk HPV generally decreased with increasing age. • Small numbers of HPV tests occur in women aged less than 30 years with no cytological abnormality in the preceding five years following a low grade cytology result (in 1.1% of women with an ASC-US result, and 0.5% of women with an LSIL result result) • Nationally, the proportion of HPV triage tests which are invalid is generally small (ranging from 0% for Abbott RealTime to 0.6% for Roche Amplicor). Rates of invalid tests

varied across laboratories, but were below 2% in all cases.

- Virtually all (98.8%) HPV triage tests were performed on cervical specimens collected at the same time as the cytology specimen (ie they appear to be reflex testing from the same LBC sample used for the cytology test).
- The proportion of women who were eligible for HPV triage of low grade cytology who subsequently received a triage test has increased substantially compared to the previous reporting period (from 60.5% to 91.7% for women with ASC-US results, and from 61.6% to 88.0% for women with LSIL results).
- The proportion of women whose HPV tests were positive was slightly higher for ASC-US in the current reporting period (27%, compared to 25% in the previous period), and slightly lower for LSIL (57%, compared to 59% in the previous period).

HPV test volumes

Target: None set.

- Nationally, 14,411 cervical samples were received at laboratories for HPV testing during the current monitoring period.
- These samples generally related to women aged 30 years or more (90.9% of all HPV test samples)
- HPV samples were predominantly from European/ Other women (12,025 samples; 83.4% of all HPV test samples).
- HPV test volumes were lowest at LabPLUS (441 samples; 3.1% of all HPV test samples) and highest at Southern Community Labs (3,852 samples; 26.7% of all HPV test samples).
- Overall HPV test volumes have substantially increased (by 28%) since the previous report, although this is consistent with the phasing in of HPV testing as a recent recommendation.
- Increases in HPV test volumes have been most pronounced among Pacific and Asian women (increased by >50%) and exceeded 90% in three laboratories (Diagnostic Medlab Ltd, LabPLUS, Pathlab).

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 those who die from it. The Programme recommends regular cervical screening at three yearly 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 is available in a separate report (Technical Specification for Monitoring Reports) available on the website:
www.cervicalscreening.govt.nz

From Report 30 onwards, monitoring has been undertaken with technical assistance of the Cancer Council of New South Wales (CCNSW). This has coincided with 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 is ongoing. In particular, colposcopy indicators are not calculated for this report due to the incompleteness of colposcopy data on the NCSP Register relating to this time period. These indicators will be reported on when the data has improved. Work is also underway to improve accuracy and completeness of ethnicity data on the Register. Other indicators, such as the accuracy of negative cytology reports, are in development and it is anticipated that these will be reported on in future.

Approval was sought and received from the National Kaitiaki Group (NKG) for access to Māori women's data from the NCSP Register (NCSP Register), in order to calculate various Programme indicators by ethnicity.

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 http://www.nsu.govt.nz/health-professionals/1072.aspx and on request from the NCSP Programme Leader:
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3. Methods

Age

Unless otherwise specified, age is defined as the woman's age at the end of the reporting period, i.e. 31 December 2010.

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 smears, depending on the type of hysterectomy that they received.

The hysterectomy-adjustment used in this report uses estimates of the hysterectomy prevalence (both total and partial) in the New Zealand population, modelled by the Public Health Intelligence unit of the Ministry of Health. The hysterectomy prevalence was estimated by extracting information about procedures from hospital discharge data. Central estimates of survival and hysterectomy incidence in five-year age groups and five-year periods by ethnicity were then used to determine the prevalence of hysterectomy in all age groups, ethnicities and years. The 2007 data was taken from these estimates (the most recent data available). Further information about the hysterectomy prevalence methodology can be found in the document '*Setting Outcome Targets for the National Cervical Screening Programme. A Report for the National Screening Unit. November 2003*' by S. Paul, M. Tobias, and C. Wright.

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 and ethnicity) who had not had a hysterectomy prior to 31 December 2010 were obtained. Hysterectomy prevalence figures for the whole population (the denominator) were not available by DHB, so age- and ethnicity-specific hysterectomy adjustments were applied equally across each DHB. These adjusted population estimates were then used as the denominator in the hysterectomy-adjusted calculations.

The estimates used for the New Zealand female population were the female 2006 Census population, projected to 31 December 2010.

While the hysterectomy prevalence estimates were the best estimates available at the time of the analysis, they are becoming outdated. They relate to 2007, while this report covers a period up until the end of December 2010. In light of these limitations, measures which rely on the hysterectomy-adjusted population, particularly coverage, need to be interpreted with caution. It is also possible that the extent to which the estimated hysterectomy-adjusted population differs from the true population may vary by ethnicity and/ or by DHB. This may occur, for example if the age-specific prevalence of hysterectomy has changed more in some DHBs or ethnic groups than in others.

Ethnicity analysis

The analysis by ethnicity considered four groups – Māori, Pacific, Asian, or European/Other, based on women's priority two ethnicity codes recorded on the NCSP Register. Women for whom ethnicity information were not available were included in the "European/Other ethnic groups" category. The data download used for the current analysis (NCSP Register data as at 1 March 2011) contained ethnicity codes for approximately 94% 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. Coding of ethnicity on the NCSP Register follows the classification used by the Ministry of Health[1] [2]. The NCSP is continuing with work to improve the accuracy of ethnicity recording on the register.

Previous reports by the Health & Disability Intelligence Unit investigated potential ethnic undercounting in the NCSP Register, by comparing NCSP Register data to data from the National Health Index (NHI) and Register of Births, Deaths & Marriages (BDM). Undercounting of Māori, Pacific, and Asian women (and as a result, overcounting of European/Other women) was found, although the degree to which this occurred varied by age-group, and has changed over time. Undercounting was estimated to be around 20% for each of the Māori, Pacific, and Asian groups in 2007. Undercounting may result in underestimates for some measures (for example coverage, first screening events, withdrawals) in Māori, Pacific, and Asian women, and overestimates for these measures in European/Other women.

The second Health & Disability Intelligence Unit report (*Wright 2008*)[3] calculated ethnicity adjustors for NCSP Register data in the period 1998-2007, based on the data from NHI and BDM. The effect of the ethnicity adjustors is to increase the number of women included in each measure who are Māori, Pacific, or Asian to compensate for undercounting, and thus to reduce it for European/Other. In this monitoring report, ethnicity adjustors for 2006 from *Wright 2008* are applied to counts derived from the NSCP Register to explore the potential impact of under-counting on ethnicity-specific coverage. Unadjusted estimates for coverage are provided as the main results, consistent with previous monitoring reports; adjusted estimates are provided for illustrative purposes. Adjustors are not directly applicable to the full time period covered by this report however, so adjusted measures should be interpreted with caution.

[1] Ministry of Health, 2004. *Ethnicity Data Protocols for the Health and Disability Sector* Wellington; Ministry of Health. Available at www.moh.govt.nz

[2] Ministry of Health, 2006. *Asian Health Chart Book* Wellington, Ministry of Health. Available at www.moh.govt.nz

[3] Craig Wright. Health & Disability Intelligence Unit. Report Number 2: Accuracy of Ethnicity Data in the National Cervical Screening Programme Register (NCSP-R). September 2008.

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.

Until monitoring report 30 (1 July to 31 December 2008), coverage was calculated for women aged 20 – 69 years at the end of the monitoring period. However this includes some younger women who were not eligible for screening for the entire three years because they were aged 22 or less at the end of the three year screening period (i.e. were aged 17 – 19 years at the start of the three year period). This means that previously there may have been slightly underestimated coverage overall. Accordingly, a change to the method for measuring coverage was discussed and agreed on with the NCSP Advisory Group. The revised approach was to report coverage for women aged 25 – 69 years at the end of the monitoring period (which therefore 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 Australia and the UK.

Beginning with NCSP Monitoring Report 30 (1 July to 31 December 2008), coverage has been reported using the revised method but estimates using the old method (20-69 years at end of period) are also included for comparison.

The difference between the new (25-69 at end of period) and the old (20-69 at end of period) estimates is small (about 1-2%). However the advantage of the new method is 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 yearly coverage, (discussed above) we also report five yearly 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. Changes currently in progress include better methods for hysterectomy adjustment and ethnicity identifications.

4. Biannual NCSP Monitoring Indicators

Indicator 1 – 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 reporting 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, ie 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 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	75% of eligible women within three years
Current Situation	852,524 (75.2%) women aged 25-69 at the end of the current reporting period had at least one cervical sample taken during the previous three years. This meets the target of 75%. 994,982 (87.8%) women aged 25-69 at the end of the current reporting period had at least one cervical sample taken during the previous five years. Three-yearly coverage in women aged 25-69 years varied by DHB from 68.1% (Counties Manukau) to 83.3% (Taranaki). Twelve of the 21 DHBs achieved the 75% target in women aged 25-69 years at the end of the period (Figure 1, Table 29). The target coverage of 75% of women screened at least once within three years was achieved in half of the five-year age groups between 20 and 69 years. The target was achieved for each of the specific five-year age groups between 35-59 years, but not for the five-year age groups between 20 and 34 years, or 60 and 69 years. Coverage was lowest in women aged 20-24 years (54.4%), however many women in this age group were not eligible for screening for the entire three-year period. Coverage was highest in women aged 45-49 years (80.9%) (Figure 2, Table 28). Three-yearly coverage also varied by ethnicity. Coverage targets of 75% were not met for Māori, Pacific, or Asian women. Coverage in these groups for women aged 25-69 years was 56.4%, 60.9%, and 54.3% respectively. Coverage targets were met for European/Other women, 83.8% of whom

had been screened within the previous three years (Figure 3,

Table 30). Undercounting of some ethnic groups on the NCSP Register may account for some of this discrepancy. We explored the impact on the results of applying ethnicity adjustors estimated by Wright (*Wright 2008*), to re-weight the counts of women screened based on the level of under- and over-counting for different ethnic groups. As expected, the adjustment narrows the gap between the groups, such that it ranges from 67.2% (Māori) to 77.9% (European/Other) among women aged 25-69 years, and from 63.2% (Asian) to 76.2% (European/Other) among women aged 20-69 years. Adjusted estimates are shown in Table 31 and Table 32.

When compared to the findings for three-year coverage, five-year coverage had similar patterns of variation by age, DHB, and ethnicity to three-year coverage. Five-year coverage varied by age from 58.7% in women aged 20-24 years to 93.5% in both women aged 45-49 years and 50-54 years (Figure 5, Table 33). Among women aged 25-69 years at the end of the period, it ranged from 80.5% in Counties Manukau to 95.4% in Taranaki (Figure 4,Table 34), and from 63.3% (Asian) to 97.1% (European/Other) (Figure 6, Table 35).

Screens in women aged less than 20 years

A total of 16,263 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 31 December 2010. This excludes two samples entered into the NCSP Register, where the apparent age of the woman was zero years. 1.7% of women who were screened at any age, were aged less than 20 years at the time their cervical sample was taken (Table 37).

The number of women aged less than 20 years at the time they were screened varied by DHB from 105 (West Coast) to 2,644 (Canterbury), however some differences in counts are to be expected due to differences in population size and age structure between DHBs. In order to take into account differences in population size between DHBs, 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 6.1% (West Coast) to 15.9% (South Canterbury). Some smaller DHBs screen a relatively low number of women when they are younger than 20 years, but at a relatively high rate, because the population is also small (for example South Canterbury and Wairarapa). Details of screens of women aged less than 20 years by DHB are presented

in Figure 7, and Table 36 to Table 38.

Further exploratory analysis determined that more than three quarters 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 (79% overall; range across DHBs 70% (South Canterbury) - 91% (Mid Central)). This may represent opportunistic screening of women aged 18-19 years. Where this proportion is higher, it is 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 similar in the current period (75.2% within the last three years, and 87.8% within the last five years) to that reported for the previous monitoring period (75.1% within the last three years, and 87.5% within the last five years).

Trends have been more complex by DHBs. There have been increases in three-year coverage in most DHBs (15 of 21). Three-year coverage was similar or slightly decreased in four DHBs; in two cases the decrease was more than one percentage point (from 78.0% to 76.9% in the current report in South Canterbury, and from 74.3% to 71.1% in the current report in Tairawhiti) (Figure 39).

Trends by age are similar to those seen in the previous monitoring report, with the coverage target of 75% of women within the past three years met for women in the five-year age groups between 35-59 years, and within this age range, three-year coverage within the individual five-year age groups has either been stable or increased slightly. The target has not been met for women in the five-year age groups aged 20-34 years or 60-69 years. In the younger women (20-34 years), three-year coverage in the five-year age groups has decreased slightly compared to the previous reporting period, whereas three-year coverage has increased in the five-year age groups among the older women (60-69 years)(Figure 40).

There have small increases in three-year coverage among Māori, Pacific, or Asian women, and a small decrease in three-year coverage among European/ Other women since the previous reporting period (Figure 41).

Screens in women aged less than 20 years

The number of women screened who are aged under 20 years has decreased from 17,671 in the previous reporting period to 16,263 in the current reporting period, as has the proportion of all women with screening events who are aged less than 20 years at the time of the event (from 1.8% to 1.7%). The number of women screened who are aged less than 20 years

at the time has decreased in all DHBs, except for Wairarapa where there was a small increase from 162 women to 168 women (Figure 42).

The proportion of these women who were aged 18-19 years has increased slightly since the previous reporting period (from 78% to 79%), and this increase has occurred in most DHBs (18 of 21). Small decreases were seen in Southland (from 80.6% to 80.3%), Taranaki (from 79.8% to 79.2%) and West Coast (from 77.9% to 77.1%). The proportions in Southland and Taranaki remain higher than that for New Zealand overall however, so while the fraction of screens in women aged less than 20 years which may be opportunistic screening of 18-19 year olds is slightly smaller in these DHBs than it was previously, it is not small compared to other DHBs or New Zealand overall.

Comments

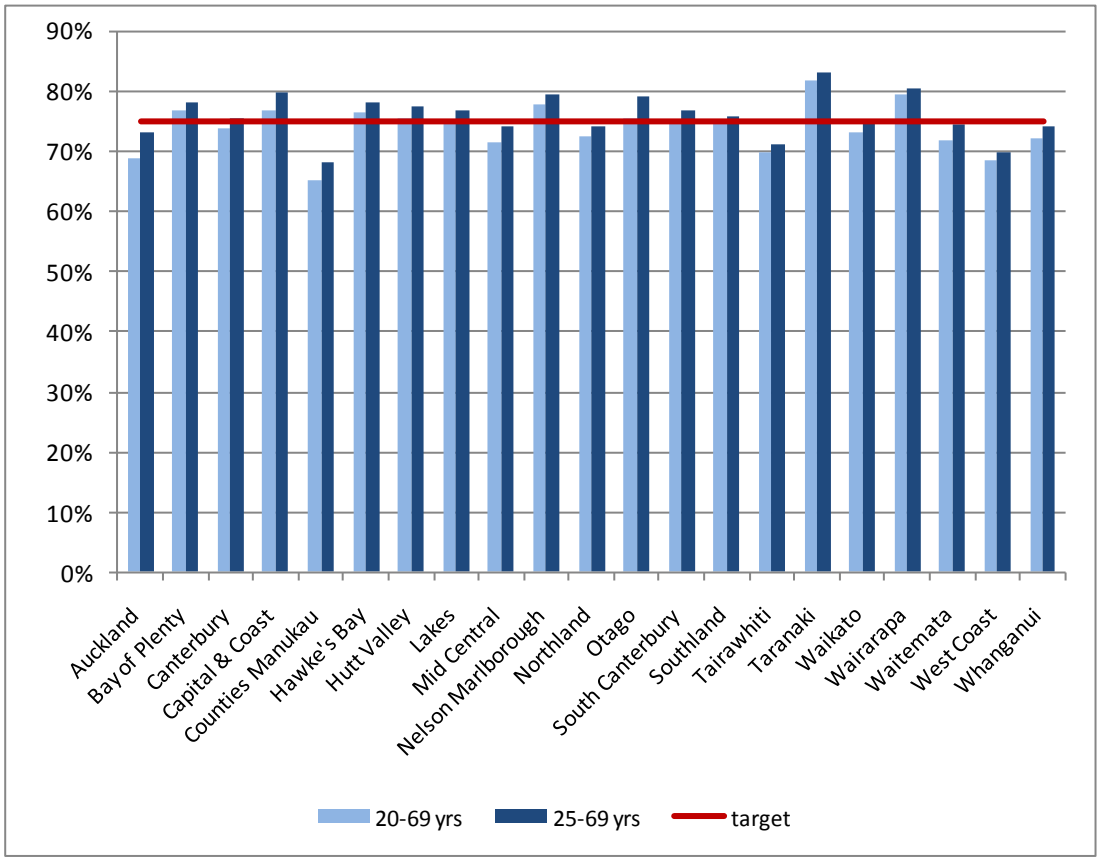
As discussed in Methods (Hysterectomy-adjusted population, page 10), the hysterectomy prevalence used to make the adjustment includes all women with a hysterectomy, some of whom may still require cervical screening. These women will have been removed from the denominator, but may still appear in the 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 (ie 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.

Misclassification of women's ethnicity (leading to under- and over-counting of different ethnicity groups) may be contributing in part to the differences in coverage achieved in different ethnicity groups. Our exploration of misclassification via ethnicity adjustors indicates that this is a factor, but is unlikely to explain all of the difference in observed coverage rates by ethnicity. Estimates which have adjusted for undercounting should be interpreted with caution however, since adjustors relate to 2006, and the periods considered for coverage are wider – ranging from 2007-2010 (three-year coverage), and 2005-2010 (five-year coverage). As is the case for the primary (unadjusted) estimates, they also rely on the accuracy of the hysterectomy-adjusted population estimate.

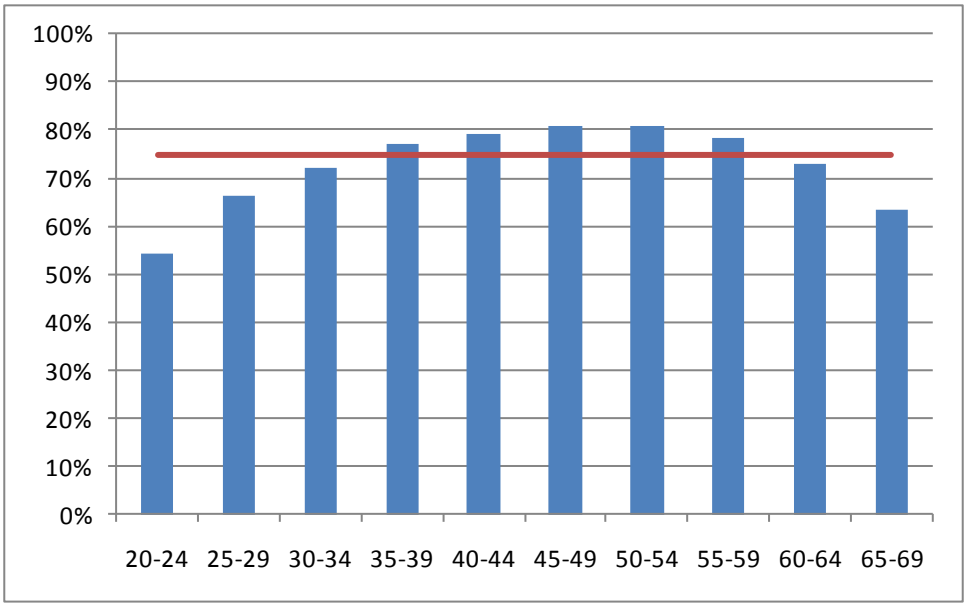
Coverage in women aged 20-24 years is likely to remain lower than for other ages and coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening.

Figure 1 - Three-year coverage by DHB (women screened in the three years prior to 31 December 2010, as a proportion of the hysterectomy-adjusted female population)



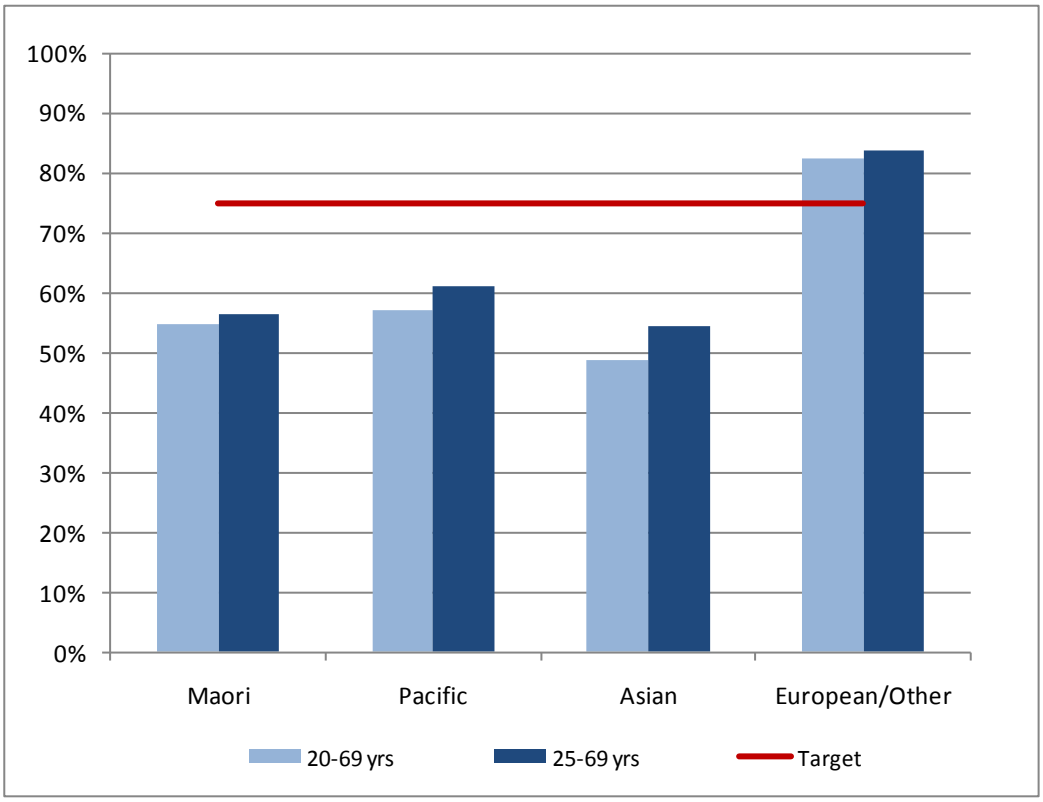
Note: Coverage calculated using population projection for end-2010 based on 2006 Census data. Target 75%, hysterectomy adjusted.

Figure 2 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 31 December 2010, as a proportion of the hysterectomy-adjusted female population)



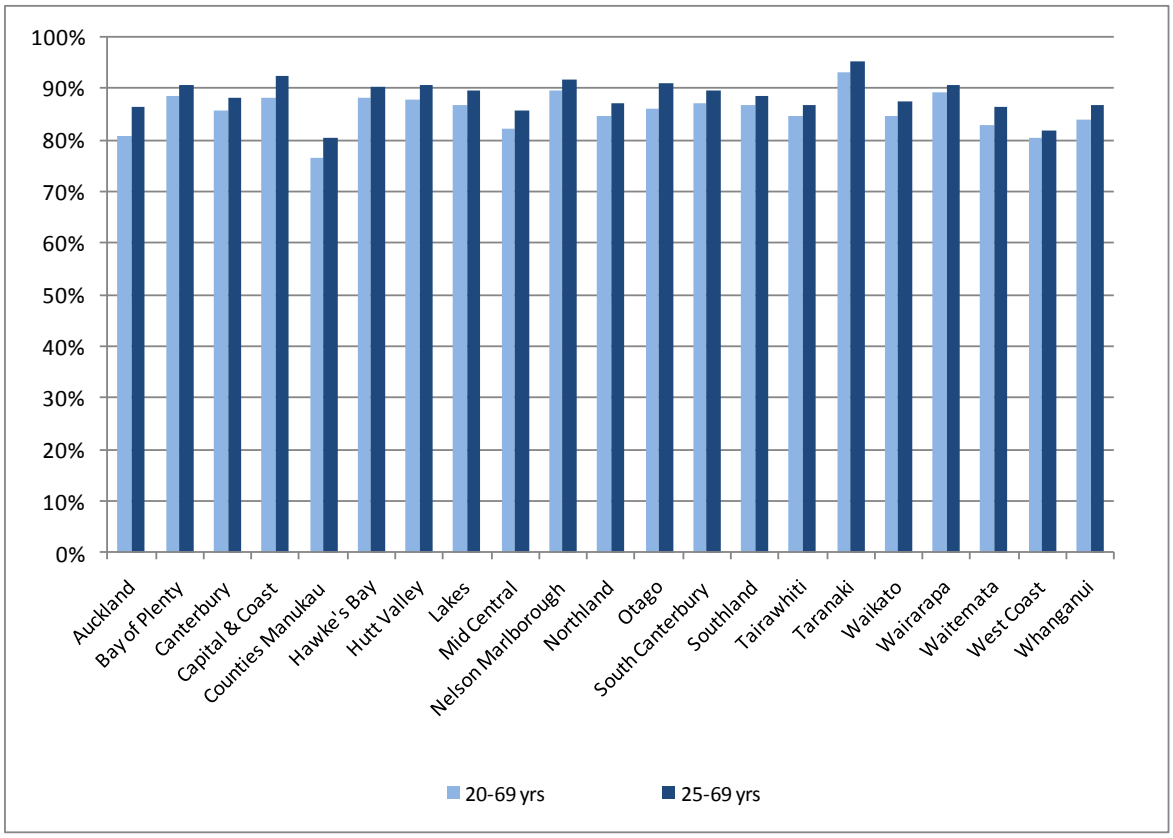
Note: Coverage calculated using population projection for end-2010 based on 2006 Census data. Target (red line); 75%, hysterectomy adjusted.

Figure 3 - Three-year coverage by ethnicity (women screened in the three years prior to 31 December 2010, as a proportion of the hysterectomy-adjusted female population)



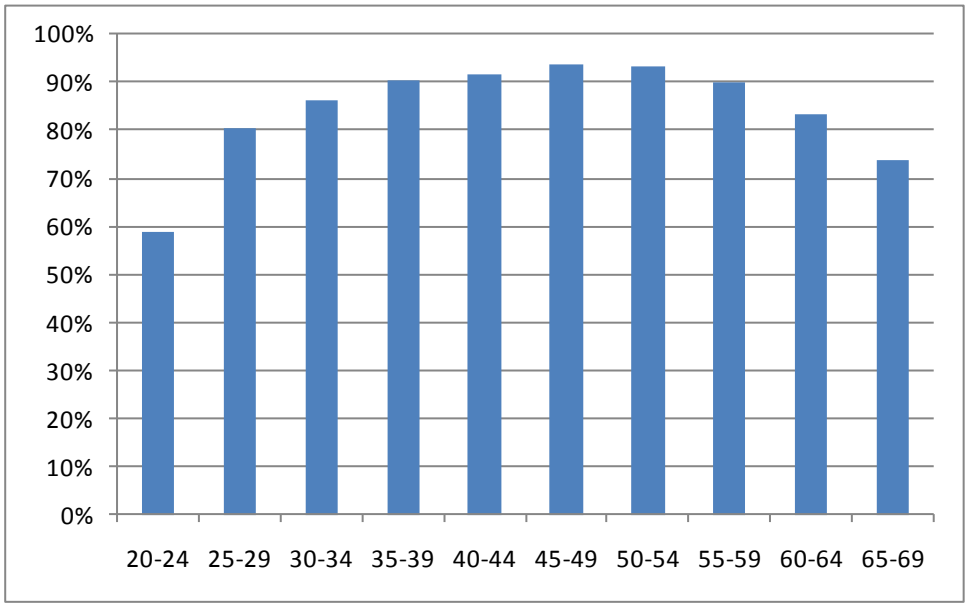
Note: Coverage calculated using population projection for end-2010 based on 2006 Census data. Target 75%, hysterectomy adjusted.

Figure 4 - Five-year coverage by DHB (women screened in the five years prior to 31 December 2010, as proportion of the hysterectomy-adjusted female population)



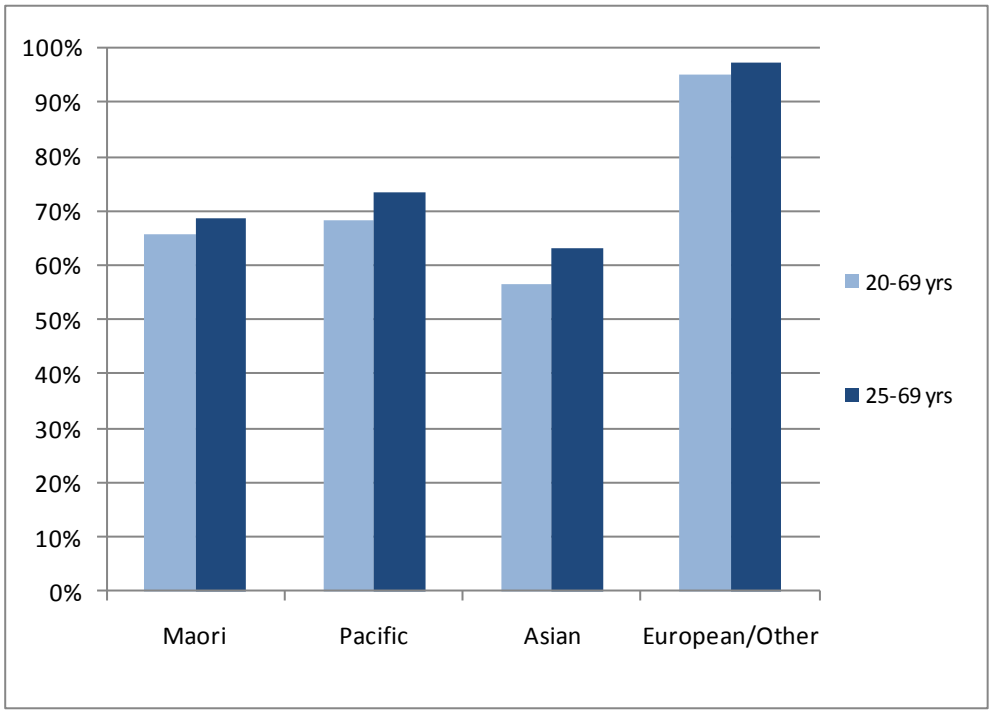
Note: Coverage calculated using population projection for end-2010 based on 2006 Census data.

Figure 5 - Five-year coverage by five-year age-group (women screened in the five years prior to 31 December 2010, as proportion of the hysterectomy-adjusted female population)



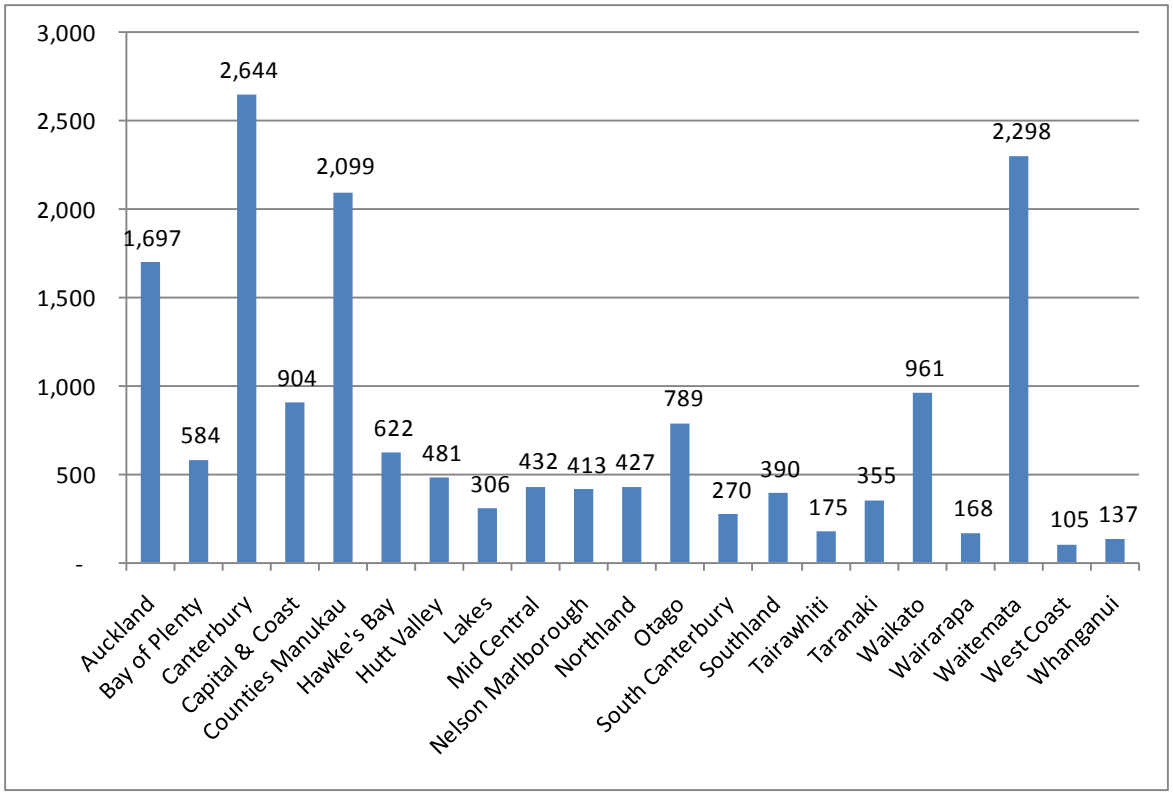
Note: Coverage calculated using population projection for end-2010 based on 2006 Census data.

Figure 6 - Five-year coverage by ethnicity (women screened in the five years prior to 31 Deccember 2010, as a proportion of the hysterectomy-adjusted female population)



Note: Coverage calculated using population projection for end-2010 based on 2006 Census data.

Figure 7 - 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 2010, by DHB



Excludes 7 women whose DHB was not recorded

Indicator 2 – First screening events

Definition

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

A woman's age is defined as her age at the end of the current reporting period (i.e. 31 December 2010).

This indicator is presented as the number of women by age and DHB. 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 time period (screening event), by DHB.

Target

There are no targets for first screening events

Current Situation

21,359 women aged 20-69 years at the end of the period had their first screening event in the period 1 July – 31 December 2010. This constituted 10.1% of the 210, 759 women aged 20-69 years with a cervical sample taken in the period (screening event), and 1.7% of the eligible population. The median age (at the end of the reporting period) of women with a first event recorded was 25 years.

The age group with the highest number of first screening events was women aged 20-24 years. 10,010 women aged 20-24 had their first screening event recorded on the register during this reporting period, accounting for 46.9% of all women aged 20-69 years with first screening events (Figure 8, Table 40). From this age group, first screening events decreased 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 (39.0%) (Figure 9), and the highest proportion of eligible women at that age with a first screening event recorded in the current reporting period (6.4%) (Figure 10).

The DHBs with the highest number of women aged 20-69 years with first screening events were Auckland (4,058) and Waitemata (2,401). The DHBs where women with first screening events, as a proportion of all women with screening events, was the highest were Auckland (16.0%), and Capital Coast (12.1%). The DHB where this proportion was lowest was South Canterbury (4.8%) (Figure 11, Table 1).

The ethnic group with the highest number of women with first screening events was European/Other (16,277) (Table 2). The group with the highest proportion of their eligible population being screened for the first time was also European/Other women (1.9%), and this proportion was lowest for Māori women (0.9%) (Table 2). The proportion of women screened who were being screened for the first time was highest for Asian women (13.4%) (Table 2, Figure 12). This proportion is likely to be related to the median age of women with a first screening event, which in Asian women is comparatively high (32 years, compared with 22 years for Māori women, 29 years for Pacific women, and 25 years for European/Other women) (Table 3).

Trends

The number of women with a first screening event recorded on the NCSP Register has decreased slightly, from 22,043 women in the previous period, to 21,359 in the current period. The proportion of the eligible population that this represents (1.7%) is the same as what it was in the previous reporting period. The proportion of women with screening events who are women with their first screening event being recorded on the NCSP Register (10.1%) is also similar to the previous period (10.2%).

Patterns by age, DHB, and ethnicity are very similar to those seen in the previous report. As was the case in the previous report, the median age of a first screening event was older for Asian and Pacific women than for Māori women and European/ Other women, and women with first screening events constituted a larger proportion of the women screened for Asian and Pacific women.

Longer term trends in the number of women with a first screening event are shown by DHB in Figure 43; by age in Figure 44; and by ethnicity in Figure 45.

Comments

Note that 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 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 (which could be due to high coverage, or higher abnormality rates, as the latter require women to return more frequently). 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 register).

Figure 8 - Number of first screening events by five-year age group

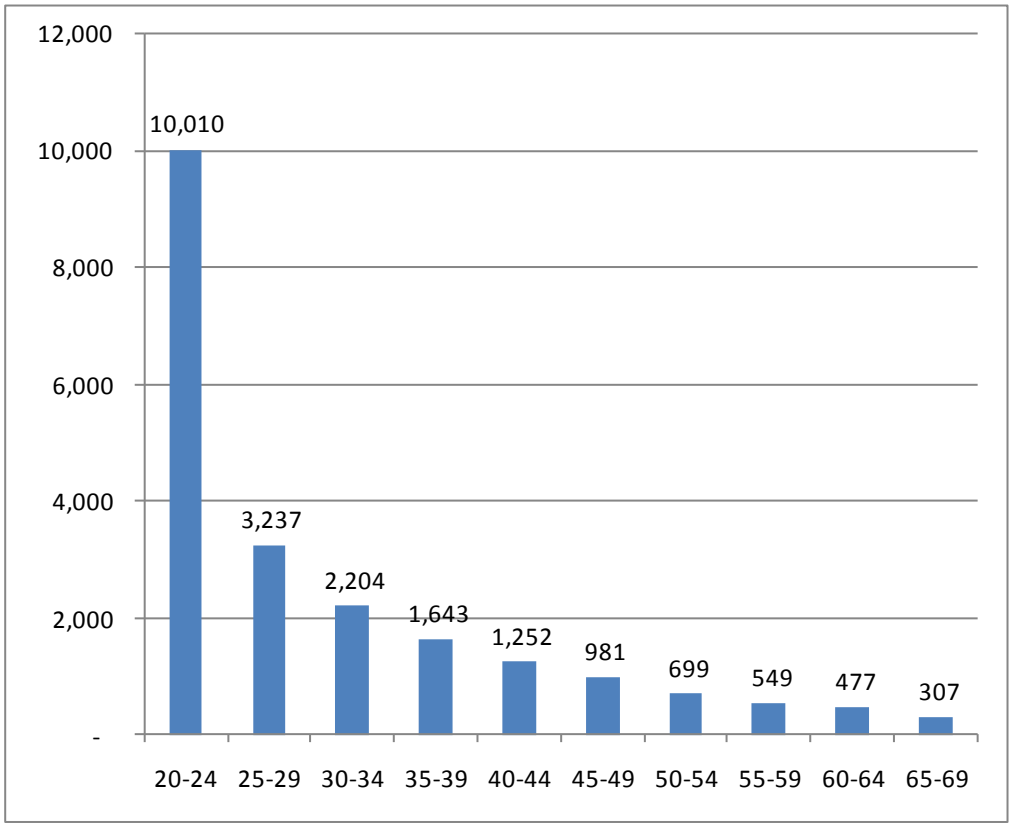


Figure 9 – Women with first screening events as a proportion of all women screened during the reporting period, by five-year age group (women aged 20-69 years at 31 December 2010)

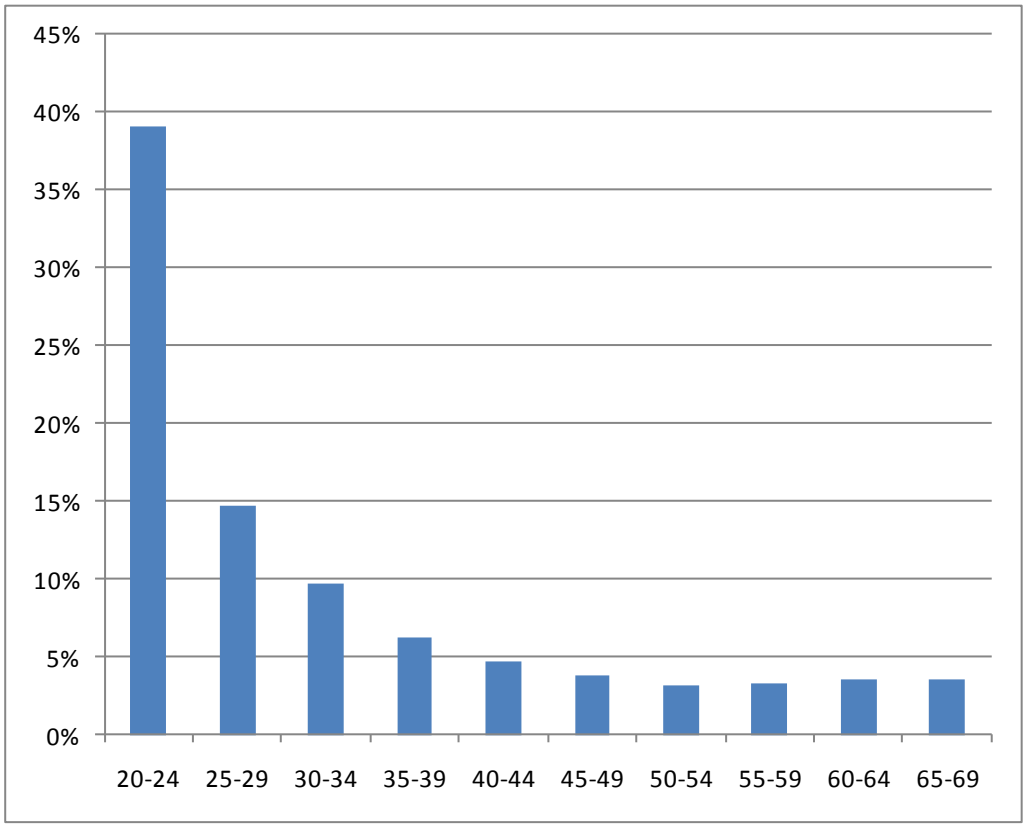
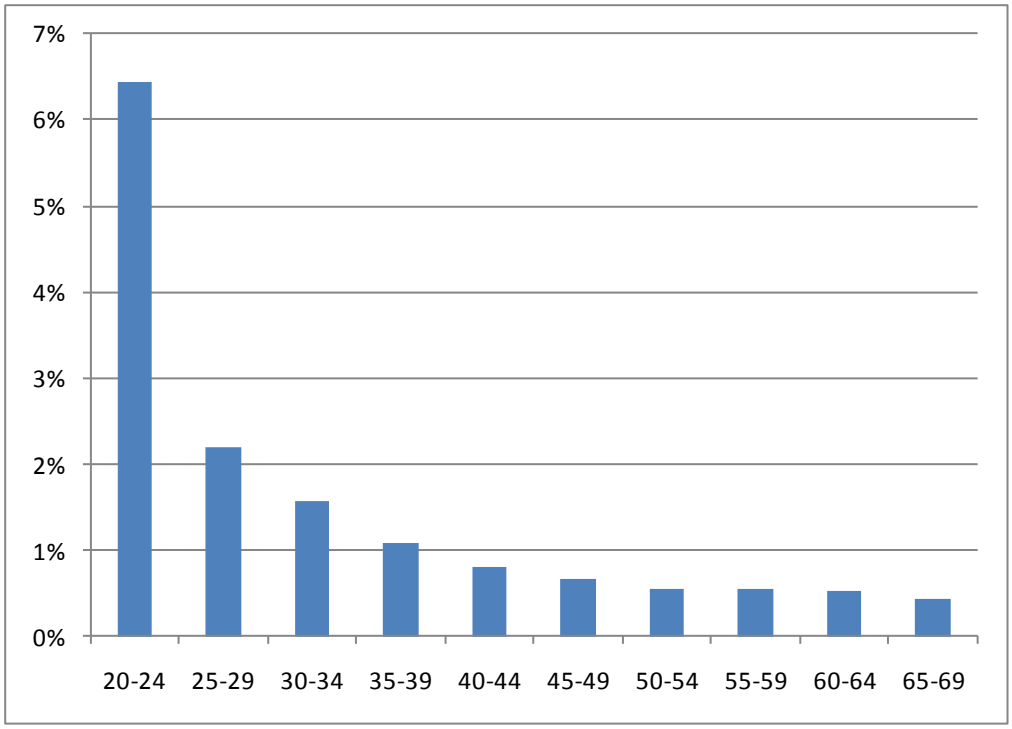


Figure 10 - Proportion of population* in that age group with their first screening event during the reporting period (women aged 20-69 years at 31 December 2010)



**Hysterectomy adjusted, 2006 Census data projected to end-2010*

Figure 11 - Women with first screening events as a proportion of all women screened during the reporting period, by DHB (women aged 20-69 years at 31 December 2010)

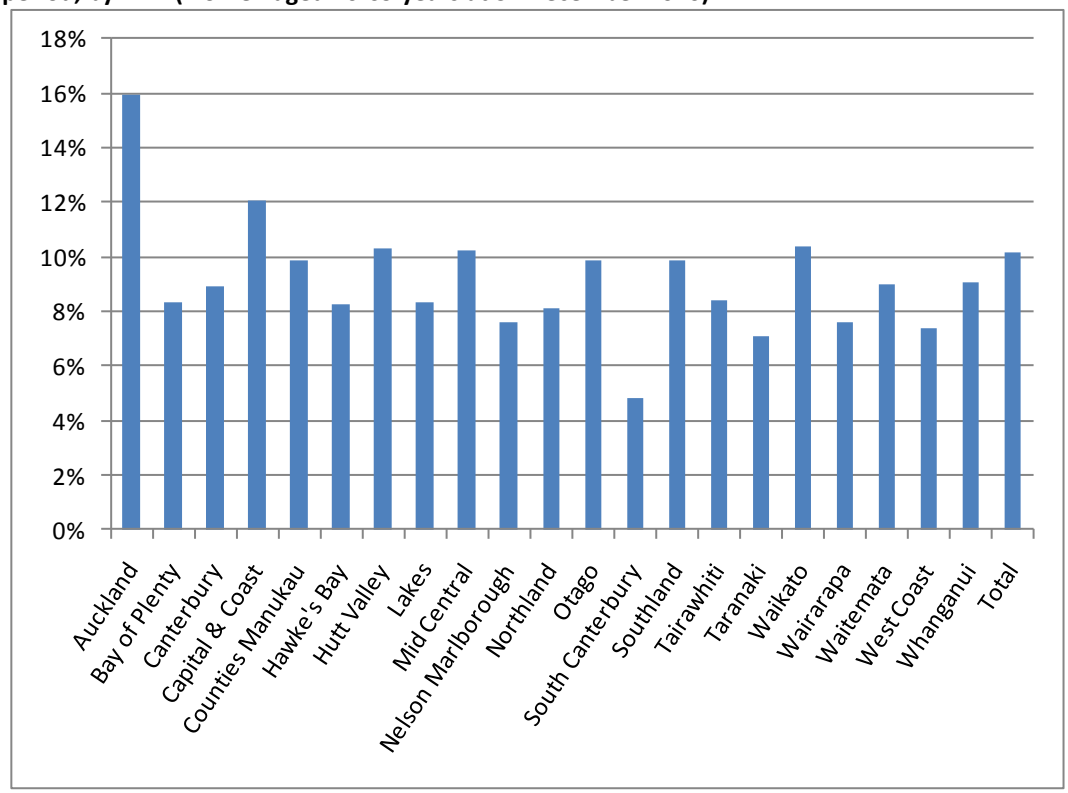


Figure 12 - Women with first screening events as a proportion of all women screened during the reporting period, by ethnicity

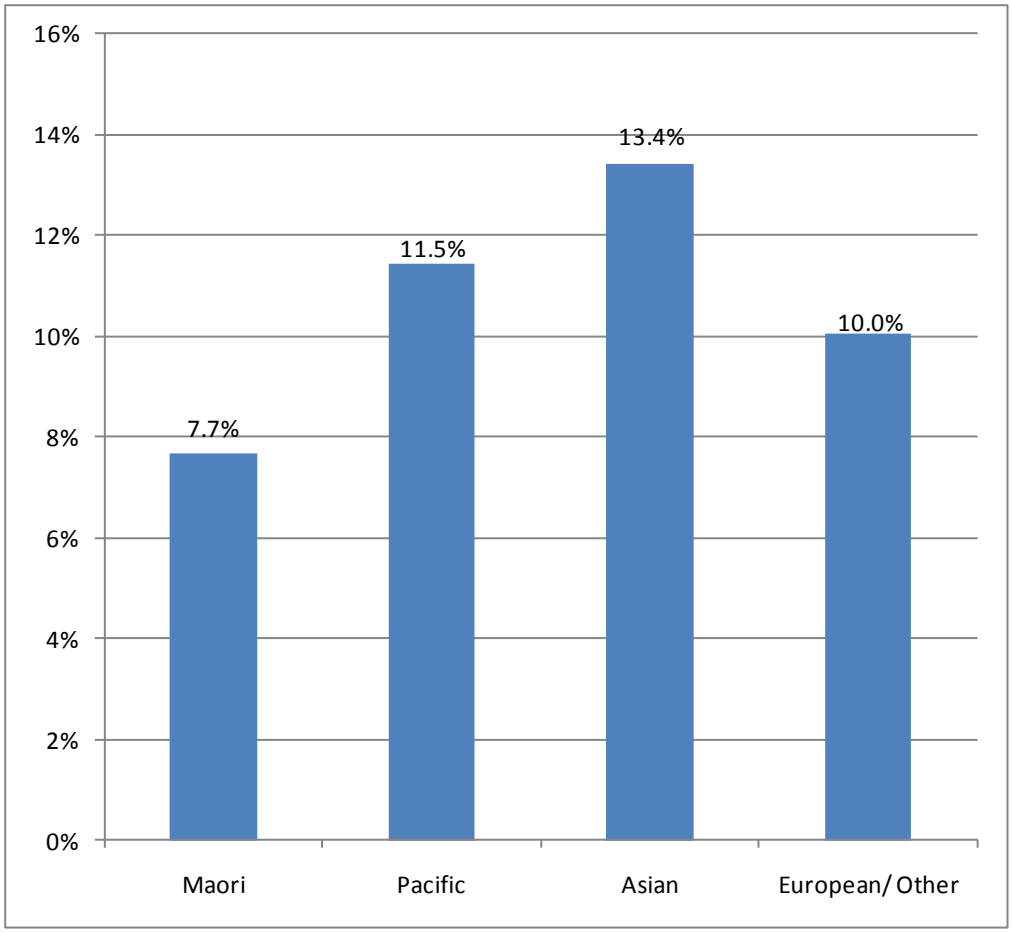


Table 1 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by DHB, for period 1 July to 31 December 2010

	Women with first events	As a propotion of women with a sceening event [i]		As a proportion of eligigble population [ii]	
DHB		**N**	**%**	**N**	**%**
Auckland	4,058	25,439	16.0	150,155	2.7
Bay of Plenty	856	10,303	8.3	58,844	1.5
Canterbury	2,099	23,467	8.9	148,135	1.4
Capital & Coast	1,946	16,149	12.1	93,535	2.1
Counties Manukau	1,986	20,215	9.9	144,823	1.4
Hawke's Bay	634	7,699	8.2	43,159	1.5
Hutt Valley	737	7,158	10.3	41,733	1.8
Lakes	442	5,287	8.4	29,381	1.5
Mid Central	755	7,395	10.2	47,653	1.6
Nelson Marlborough	498	6,521	7.6	39,279	1.3
Northland	580	7,173	8.1	43,557	1.3
Otago	954	9,667	9.9	55,682	1.7
South Canterbury	116	2,419	4.8	15,114	0.8
Southland	525	5,324	9.9	32,312	1.6
Tairawhiti	102	1,215	8.4	12,992	0.8
Taranaki	385	5,434	7.1	30,108	1.3
Waikato	1,791	17,204	10.4	103,343	1.7
Wairarapa	150	1,981	7.6	10,901	1.4
Waitemata	2,401	26,645	9.0	161,351	1.5
West Coast	107	1,453	7.4	9,150	1.2
Whanganui	237	2,615	9.1	17,218	1.4
Total	**21,359**	**210,673**	**10.1**	**1,288,425**	**1.7**

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 2006 census population projected to end-2010 for that DHB, as a percent

Table 2 - 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 to 31 December 2010

Ethnicity	Women with first events N	As a proportion of women with a screening event[i]		As a proportion of eligible population[ii]	
		N	**%**	**N**	**%**
Maori	1,666	21,753	7.7	177,413	0.9
Pacific	1,083	9,455	11.5	78,460	1.4
Asian	2,333	17,376	13.4	165,567	1.4
European/Other	16,277	162,175	10.0	866,985	1.9
Total	**21,359**	**210,759**	**10.1**	**1,288,425**	**1.7**

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 2006 census population projected to end-2010 for that DHB, as a percent

Table 3 – Median age of women with a first screening event, by ethnicity

Ethnicity	Median Age (years)
Māori	22
Pacific	29
Asian	32
European/Other	25

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 reporting period (withdrawals). Withdrawals relate to active withdrawals, where women specifically elect to be removed from the NCSP Register. The proportion of women who were enrolled on the NCSP Register at 30 June 2010, whose enrolment ended within the current reporting period, is also reported. Age is defined as a woman's age at the end of the reporting period.
Target	Zero for ages 20-69 years.
Current Situation	At the commencement of the reporting period, 1,382,515 women aged 20-69 years, and 1,534,474 women in total were enrolled on the NCSP Register. 52 women withdrew from the NCSP Register during the reporting period, all of whom were aged 20-69 years at the end of the monitoring period (0.003% of all women who were enrolled at the commencement of the period) (Table 4). In all DHBs the proportion of those enrolled at the beginning of the period who withdrew was extremely small (<0.02%). The DHBs with the largest number of withdrawals were Waitemata (seven women) and Nelson Marlborough (six women) (Figure 13, Table 41). No women withdrew in Hutt Valley, Southland, Tairawhiti, Taranaki, Wairarapa, West Coast or Whanganui during this period (Table 41). The age group with the largest proportion of women withdrawing among those who were enrolled at the beginning of the period were women who were aged 60-64 years at the end of the period (0.008%) (Table 2, Figure 14). In all ethnic groups the number and proportion of women withdrawing was extremely small (Māori 0.003%, Pacific 0.001%, Asian 0.003%, European/Other 0.004%) (Table 5, Figure 15).
Trends	The number of women who withdrew in the current reporting period (52 aged 20-69 years, 52 any age) is slightly higher than in the previous reporting period (47 aged 20-69 years; 47 any age), however the proportion is virtually unchanged. The overall number of withdrawals remain extremely small.
Comments	The proportion of women choosing to actively 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.

Figure 13 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by DHB, 1 July to 31 December 2010

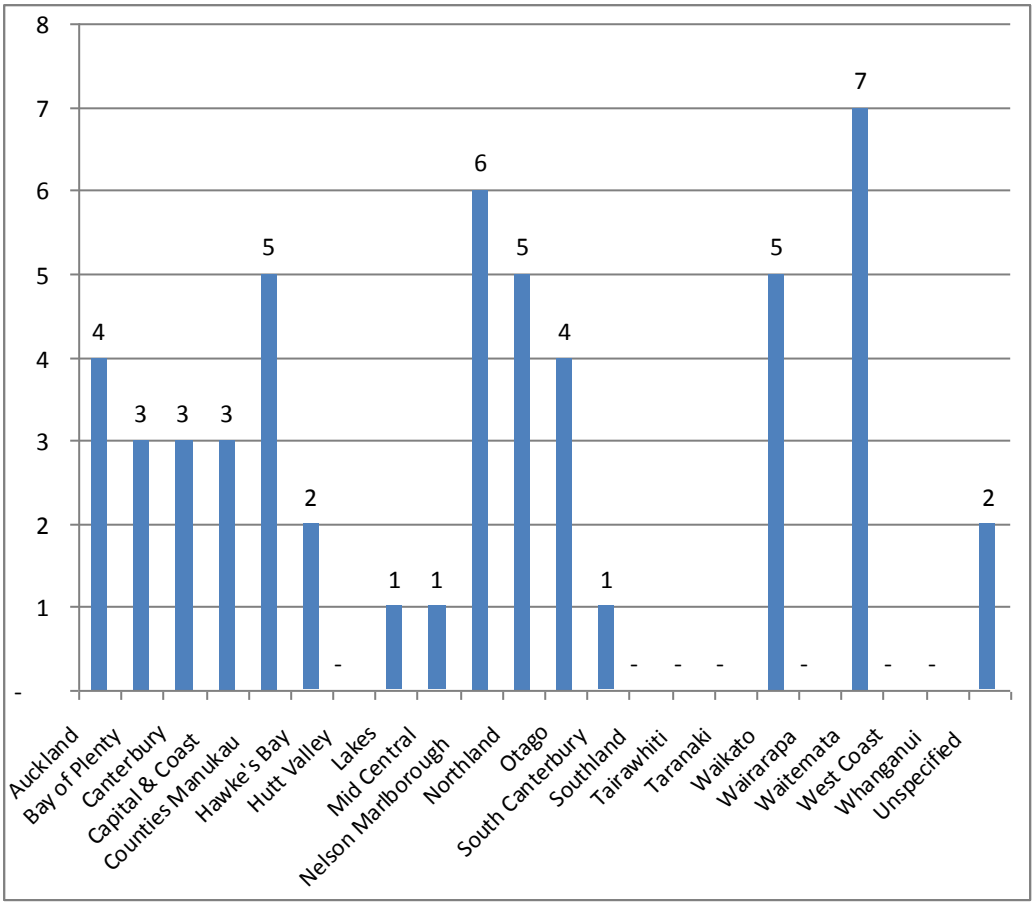


Figure 14 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by age, 1 July to 31 December 2010

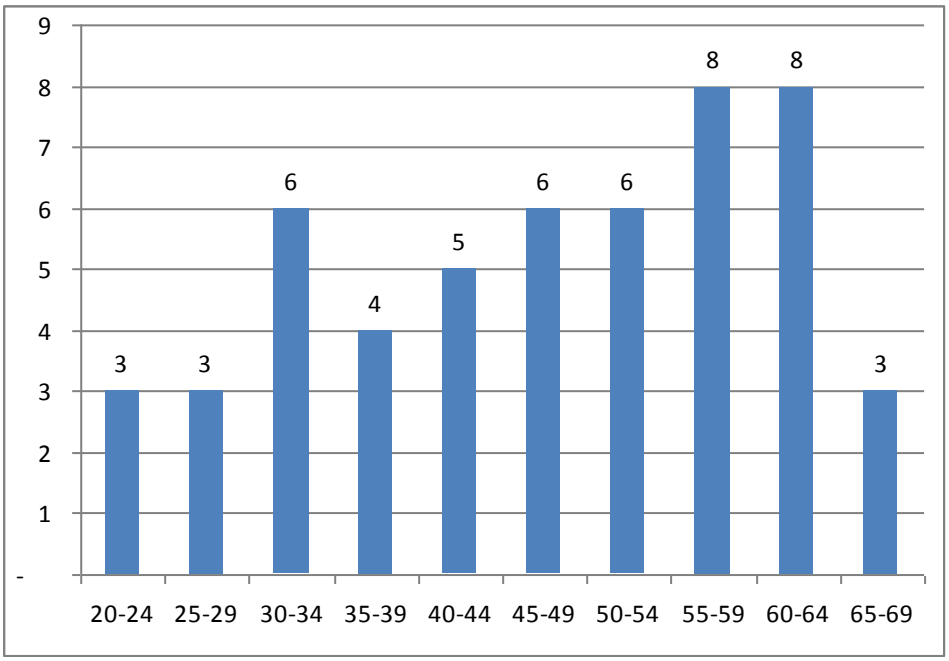


Figure 15 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by ethnicity, 1 July to 31 December 2010

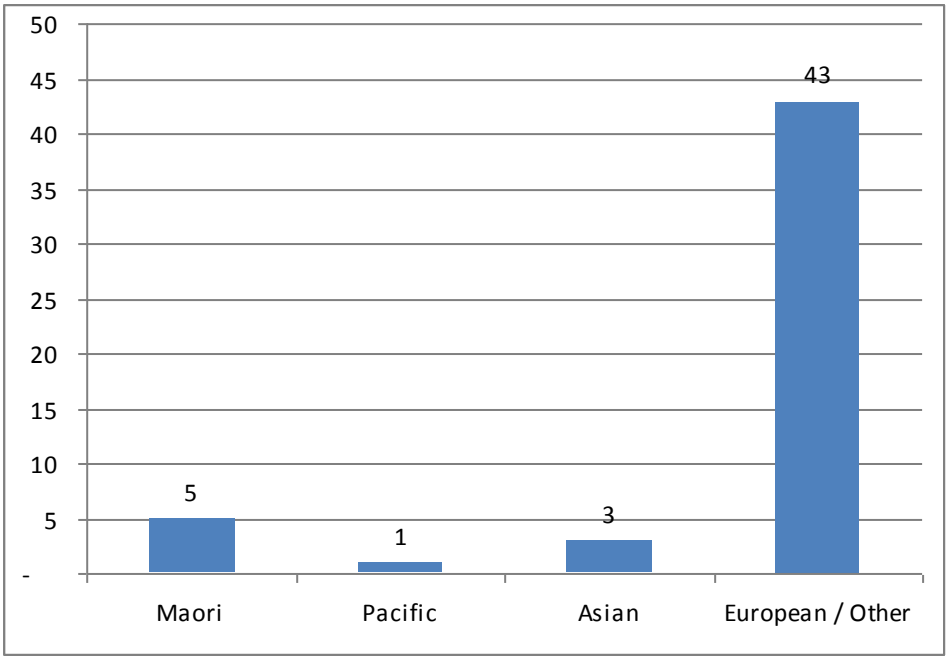


Table 4 - Number of women who withdrew from the NCSP Register 1 July to 31 December 2010 by age, and proportion of women who were enrolled at the start of the reporting period who withdrew

Age group	Women enrolled at start of period	Women who withdrew during period	
		N	% *
<20	3,944	-	0
20-24	82,455	3	0.004
25-29	131,977	3	0.002
30-34	153,587	6	0.004
35-39	181,616	4	0.002
40-44	186,364	5	0.003
45-49	181,842	6	0.003
50-54	157,720	6	0.004
55-59	126,895	8	0.006
60-64	106,117	8	0.008
65-69	73,942	3	0.004
70+	148,015	-	0
Total (all ages)	**1,534,474**	**52**	**0.003**
Total (ages 20-69)	**1,382,515**	**52**	**0.004**

**As a proportion of women enrolled at the start of the reporting period*

Table 5 - Number of women (aged 20-69 years) who withdrew from the NCSP Register 1 July to 31 December 2010 by ethnicity, and proportion of women who were enrolled at the start of the reporting period who withdrew

Age group	Women enrolled at start of period	Women who withdrew during period	
		N	% *
Māori	155,847	5	0.003
Pacific	73,335	1	0.001
Asian	113,454	3	0.003
European/Other	1,039,879	43	0.004
Total	**1,382,515**	**52**	**0.004**

**As a proportion of women enrolled at the start of the reporting period*

Indicator 4 – Early re-screening

Definition	The proportion of women who returned for a smear within 30 months (2.5 years) of their index smear is calculated for a cohort of women. The cohort comprises women with an index smear taken between 1 February 2008 – 31 March 2008 (inclusive), who i) were aged 20 – 66 years at the time the smear was taken (and hence remained within the screening target age throughout the period); and ii) had a negative cytology result; and iii) were given a recommendation to return at the regular interval of three years as a result of their smear in February/ March 2008 (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 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" smear 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 reporting period (ie 31 December 2010).
Target	A target has not yet been set for this cohort-based calculation method. This method of calculation will result in a higher value than the previous interval-based method, because all women are followed over the same length of time (30 months). A more detailed discussion of the reasons for this, and the rationale for the cohort-based method, can be found in Monitoring Report 30.
Current Situation	41,559 women had a smear taken in February or March 2008, were aged between 20-66 years at the time of their negative smear, and were given a recommendation to return for their next smear at the routine interval of three years. Among these women, 10,259 (24.7%) had at least one subsequent smear in the following 30 months. There was wide variation in early re-screening by DHB. Early re-screening was most common in Waitemata (37.1%), and was least common in Taranaki (12.3%) (Figure 16, Table 43). There was also some variability by age. Younger women (aged 20-24 years at the end of the period) were most likely to be re-screened early (31.8%), and older women (aged 65-69 years) were the least likely to be re-screened early (18.0%) (Figure 17, Table 42). Rates of early re-screening are very similar

	across the five year age groups from 25 to 59 years. Among the ethnic groups considered, Asian women were the most likely to be re-screened early (29.3%). Early re-screening was least common among Pacific women (21.0%) (Figure 18, Table 44).
Trends	The level of early re-screening is lower than in the previous monitoring report, when it was 26.7%. DHBs with the lowest and highest levels of early re-screening are largely unchanged since the previous report. Early re-screening has reduced among all age groups, although the reductions have been smallest among women aged 20-24 years (the group with the highest level of re-screening), and women aged 65-69 years (the group with the lowest level of early re-screening). Early re-screening has decreased in all ethnic groups. Longer terms trends in early re-screening are shown by DHB in Figure 46; by age in Figure 47; and by ethnicity in Figure 48.
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 smear for whom an earlier screening visit is appropriate. Thus, only women with a negative result *and* 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 denominator and [potentially] the numerator). Women excluded from the early re-screening group would include those who had just had their first smear or their first smear after a period of time (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. Prior to Report 30, calculation of this indicator had not explicitly used recommendation codes to define the group of women of interest, and therefore the estimates for this measure may not be directly comparable to reports prior to Report 30. It is important to note that whilst early re-screening rates appear to be relatively high in women aged 20-24 years, three-year coverage is much lower in this age-group. While a small proportion of women in this age group may be screened more frequently than recommended, a much larger proportion is under-screened or unscreened. In DHBs too, there is not a simple relationship between early re-screeening and coverage. For example, higher coverage does not necessarily accompany higher early re-screening, or lower coverage lower levels of early re-screening. Some DHBs with higher coverage have comparatively low levels of early re-screening (such as Hutt Valley, Nelson Marlborough, and Taranaki),

whereas other DHBs with higher coverage also have comparatively high levels of early re-screening (such as Wairarapa).

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 probably does not exclude all screens performed in response to clinical symptoms.

Note that the accuracy of this calculation is reliant on the correct use of R1 code in laboratory reports. An exploratory analysis of the accuracy of the R1 code was published in a previous monitoring report (Report 30). It suggested that R1 codes were generally accurate, and the small number of discrepancies would not have a substantial effect on the estimate for early re-screening.

Figure 16 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

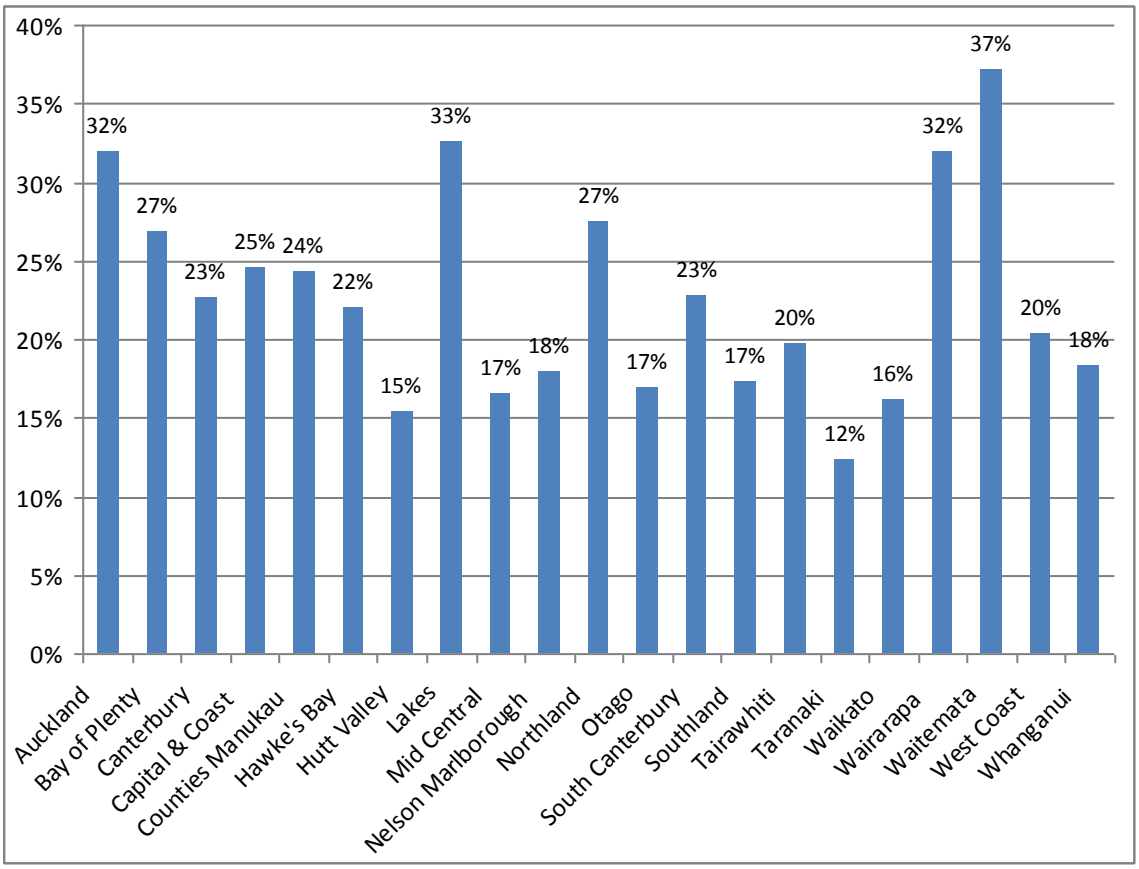


Figure 17 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by five-year age group

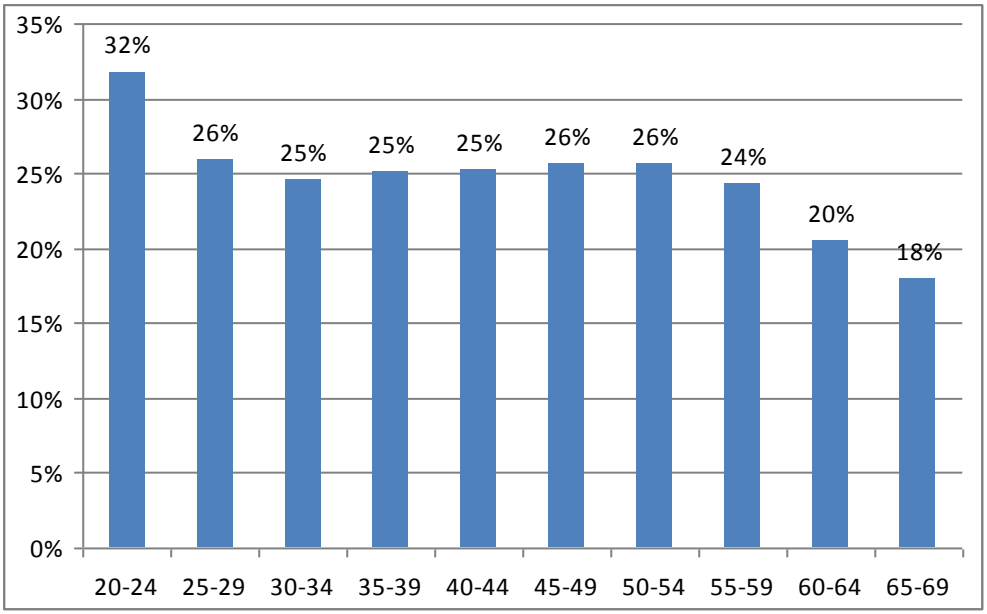
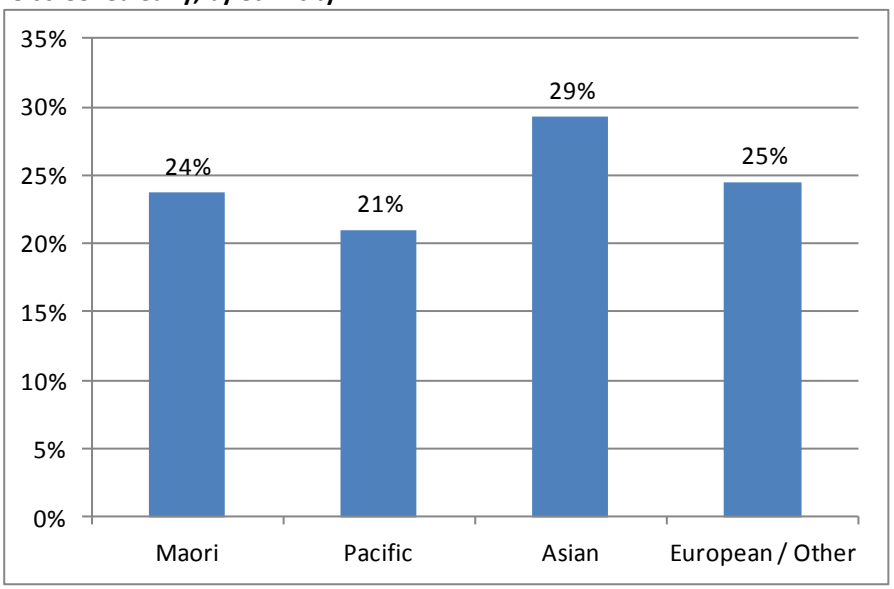


Figure 18 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity



Indicator 5 – Laboratory indicators

The indicators include cytology and 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 HrHPV tests are included in Indicator 8.

One laboratory (Southern Community Labs Christchurch) ceased reporting at the end of the previous reporting period. Note that this means the number of laboratories reporting on cytology varies in Indicator 5.2 (relating to cytology samples from the previous 6-month reporting period, when Southern Community Labs Christchurch still processed cytology) compared to Indicator 5.1 and 5.5 (cytology samples from the current monitoring period, after Southern Community Labs Christchurch stopped processing cytology samples).

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 reporting period, including LBC and conventional samples. Reporting rates for negative cytology, total abnormal cytology, and other reporting categories are as a percentage of all satisfactory cytology samples.
Target	1-5% of LBC and 1-8% of conventional cytology 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 0.6% of satisfactory samples reported as HSIL (Bethesda HS1 or HS2)

Current Situation

Eight laboratories reported on cytology taken during this reporting period. A total of 213,825 cytology samples were taken, 99.8% of which were liquid-based cytology (LBC), 0.1% were conventional cytology, and 0.1% were a combination of the two (Table 6). In all laboratories, virtually all samples are LBC. The proportion of cytology samples which were LBC varied from 99.5% (Southern Community Labs) to all samples processed (Diagnostic Medlab Ltd). All laboratories had a very small proportion of samples which were conventional cytology (maximum 0.3% at Southern Community Labs) or combined samples (maximum 0.2% at Southern Community Labs) (Table 6).

Unsatisfactory cytology

1,534 cytology samples (0.7%) were unsatisfactory. These are reported on in more detail in Table 7 and Table 9. The remaining satisfactory samples are reported on in more detail in Table 8, and Table 10 to Table 13.

Nationally, the unsatisfactory rate for LBC was 0.6%. Four of the eight laboratories had unsatisfactory rates within the target range for LBC (Figure 19, Table 9). No laboratories had rates above the upper target of 5%, but four laboratories had rates below the 1% lower target (Aotea Pathology Ltd 0.2%, Canterbury Health Laboratories 0.2%, Pathlab 0.2%, Southern Community Labs 0.5%).

Unsatisfactory rates for conventional cytology have not been analysed further by laboratory, due to the small number of conventional cytology samples processed in each laboratory (254 samples nationally).

Negative cytology reports

91.8% of cytology results were negative, consistent with the target of no more than 96% (Table 8). The proportion of samples which were negative varied by laboratory from 65.3% (LabPLUS) to 95.5% (Southern Community Labs). All eight laboratories met the target of no more than 96%.

Abnormal cytology reports

The proportion of samples which were abnormal (8.2%) also fell within the recommended range of no more than 10% (Figure 21, Table 8). This varied widely by laboratory however, from 4.5% (Southern Community Labs) to 34.7% (LabPLUS). Three laboratories exceeded the target, although in one case very slightly (Canterbury Health Laboratories 13.5% Diagnostic Medlab Ltd 10.1% and LabPLUS 34.7%).

Abnormal cytology results were most common in younger women (Table 12, Table 13).

HSIL cytology reports

Overall, 0.8% of cytology samples were HSIL, consistent with the target of at least 0.6% of samples (Figure 22, Table 11). Rates varied by laboratory from 0.3% (Aotea Pathlogy Ltd) to 6.0% (LabPLUS). Two laboratories had rates of HSIL below target levels (Aotea Pathlogy Ltd 0.3% and Diagnostic Medlab Ltd 0.5%) (Figure 22, Table 11).

Rates of HSIL or worse were most common in women aged 25-29 years (Table 12, Table 13).

Trends

Unsatisfactory cytology

The unsatisfactory rate in LBC samples has fallen from 2.0% to 0.7% in the current reporting period, and therefore has dropped outside the target range. This overall trend is mainly due to a large drop in the rate at Diagnostic Medlab Ltd since the previous reporting period (from 4.8% to 1.0%) - although this laboratory was within the target range in both reports. Longer term trends are shown in Figure 49.

The four laboratories meeting the target for unsatisfactory LBC samples are the same as in the previous reporting period. The number of laboratories with unsatisfactory rates for LBC below the lower target of 1% (four) is slightly lower than in the previous reporting period, but there is also one less laboratory reporting on cytology in the current reporting period.

Negative vs abnormal cytology reports

The proportion of satisfactory cytology samples which are negative for intraepithelial lesion or malignancy (91.8%) is very similar to that in the previous reporting period (91.9%), and correspondingly the proportion of cytology samples reported as abnormalities (8.2%) is also very similar to that in the previous reporting period (8.1%). As in the previous reporting period, all laboratories met the target for negative cytology (although the number has decreased from nine to eight since there is one fewer laboratory reporting on cytology in the current reporting period). The number meeting the target for abnormal samples has decreased from seven (of nine laboratories) to five (of eight laboratories) since the previous reporting period, and conversely the number of laboratories with abnormal cytology rates above the target range has increased from two to three (although at one of these laboratories the rate is very close to the target). Longer term trends are shown in Figure 50 (negative reports) and Figure 51 (abnormal reports).

HSIL cytology reports

The proportion of cytology samples reported as HSIL has remained the same as in the previous monitoring report, at 0.8%. One fewer laboratory has met the target for HSIL rates, as the rate of HSIL samples has dropped slightly at Diagnostic Medlab Ltd. Longer term trends are shown in Figure 52

Comments

As a result of funding and guideline changes, the proportion of cytology samples which are LBC has continued to increase since the previous reporting period, from 99.3% to 99.8%. Since the number of conventional cytology samples is small and likely to continue to decrease, in this and future reports unsatisfactory rates in conventional cytology will not be reported on in detail.

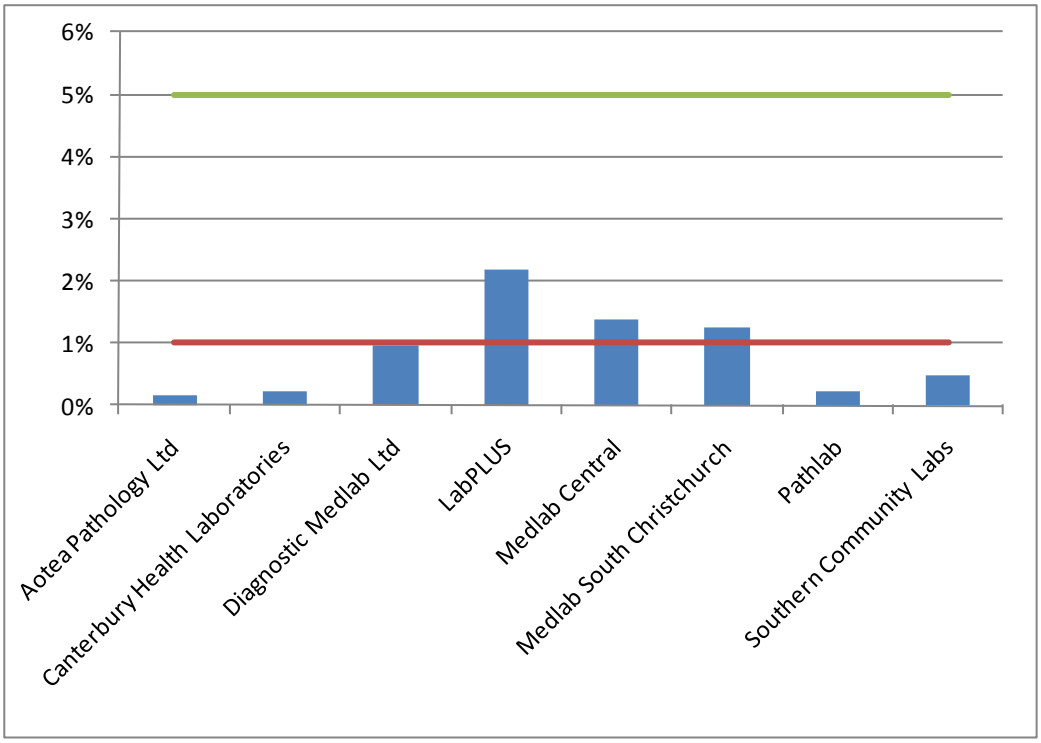
High rates of abnormal samples from LabPLUS are consistent with previous reports, and as discussed in previous monitoring reports (in particular Report 33) it is thought that the case-mix of this laboratory is a factor underlying the observed higher rate for this laboratory (ie that a higher proportion of the samples received by LabPLUS are from colposcopy clinics compared to other laboratories) in conjunction with a bias from a drop in the proportion of community work received.

Results for Southern Community Labs include those for tests recorded as being performed at Southern Community Labs Christchurch and Southern Community Labs Dunedin. It is known that Southern Community Labs Christchurch ceased reporting on cytology in the current reporting period, therefore tests recorded in Christchurch are likely to be attributable to data mis-entry.

The targets for unsatisfactory cytology applies to both types of LBC (ThinPrep and SurePath). It is uncertain if this is applicable, as the techniques used to produce slides from the liquid samples differ between test technologies. There is limited evidence on the appropriate lower level for unsatisfactory cytology using SurePath, however results from a pooled analysis suggest that unsatisfactory rates may differ between the technologies.[4] Use of different LBC test technologies by different laboratories may be a factor in the variation in rates of unsatisfactory cytology (it is believed that all laboratories with unsatisfactory rates below 1% for LBC use SurePath), as well as reprocessing protocols of unsatisfactory samples and determination of adequacy by imager assisted screening. The target for unsatisfactory LBC samples will be reviewed as more evidence becomes available.

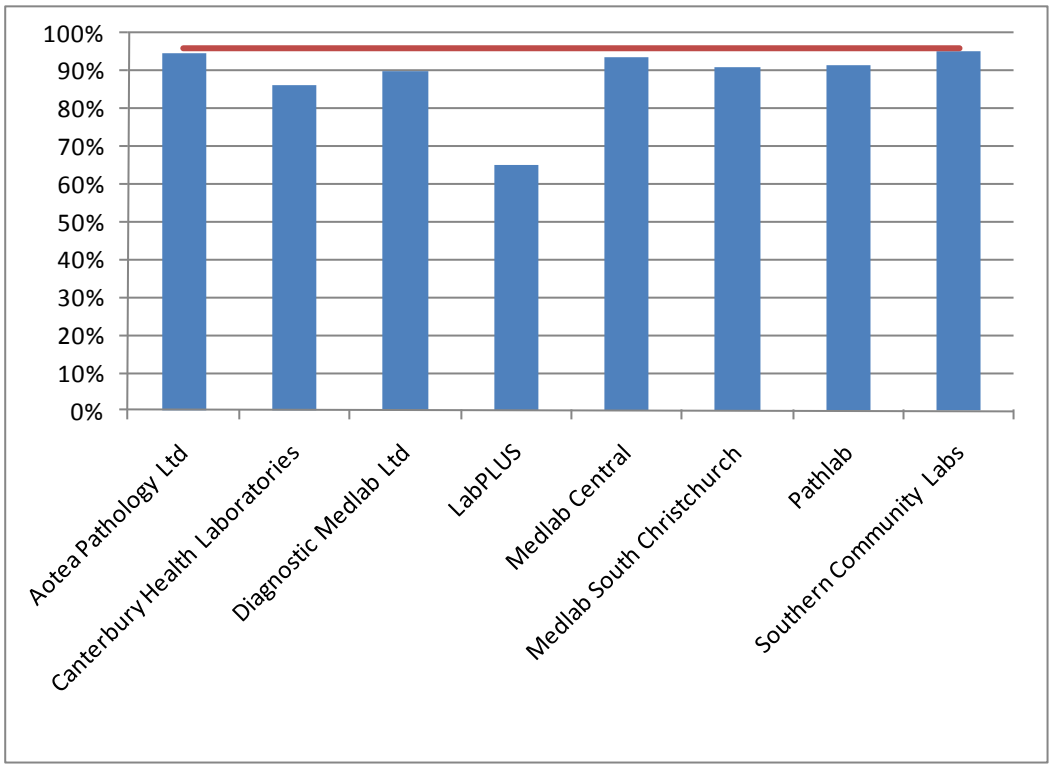
[4] Krahn, M., McLachlin M., *et al*. 2008. *Liquid-based techniques for cervical cancer screening: systematic review and cost-effectiveness analysis*. Technology report number 103. Ottawa: Canadian Agency for Drugs and Technologies in Health.

Figure 19 - Proportion of total LBC samples reported as unsatisfactory by laboratory, 1 July to 31 December 2010



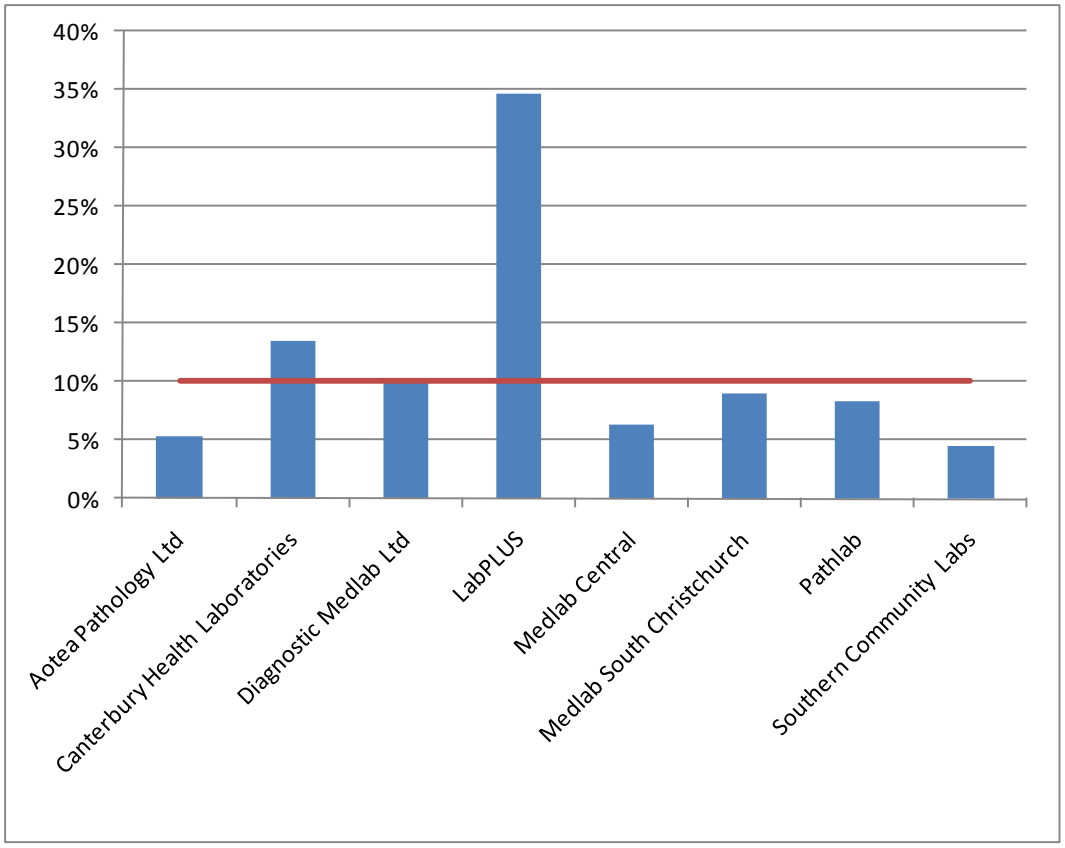
Lines show target for LBC: 1-5%

Figure 20 - Proportion of total satisfactory samples reported as negative by laboratory, 1 July to 31 December 2010



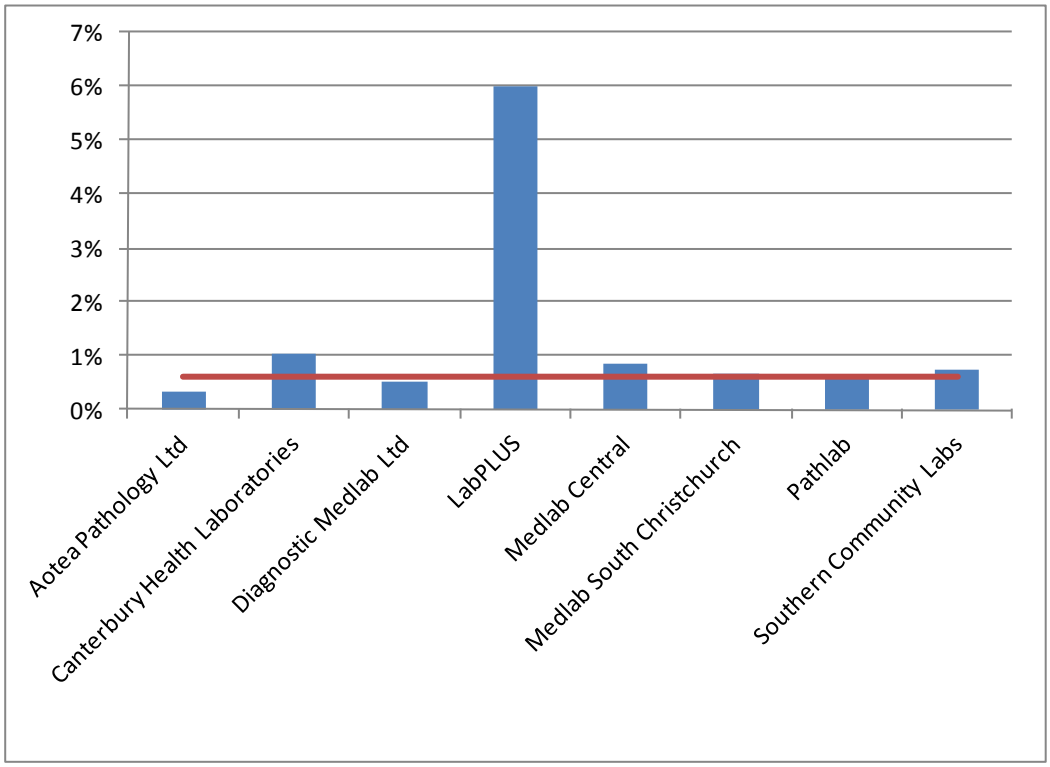
Note: Line shows negative target ≥ 96%

Figure 21 - Proportion of total satisfactory samples reported as abnormalities by laboratory, 1 July to 31 December 2010



Note: Red line shows abnormal target ≤ 10%

Figure 22 - Proportion of samples reported as HSIL for each laboratory, 1 July to 31 December 2010



Note:red line shows HSIL target ≥ 0.6%

Table 6 - Laboratory cytology reporting by type of cytology sample (1 July to 31 December 2010)

Organisation	All samples	By cytology specimen type					
		LBC		Conventional		Combined	
	N	N	%	N	%	N	%
Aotea Pathology Ltd	23,055	23,051	100.0	3	0.0	1	0.0
Canterbury Health Laboratories	10,804	10,801	100.0	3	0.0	-	0.0
Diagnostic Medlab Ltd	57,392	57,392	100.0	-	0.0	-	0.0
LabPLUS	5,533	5,530	99.9	2	0.0	1	0.0
Medlab Central	16,489	16,473	99.9	15	0.1	1	0.0
Medlab South Christchurch	14,853	14,819	99.8	29	0.2	5	0.0
Pathlab	21,015	21,012	100.0	3	0.0	-	0.0
Southern Community Labs	64,684	64,357	99.5	199	0.3	128	0.2
TOTAL	**213,825**	**213,435**	**99.8**	**254**	**0.1**	**136**	**0.1**

Notes:
Includes all samples (satisfactory and unsatisfactory)
Target total samples: ≥ 15,000 per annum
LBC refers to both ThinPrep and SurePath samples
Combined refers to instances where both conventional cytology and LBC were used

Table 7 - Satisfactory and unsatisfactory cytology reporting by laboratory (1 July to 31 December 2010)

Laboratory	All Samples N	Satisfactory N	Satisfactory %	Unsatisfactory N	Unsatisfactory %
Aotea Pathology Ltd	23,055	23,019	99.8	36	0.2
Canterbury Health Laboratories	10,804	10,781	99.8	23	0.2
Diagnostic Medlab Ltd	57,392	56,840	99.0	552	1.0
LabPLUS	5,533	5,411	97.8	122	2.2
Medlab Central	16,489	16,259	98.6	230	1.4
Medlab South Christchurch	14,853	14,666	98.7	187	1.3
Pathlab	21,015	20,971	99.8	44	0.2
Southern Community Labs	64,684	64,344	99.5	340	0.5
Total	**213,825**	**212,291**	**99.3**	**1,534**	**0.7**

See also Table 9

Table 8 - Laboratory cytology reporting by general result (1 July to 31 December 2010) – percentage of satisfactory samples

Laboratory	Negative N	Negative %	Abnormal N	Abnormal %
Aotea Pathology Ltd	21,789	94.7	1,230	5.3
Canterbury Health Laboratories	9,326	86.5	1,455	13.5
Diagnostic Medlab Ltd	51,102	89.9	5,738	10.1
LabPLUS	3,535	65.3	1,876	34.7
Medlab Central	15,232	93.7	1,027	6.3
Medlab South Christchurch	13,337	90.9	1,329	9.1
Pathlab	19,218	91.6	1,753	8.4
Southern Community Labs	61,440	95.5	2,904	4.5
Total	**194,979**	**91.8**	**17,312**	**8.2**

Target total negative: ≤ 96% of satisfactory samples reported as negative
Target total abnormal: ≤ 10% of satisfactory samples reported as abnormal

Table 9 - Laboratory reporting of unsatisfactory results by type of cytology sample (1 July to 31 December 2010)

	LBC			Conventional			Combined			TOTAL		
Laboratory	**Unsat**	**Total**	**%**	**Unsat**	**Total**	**%**	**Unsat**	**Total**	**%**	**Unsat**	**Total**	**%**
Aotea Pathology Ltd	36	23,051	0.2				-	1	0.0	36	23,055	0.2
Canterbury Health Laboratories	23	10,801	0.2				-	-	-	23	10,804	0.2
Diagnotstic Medlab Ltd	552	57,392	1.0				-	-	-	552	57,392	1.0
LabPLUS	121	5,530	2.2				-	1	0.0	122	5,533	2.2
Medlab Central	229	16,473	1.4				-	1	0.0	230	16,489	1.4
Medlab South Christchurch	184	14,819	1.2				-	5	0.0	187	14,853	1.3
Pathlab	44	21,012	0.2				-	-	-	44	21,015	0.2
Southern Community Labs	311	64,357	0.5				3	128	2.3	340	64,684	0.5
Total	**1,500**	**213,435**	**0.7**	**31**	**254**	**12.2**	**3**	**136**	**2.2**	**1,534**	**213,825**	**0.7**

Target unsatisfactory: 1-5% LBC; 1-8% conventional cytology

Table 10 - Laboratory cytology reporting by cytological category (1 July to 31 December 2010) – counts

	Result									
Laboratory	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**SC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**	**Total**
Aotea Pathology Ltd	21,789	413	650	83	75	2	5	2	-	**23,019**
Canterbury Health Laboratories	9,326	515	655	153	113	-	11	7	1	**10,781**
Diagnostic Medlab Ltd	51,102	2,412	2,698	278	297	1	40	11	1	**56,840**
LabPLUS	3,535	592	576	339	324	3	32	9	1	**5,411**
Medlab Central	15,232	262	525	92	141	1	6	-	-	**16,259**
Medlab South Christchurch	13,337	537	502	177	100	1	9	3	-	**14,666**
Pathlab	19,218	582	888	131	124	2	23	3	-	**20,971**
Southern Community Labs	61,440	533	1,749	109	465	8	27	13	-	**64,344**
Total	**194,979**	**5,846**	**8,243**	**1,362**	**1,639**	**18**	**153**	**48**	**3**	**212,291**

Table 11 - Laboratory cytology reporting by cytological category (1 July to 31 December 2010) - percentage of all satisfactory samples

	Percentage of Laboratory's Result								
Laboratory	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**SC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**
Aotea Pathology Ltd	94.7	1.8	2.8	0.4	0.3	0.01	0.02	0.01	-
Canterbury Health Laboratories	86.5	4.8	6.1	1.4	1.0	-	0.10	0.06	0.01
Diagnostic Medlab Ltd	89.9	4.2	4.7	0.5	0.5	<0.005	0.07	0.02	<0.005
LabPLUS	65.3	10.9	10.6	6.3	6.0	0.06	0.59	0.17	0.02
Medlab Central	93.7	1.6	3.2	0.6	0.9	0.01	0.04	-	-
Medlab South Christchurch	90.9	3.7	3.4	1.2	0.7	0.01	0.06	0.02	-
Pathlab	91.6	2.8	4.2	0.6	0.6	0.01	0.11	0.01	-
Southern Community Labs	95.5	0.8	2.7	0.2	0.7	0.01	0.04	0.02	-
Total	**91.8**	**2.8**	**3.9**	**0.6**	**0.8**	**0.01**	**0.07**	**0.02**	**<0.005**

Target HSIL: ≥ 0.6% of satisfactory samples reported as HSIL

Table 12 - Laboratory reporting of cytological category by five-year age group (1 July to 31 December 2010) – counts

Age Group	Cytology Result									Total
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	
<20	1,747	131	385	42	21	-	-	-	-	2,326
20-24	21,294	1,263	2,850	369	395	-	10	-	-	26,181
25-29	19,074	738	1,352	261	379	-	12	-	1	21,817
30-34	20,633	610	846	195	268	1	20	-	-	22,573
35-39	24,476	705	742	112	209	2	14	4	-	26,264
40-44	24,743	662	664	116	149	1	22	1	-	26,358
45-49	24,167	660	510	85	88	1	16	4	-	25,531
50-54	20,391	442	370	70	46	3	18	5	1	21,346
55-59	15,764	303	232	54	31	2	18	6	-	16,410
60-64	12,710	185	182	35	34	2	12	7	-	13,167
65-69	8,059	112	80	10	8	3	6	6	-	8,284
70+	1,920	35	30	13	11	3	5	15	1	2,033
Total	**194,978**	**5,846**	**8,243**	**1,362**	**1,639**	**18**	**153**	**48**	**3**	**212,290**

Note: excludes 1 negative cytology sample in 1 woman for whom date of birth was not available

Table 13 - Laboratory reporting of cytological category by five-year age group (1 July to 31 December 2010) - percentage of all satisfactory samples among women that age group

Age Group	Percentage of Age Group Total								
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm
<20	75.1	5.6	16.6	1.8	0.9	-	-	-	-
20-24	81.3	4.8	10.9	1.4	1.5	-	0.04	-	-
25-29	87.4	3.4	6.2	1.2	1.7	-	0.06	-	<0.005
30-34	91.4	2.7	3.7	0.9	1.2	<0.005	0.09	-	-
35-39	93.2	2.7	2.8	0.4	0.8	0.01	0.05	0.02	-
40-44	93.9	2.5	2.5	0.4	0.6	<0.005	0.08	<0.005	-
45-49	94.7	2.6	2.0	0.3	0.3	<0.005	0.06	0.02	-
50-54	95.5	2.1	1.7	0.3	0.2	0.01	0.08	0.02	<0.005
55-59	96.1	1.8	1.4	0.3	0.2	0.01	0.11	0.04	-
60-64	96.5	1.4	1.4	0.3	0.3	0.02	0.09	0.05	-
65-69	97.3	1.4	1.0	0.1	0.1	0.04	0.07	0.07	-
70+	94.4	1.7	1.5	0.6	0.5	0.15	0.25	0.74	0.05
Total	**91.8**	**2.8**	**3.9**	**0.6**	**0.8**	**0.01**	**0.07**	**0.02**	**<0.005**

Note: excludes 1 negative cytology sample in 1 woman for whom date of birth was not available

Indicator 5.2 – Accuracy of cytology predicting HSIL

Definition	The accuracy of cytology predicting HSIL (positive predictive value – PPV) is defined as the probability of a high grade histological report (CIN2/3) or higher given an HSIL/invasive squamous carcinoma cytology report. Refer to Appendix D for detailed definitions of histological confirmation.
Target	Not less than 65% and not greater than 85%.
Current Situation	All satisfactory cytology samples collected in the six months prior to the current reporting period (ie collected from 1 January until 30 June 2010 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 five days prior to and up to six months after the cytology sample were then retrieved for women with a high grade cytology report. Where there were multiple histology reports for a woman in the defined period, the most serious abnormality category was used. ***HSIL+SC*** 1,569 women with HSIL or SC cytology reports were identified. 184 of these women (11.7%) had no histology taken in the period from five days prior to six months after the date that the cytology sample was taken. Among the remaining 1,385 for whom there was histology, 1,120 (80.9%) had their HSIL/SC cytology confirmed by histology (Figure 23, Table 45). All laboratories achieved the minimum target of at least 65% of cytological HSIL +SC being confirmed by histology. Three laboratories exceeded 85% of HSIL+SC being histologically confirmed - they were Canterbury Health Laboratories (86.7%), Pathlab (86.6%) and Southern Community Labs Dunedin (90.3%) (Figure 23, Table 45). ***Other cytological abnormalities*** Similar calculations for positive predictive value were performed for ASC-H; the combination of ASC-H, HSIL and SC; and glandular abnormalites (AG1-AG5, AIS, AC1-AC4). There are no targets for these measures. ***ASC-H*** 1,115 women with a cytology report of ASC-H were identified. 286 (25.7%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 829 women, 425 (51.3%) were histologically confirmed as high grade. This proportion varied by laboratory, from 38.1% (Diagnostic Medlab Ltd) to 74.0% (Canterbury Health

Laboratories) (Figure 24, Table 46).

ASC-H+HSIL+SC

A total of 2,684 women had a cytology report of ASC-H, HSIL or SC. 470 (17.5%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 2,214 women, 1,545 (69.8%) were histologically confirmed as high grade. This proportion varied by laboratory, from 58.3% (Diagnostic Medlab Ltd) to 85.4% (Southern Community Labs Dunedin). The combined positive predictive value across the 2,214 women with ASC-H, HSIL, and SC and histology available is shown in Figure 24 and Table 47.

Glandular abnormalities

242 women with a glandular abnormality (AG1-AG5, AIS, AC1-AC4) were identified. 83 women (34.3%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 159 women, 82 (51.6%) had their high grade histologically confirmed. This was not analysed further by laboratory, as the number of samples reported on by many laboratories was too small to be meaningful.

Trends

HSIL+SC

Positive predictive value for HSIL and SC cytology has decreased since the previous monitoring report (83.5% in the previous period; 80.9% in the current period). As in the previous monitoring period, all laboratories had at least 65% of their HSIL + SC cytology results confirmed by histology. The number of laboratories with PPVs above the upper target of 85% has decreased from four to three. The proportion of cytology reports with histology available has decreased for HSIL or SC (90.7% in the previous report; 88.3% in the current report). Longer term trends are shown in Figure 53.

ASC-H

Positive predictive value for ASC-H cytology has decreased slightly, from 51.8% to 51.3%, however there is no target for this measure. The proportion of cytology reports with histology available has decreased for ASC-H (from 78.1% to 74.3%).

ASC-H+HSIL+SC

The positive predictive value for the combined group ASC-H, HSIL and SC decreased between the previous report (71.2%) and the current report (69.8%), however there are no targets for the positive predictive value of the combined group of ASC-H, HSIL and SC. Longer term trends are shown in Figure 54.

Glandular abnormalities

The positive predictive value of glandular abnormalities increased (from

42.9% in the previous report to 51.6% 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 (65.7%) is similar to that in the previous reporting period (65.4%), and remains less than that for ASC-H (74.3%) and HSIL+SC (88.3%). Due to the small number of samples involved, trends for glandular abnormalities were not analysed in further detail.

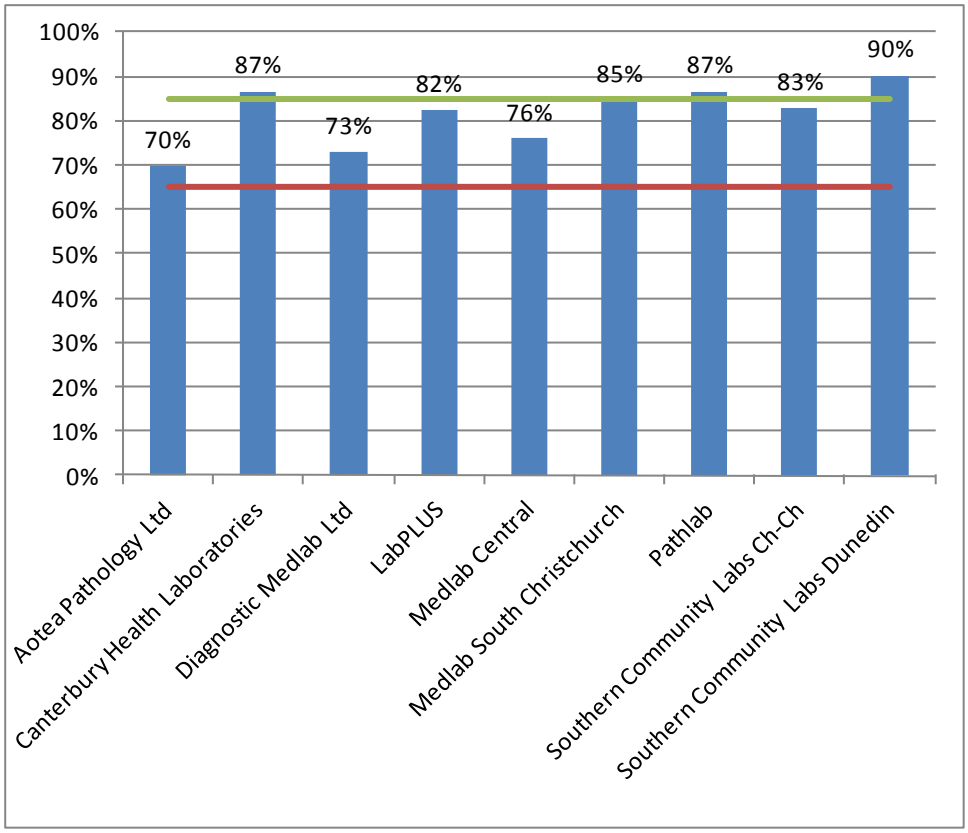
Comments

This estimate does not take into account cytology predicting HSIL for which there is no histology available. The proportion of high grade cytology with histology available is reported to assist with interpretation, especially when considering results for different time periods. Histology may be unavailable because the woman does not attend for follow-up colposcopy, or it may not be taken if the colposcopic impression is normal. When more colposcopy data is available on the NCSP Register, it may be possible to better distinguish between these two possibilities.

The calculations also do not discriminate between cytology taken as a screening test versus that taken as a diagnostic test. This may be a contributing factor for some laboratories with a PPV which is higher than the upper end of the target range, particularly where the colposcopically-directed cytology and corresponding histology are reported by the same laboratory as best management practice. Analysis separating community- vs clinic-derived cytology would provide a clearer picture of PPV (and other reporting categories) in a screening setting.

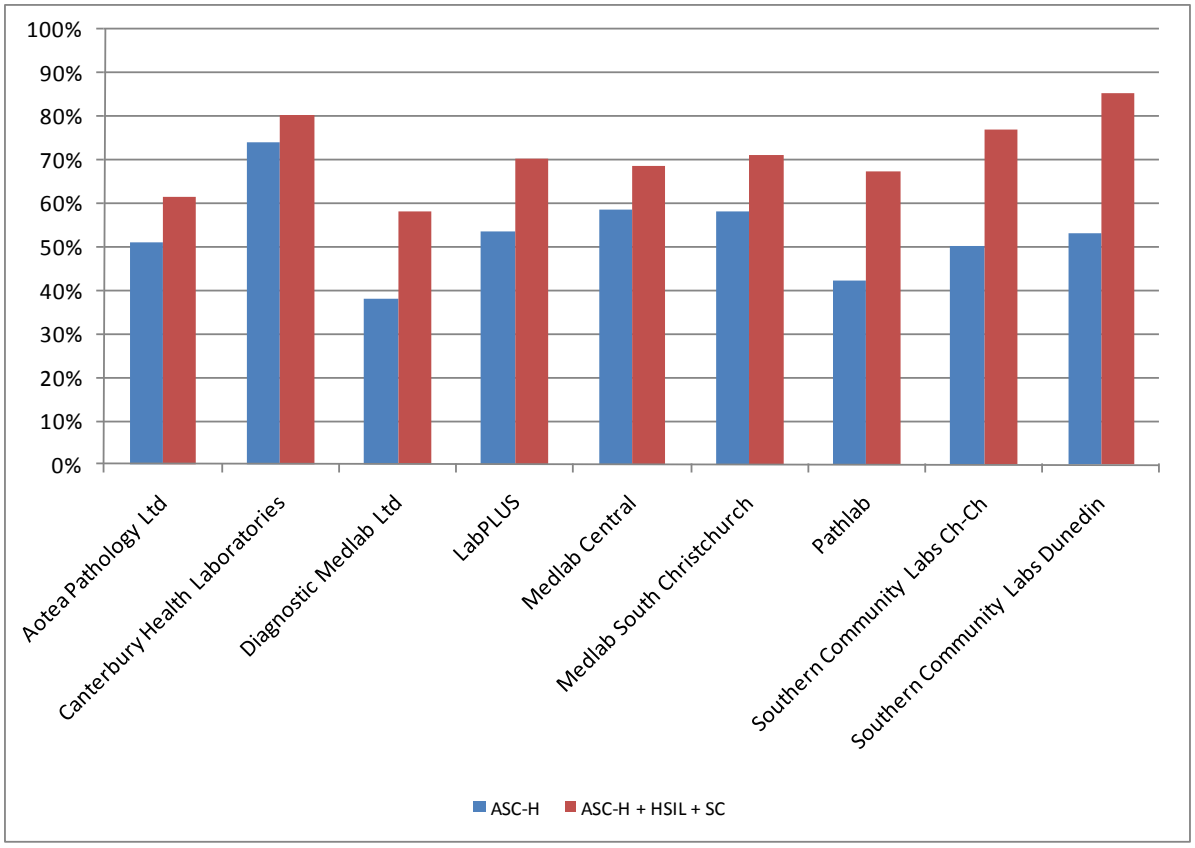
Note that although Southern Community Labs Christchurch ceased reporting on cytology in July 2010, their results appear separately in this section, as this section pertains to cytology samples collected in the six months prior to the current reporting period, during which time Southern Community Labs Christchurch were reporting on cytology.

Figure 23 - Positive predictive value for CIN2+ in women with HSIL or SC cytology reports by laboratory, 1 July to 31 December 2010



Target: 65% - 85%

Figure 24 - Positive predictive value for CIN2+ in women with other high grade cytology results, by laboratory 1 July to 31 December 2010



Target: None

Indicator 5.3 – Accuracy of negative cytology reports

Definition	This indicator is under development and currently has two parts to its definition. 1. The percentage of negative cytology samples (excluding unsatisfactory samples which are reported separately) with subsequent high grade or worse histology that are upgraded to high grade or worse category following slide review. 2. The ability of a laboratory to correctly identify a negative sample.
Current Situation	Data required for this measure was not available from the NCSP Register for the current reporting period. While some data are provided by laboratories to the NCSP, methodology is not consistent between laboratories. As a result of these methodological differences, it was considered that comparisons should not be made between laboratories.

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 this 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 for the ranking used). 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. The Ministry of Health holds the NZ licence for SNOMED CT and the NCSP is in the early stages of investigating its use. A woman's age is defined as her age at the end of the reporting period.
Target	None
Current Situation	11,949 histology samples were taken during the current reporting period. 296 (2.5%) of these were insufficient for diagnosis. The remaining 11,653 samples were taken from 10,152 women. Results for these women are reported on in detail in Table 14 - Table 17. The 296 samples which were insufficient for diagnosis were taken from 292 women, 57 (20%) of whom have a record of a subsequent histology test (as of the date of the data download for this report, ie 1 March 2011). 49.3% of women with histology tests had negative or benign histology results (Table 14, Table 15). 23.1% of women had high grade squamous histology results (ie CIN2, CIN3, or HSIL not otherwise specified). 51 (0.5%) women had histology results which were invasive squamous cell carcinoma (ISCC), eight (0.08%) which were microinvasive SCC, 38 (0.4%) which were invasive adenocarcinoma, three (<0.05%) which were adenosquamous carcinoma and 35 (0.3%) which were adenocarcinoma in situ. The age group with the largest number of women with histology samples was women aged 20-24 years (1,506 women, Table 16). This was also the age group (among those in the target age range of 20-69 years) with the lowest rate of women with results which were negative or HPV only (32%, Table 17). Women aged less than 20 years had slightly lower rates of results which were negative or HPV only (31%).
Trends	The proportion of women with negative or benign histology (49.3%) is lower than that reported for the previous period (January-June 2010; 53.5%). The proportion of women with high grade squamous histology is higher in the

	current period (23.1%) than in the previous period (20.9%) The proportions were similar to those in the previous period for women with ISCC (0.5% this period; 0.4% last period), invasive adenocarcinoma (0.4% this period; 0.5% last period), adenosquamous carcinoma (<0.05% in both periods), and adenocarcinoma in situ (0.3% this period; 0.2% last period).
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. This is likely to be contributing to the higher number of women with adenocarcinoma histology on the NCSP Register compared to the Cancer Registry.

Table 14 - Histology results reporting by SNOMED category

SNOMED category	Women with that diagnosis	
	N	%
Negative/normal	2,356	23.2
Inflammation	810	8.0
Microglandular hyperplasia	10	0.10
Squamous metaplasia	457	4.5
Atypia	63	0.6
HPV	841	8.3
Condyloma acuminatum	5	<0.05
Dysplasia/CIN NOS	85	0.8
CIN 1 (LSIL) or VAIN 1	1,639	16.1
CIN 2 (HSIL) or VAIN 2	608	6.0
CIN 3 (HSIL) or VAIN 3	897	8.8
HSIL not otherwise specified	843	8.3
Polyp	876	8.6
Other	493	4.9
Microinvasive squamous cell carcinoma	8	0.1
Invasive squamous cell carcinoma	51	0.5
Benign glandular atypia	-	-
Glandular dysplasia	1	<0.5
Adenocarcinoma in situ	35	0.3
Invasive adenocarcinoma	38	0.4
Adenosquamous carcinoma	3	<0.05
Metastatic tumour	10	0.1
Undifferentiated carcinoma	-	-
Sarcoma	4	<0.05
Carcinosarcoma	-	-
Choriocarcinoma	-	-
Miscellaneous primary tumour	3	<0.05
Small cell carcinoma	1	<0.05
Malignant tumour, small cell type	1	<0.05
Melanoma	1	<0.5
Other primary epithelial malignancy	13	0.1
Total	**10,152**	**100%-**

NOS = not otherwise specified; HSIL not otherwise specified = CIN2/3 (SNOMED code M67017; see Appendix C)

Table 15 - Histology results reporting by diagnostic group

Histology diagnosis category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	5,002	49.3
HPV	846	8.3
CIN1	1,787	17.6
CIN2	608	6.0
CIN3	897	8.8
HSIL not otherwise specified	843	8.3
Microinvasive	8	0.08
Invasive squamous cell carcinoma	51	0.5
Glandular dysplasia	1	<0.5
Adenocarcinoma in situ	35	0.3
Invasive adenocarcinoma	38	0.4
Adenosquamous carcinoma	3	<0.05
Other cancer	33	0.3
Total	**10,152**	**100%**

HSIL not otherwise specified =CIN 2/3 (SNOMED code M67017; see Appendix C)

Table 16 - Histology results by age – counts

Histology 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)	14	328	370	395	559	756	934	630	365	287	187	177	5,002
HPV	6	149	131	130	110	103	98	49	31	21	13	5	846
CIN1	25	432	306	298	214	195	166	75	32	25	17	2	1,787
CIN2	10	182	112	97	78	56	38	19	6	4	5	1	608
CIN3	6	190	219	174	131	71	46	22	14	11	7	6	897
HSIL not otherwise specified	4	215	173	157	112	78	44	28	13	9	7	3	843
Microinvasive	-	1	1	1	-	1	1	1	1	1	-	-	8
Invasive SCC	-	2	4	5	2	9	7	4	4	1	5	8	51
Glandular dysplasia	-	-	-	-	-	-	-	-	1	-	-	-	1
Adenocarcinoma in situ	-	4	5	4	8	4	6	-	1	3	-	-	35
Invasive adenocarcinoma	-	1	1	2	2	4	1	3	7	5	1	11	38
Adenosquamous carcinoma	-	1	-	-	-	-	1	-	1	-	-	-	3
Other cancer	-	1	-	1	4	1	2	1	1	6	1	15	33
Total	**65**	**1,506**	**1,322**	**1,264**	**1,220**	**1,278**	**1,344**	**832**	**477**	**373**	**243**	**228**	**10,152**

HSIL not otherwise specified =CIN 2/3 (SNOMED code M67017; see Appendix C)

Table 17 - Histology results by age – women with that histology result, as a percentage of all women in that age group with histology results

Histology 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)	21.5	21.8	28.0	31.3	45.8	59.2	69.5	75.7	76.5	76.9	77.0	77.6
HPV	9.2	9.9	9.9	10.3	9.0	8.1	7.3	5.9	6.5	5.6	5.3	2.2
CIN1	38.5	28.7	23.1	23.6	17.5	15.3	12.4	9.0	6.7	6.7	7.0	0.9
CIN2	15.4	12.1	8.5	7.7	6.4	4.4	2.8	2.3	1.3	1.1	2.1	0.4
CIN3	9.2	12.6	16.6	13.8	10.7	5.6	3.4	2.6	2.9	2.9	2.9	2.6
HSIL not otherwise specified	6.2	14.3	13.1	12.4	9.2	6.1	3.3	3.4	2.7	2.4	2.9	1.3
Microinvasive	-	0.1	0.1	0.1	-	0.1	0.1	0.1	0.2	0.3	-	-
Invasive SCC	-	0.1	0.3	0.4	0.2	0.7	0.5	0.5	0.8	0.3	2.1	3.5
Glandular dyslasia	-	-	-	-	-	-	-	-	0.2	-	-	-
Adenocarcinoma in situ	-	0.3	0.4	0.3	0.7	0.3	0.4	-	0.2	0.8	-	-
Invasive adenocarcinoma	-	0.1	0.1	0.2	0.2	0.3	0.1	0.4	1.5	1.3	0.4	4.8
Adenosquamous carcinoma	-	0.1	-	-	-	-	0.1	-	0.2	-	-	-
Other cancer	-	0.1	-	0.1	0.3	0.1	0.1	0.1	0.2	1.6	0.4	6.6
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 =CIN 2/3 (SNOMED code M67017; see Appendix C)

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, to the date when it is reported to the smear-taker or colposcopist. 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 smear-takers within seven working days of receipt of the sample and 100% within 15 working days (also Standard 513[5]).

Histology

Laboratories are required to report 90% of final histology results to referring colposcopists within five working days of receipt of the sample and 99% of final histology results within 15 working days of receiving the sample (also Standard 516[5]).

Cytology with associated HPV testing

Laboratories are required to report 100% 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 reporting period (as opposed to *samples collected* in the period, in Indicator 8). It is explicitly restricted to testing in women aged 30 years or more. These samples form a subset of those considered in the overall measure of turnaround time for cytology.

Current Situation

Cytology

Eight laboratories received 214,327 cytology samples during the current reporting period. Overall, 78.6% of cytology samples were reported on within seven working days, which is below the target. Nationally, 96.5% were reported on within 15 working days, which is below the target (Table 48).

Two laboratories met the target for 90% of cytology samples to be reported to smear-takers in seven days or less (Diagnostic Medlab Ltd, Medlab South Christchurch). The proportion of samples reported on within seven working days ranged from 19.5% (Aotea Pathology) to 100.0% (Medlab South Christchurch)(Figure 25, Table 48).

One laboratory met the target of 100% of samples reported within 15 working days (Medlab South Christchurch) (Figure 26, Table 48). Of the remaining seven laboratories, one had reported on over 99% of cytology

[5] NCSP Operational Policy and Quality Standards, Section 5

samples within 15 days (Southern Community Labs), and another four laboratories had reported on more than 95% within 15 working days.

Histology

17 laboratories received 11,982 histology samples in the current reporting period. Overall 80.9% of samples were reported on within five working days, and 96.1% were reported on in 15 working days or less. These values are below the targets (Table 49).

Five laboratories met the target of 90% of final histology results to referring colposcopists within five working days of receipt of the sample (Medlab South Christchurch, Memorial Hospital Hastings Lab, Northland Pathology Laboratory, Southern Community Labs and Taranaki Medlab) (Figure 27, Table 49). Seven laboratories met the target of 99% of final histology results within 15 working days of receiving the sample, and five of the remaining ten had reported on at least 95% of samples within 15 days (Figure 28, Table 49).

Cytology with associated HPV triage testing

Eight laboratories received 3,434 cytology samples during the current reporting period which were associated with HPV testing for the purpose of triage of low grade abnormalities. Overall, 87.0% of these cytology samples were reported on within 15 working days, which is below the target. The proportion of cytology samples with HPV triage tests reported on within 15 days ranged from 23.9% (Aotea Pathology) to 100.0% (Medlab South Christchurch) (Figure 29, Table 50). The target of 100% of tests reported within 15 working days was met by one laboratory (Medlab South Christchurch). Nationally, the proportion of cytology reported within 15 days is significantly lower for associated cytology with low grade triage HPV testing (87.0%), compared to cytology overall (96.5%). This is not the case for all laboratories, however. The proportion of cytology tests reported within 15 days is much lower for those cytology tests with an associated HPV triage test at Aotea Pathology, Canterbury Health Laboratories, and Southern Community Labs (and also at LabPLUS, but based on a small number of cytology tests with associated HPV triage testing). The proportion of cytology tests reported within 15 days is similar regardless of whether there is an associated HPV triage test at Diagnostic Medlab Ltd and Medlab South Christchurch (Figure 29).

Trends

Cytology

The overall proportion of samples reported on within seven working days decreased in this period, from 84.4% in the previous monitoring period to 78.6% in the current period. The number of laboratories meeting the cytology turnaround time target of 90% for seven working days has decreased in the current monitoring period to two of the eight laboratories, compared to four (of nine) in the previous period. The proportion of samples reported on within 15 working days was lower in the current reporting period (96.5%, compared to 99.1% in the previous reporting period), but the number of laboratories meeting the target increased (to two of the eight laboratories,

compared to one of the nine in the previous report). In the current monitoring period six of the eight laboratories had reported on at least 95% of samples within 15 days, compared to nine out of nine laboratories in the previous report .

Longer term trends are shown in Figure 55 (proportion reported within seven working days) and Figure 56 (proportion reported within fifteen working days).

Histology

Overall, the proportion of histology samples reported on within five working days is lower than it was in the previous reporting period (80.9% during this period compared to 81.9% in the previous report), and the proportion reported on within 15 working days is also lower (96.1%, compared to 97.9% in the previous report). The number of laboratories meeting the five-working-days target is similar to that in the previous reporting period (five of 17, compared to six of 18 in the previous report), but the number of laboratories who had reported on 99% of samples within 15 days has decreased from 15 in the previous reporting period to seven in the current reporting period. Five laboratories had reported on less than 95% of samples within 15 days in the current reporting period, compared to two in the previous period.

Longer term trends are shown in Figure 57 (proportion reported within five working days) and Figure 58 (proportion reported within fifteen working days).

Cytology with associated HPV triage testing

Turnaround time for cytology with an HPV triage test has improved overall since the previous report – from 79.7% to 87.0% within 15 days. One fewer laboratory met the target in the current report than in the previous report. The proportion of samples reported within 15 days has increased at a number of laboratories (Aotea Pathology, Canterbury Health Laboratories, Diagnostic Medlab Ltd).

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 *received by laboratories* within the reporting period, rather than cytology *taken* during the reporting period which was 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

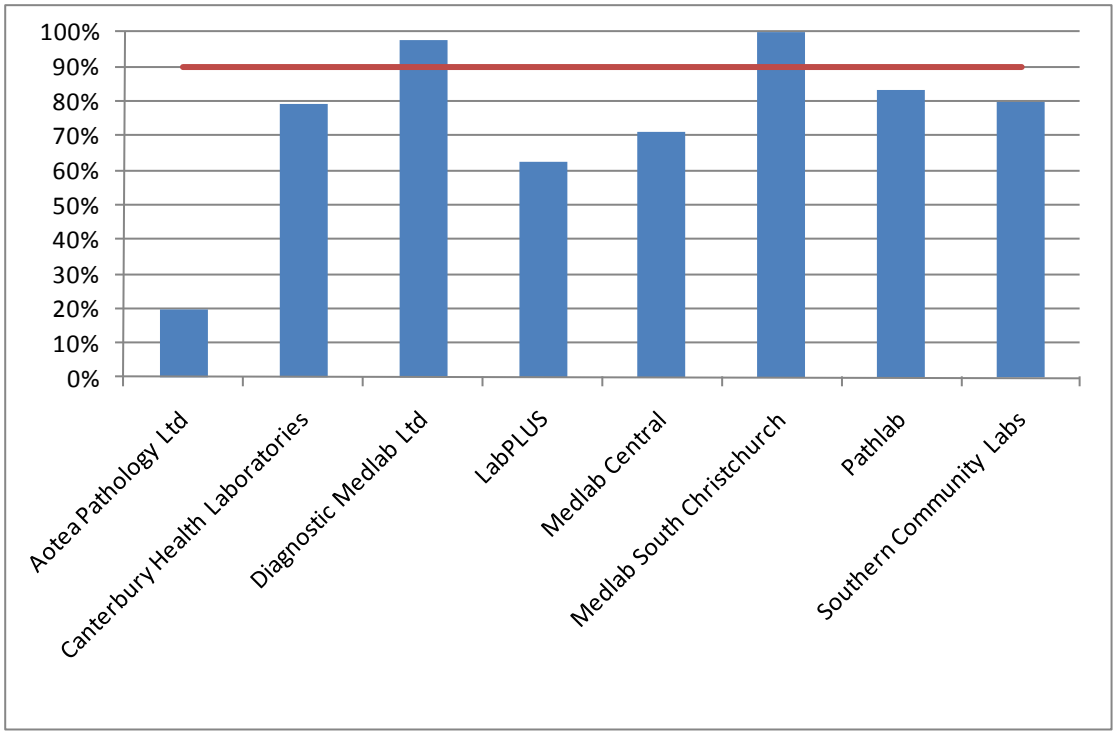
here which is consistent with what each individual laboratory uses.

When errors are detected in 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 error was resolved. The occurrence of these errors 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 smear-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.

The calculations currently include public holidays which fall on a weekday as working days.

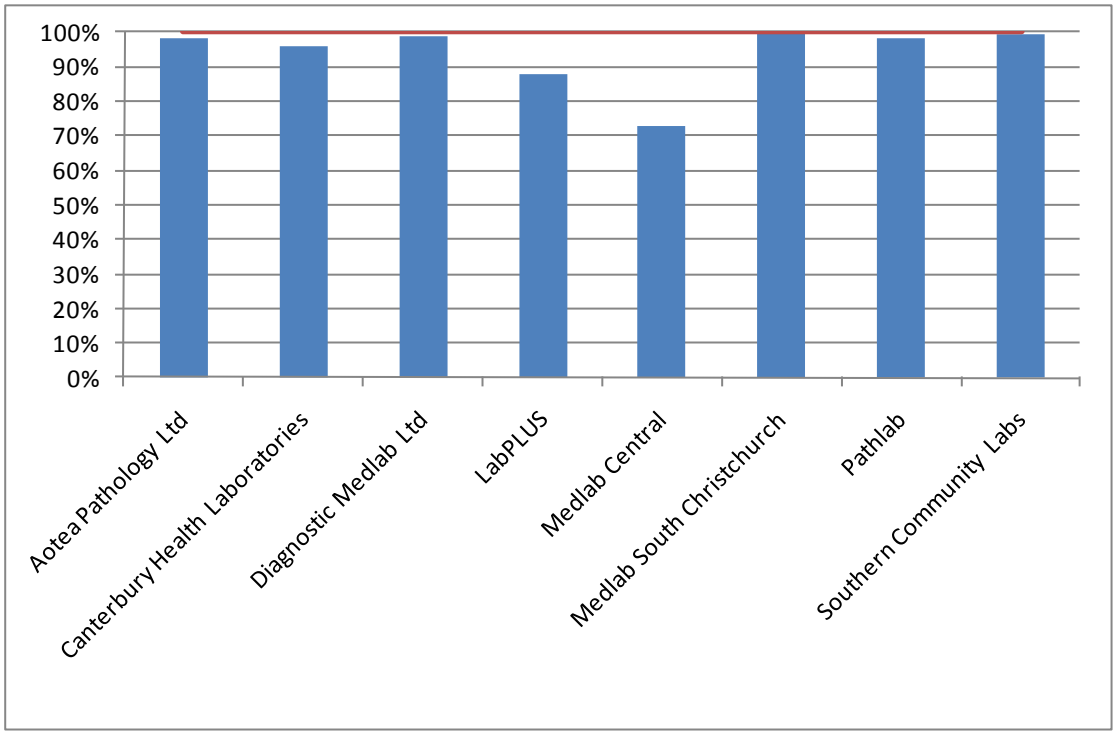
Results for Southern Community Labs include those for tests recorded as being received at Southern Community Labs Christchurch and Southern Community Labs Dunedin. Southern Community Labs Christchurch ceased reporting on cytology in the current reporting period, therefore tests recorded as received in Christchurch are likely to be attributable to data mis-entry.

Figure 25 - Proportion of cytology samples reported within seven working days by laboratory, 1 July to 31 December 2010



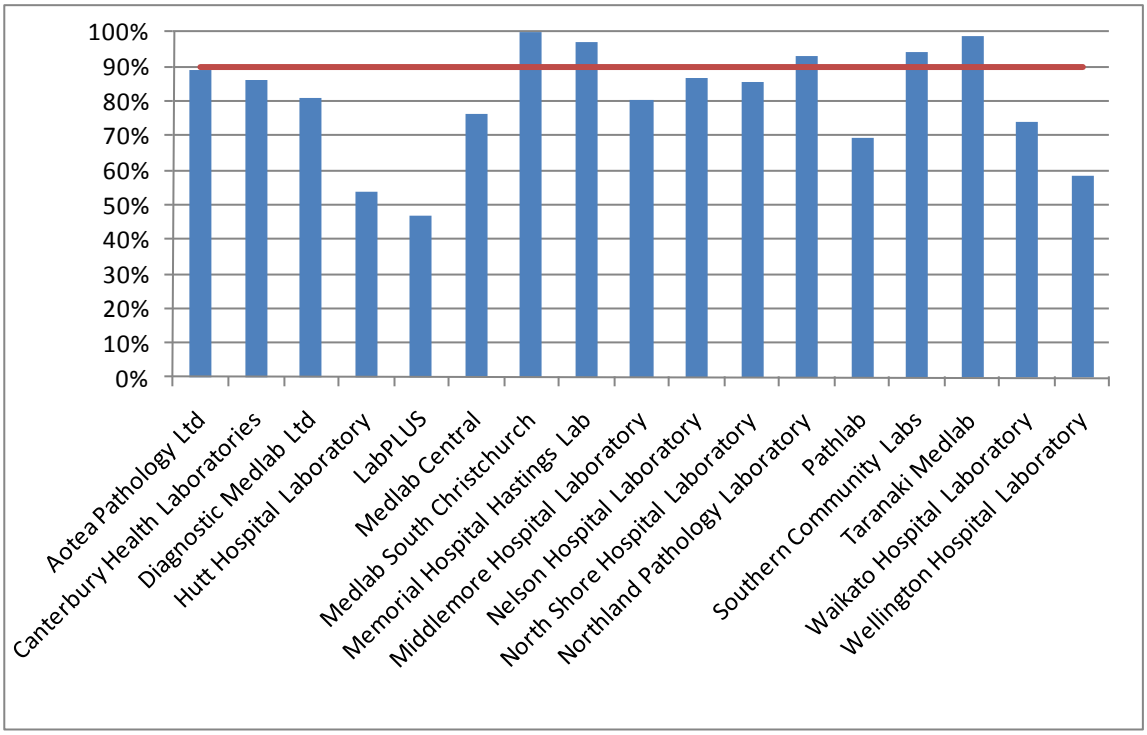
Target: 90 % within seven working days (red line)

Figure 26 - Proportion of cytology samples reported within 15 working days by laboratory, 1 July to 31 December 2010



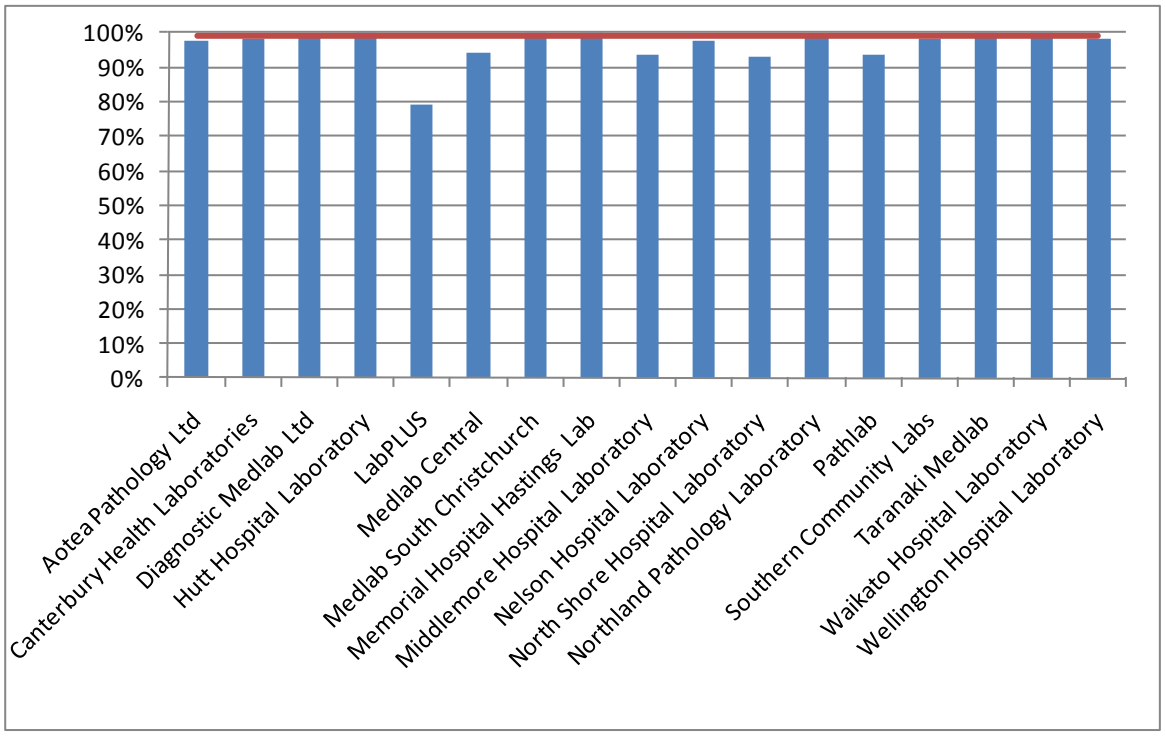
Target: 100% within 15 working days (red line)

Figure 27 - Proportion of histology samples reported within five working days by laboratory, 1 July to 31 December 2010



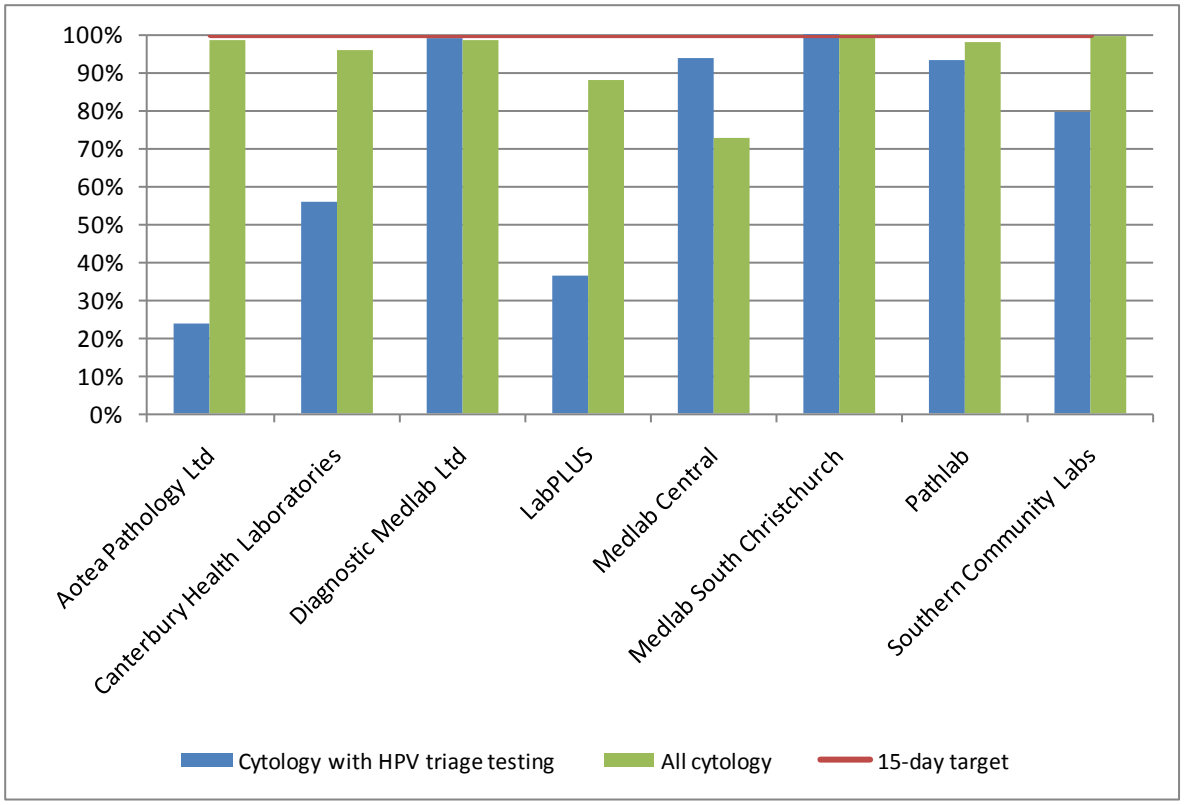
Target: 90% withing five working days (red line)

Figure 28 - Proportion of histology samples reported within 15 working days by laboratory, 1 July to 31 December 2010



Target: 99% within 15 working days(red line)

Figure 29 - Proportion of cytology samples with associated HPV triage testing and of all cytology samples reported within 15 days by laboratory, 1 July to 31 December 2010



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

Definition

The proportion of women (20-69 years) 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 collected in the six months preceding the current reporting period (ie sample taken from 1 January to 30 June 2010), 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.

In this report, exploratory 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 (2005) interpretation codes are included as high grade cytology: ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5.

High grade cytology reports which indicated that women were already under specialist management (TBS2001 NZ modified 2005 recommendation code R13) are excluded. After these reports 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 no biopsy taken. The colposcopy visit data for this group of women (Indicator 7.1) will supplement this indicator. As complete data were not available for Indicator 7.1, an exploratory analysis was performed 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 reporting period (ie 31 December 2010), not her age at the time of the cervical sample.

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 3,305 high grade cytology results relating to samples collected in the period 1 January to 30 June 2010; 3,239 in women aged 20-69 years at the end of the reporting period. 945 of these cytology 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 these cytology tests were excluded from this measure. This left 2,294 cytology results, which related to 2,186 women aged 20-69 years at the end of the reporting period. Histological follow-up for these 2,186 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, 1,716 women (78.5%) aged 20-69 years at the end of the period had a histology report within 90 days of their cytology report, and 1,857 (84.9%) had a histology report within 180 days. These are below the targets of 90% within 90 days and 99% within 180 days. The proportion of women with a histology report within 90 days of their cytology report varied by DHB from 58.3% (Tairawhiti and Wairarapa) to 100.0% (West Coast). At 180 days the range remained the same (58.3% in Tairawhiti and Wairarapa to 100.0% in West Coast) (Figure 30, Table 51). West Coast was the only DHB to meet the target for the proportion of women with histology within 90 days; and for 180 days. The proportion of women with a histology report also varies by age, from 52.2% (ages 65-69 years) to 88.1% (ages 35-39 years) within 90 days, and from to 60.9% (ages 65-69 years) to 93.2% (ages 35-39 years) within 180 days (Table 52). The targets were not met in any age group. There was some variation in the proportion of women with histological follow-up by ethnicity, however the targets were not met for any group of women nationally. At 90 days, it ranged from 63.3% (Pacific women) to 82.1% (European/Other women). By 180 days, however, the overall difference between ethnic groups had narrowed, and histology reports were available for 77.2% of Pacific women and 87.5% of European women/women from other ethnic groups (Table 18, Table 19). Further breakdown by DHB and ethnicity is shown in Table 18 and Table 19, and breakdown by DHB and age is shown in Table 20 and Table 21. ***Women with no follow-up tests*** When follow-up tests of any kind (colposcopy, histology, HPV test, or

subsequent cytology test) were considered, there remained 153 women (7.0%) who had no record of any subsequent follow-up within 180 days on the NCSP Register (Figure 31, Table 53).

This varied by DHB at 180 days from 0.0% (ie no women, in Hutt Valley and West Coast) to 16.7% (Tairawhiti and Wairarapa). It also varied by ethnicity, from 5.3% (European/Other ethnic groups) to 12.7% (Pacific) at 180 days.

Trends

Histological follow-up

The proportion of women with a histology report within 90 days is similar to that in the previous reporting period (78.2% in the previous reporting period; 78.5% in the current period). The proportion of women with a histology report within 180 days has increased from 85.0% within 180 days in the previous period to 87.5% in the current period.

While the proportion of women with histological follow-up has increased slightly overall, the trend varies for individual DHBs. In a number of DHBs the proportion of women with histological follow-up has increased at 90 days (Hawkes Bay, Mid Central, Northland, Otago, Tairawhiti, Wairarapa) and at 180 days (Hawkes Bay, Northland, Otago, Tairawhiti), often quite substantially. In a smaller number of DHBs, the proportion of women with histological follow-up decreased noticeably (South Canterbury, West Coast, Waitemata, Whanganui). Changes in other DHBs were smaller. Longer term trends by DHB are shown in Figure 59 and Figure 60.

The proportion of women with follow-up histology has decreased overall in the current monitoring period for Pacific and Asian women (at both 90 days and 180 days), and for Māori women (at 180 days). These proportions are quite variable in Asian and Pacific women, especially within individual DHBs, as the number of these women with high grade cytology is also comparatively small. Considering only the DHBs with ten or more women with high grade cytology results requiring follow-up, the proportion of Pacific women with follow-up histology at 90 days increased in Waitemata, but decreased at 180 days, and decreased in Auckland and Counties Manukau at both 90 and 180 days. Among DHBs with at least ten Asian women with high grade histology, proportion of Asian women with follow-up histology at 90 days increased in Waikato at 180 days, but decreased at 90 days, and decreased at both 90 and 180 days in Auckland, Counties Manukau and Waitemata. In the 12 DHBS with ten or more Māori women with high grade cytology results requiring follow-up, the proportion of women with follow-up histology at 90 days and 180 days increased in five DHBs (Auckland, Bay of Plenty, Canterbury, Taranaki, Waikato), and decreased in seven DHBs (Counties Manukau, Hawkes Bay, Lakes, Mid Central, Nelson Marlborough, Northland, Waitemata). Longer term trends by ethnicity are shown in Figure 61 and Figure 62.

As in previous reports, the proportion of women with histological follow-up varies substantially by age, and generally seems to be lower in women aged

50 years or more, than in women younger than 50 years. The proportion of women with follow-up histology within either 90 or 180 days has decreased since the previous report for women aged 60-64 years and 65-69 years (from 74.1% to 59.2% and from 61.6% to 52.2% respectively at 90 days, and from 77.6% to 61.2% and from 73.5% to 60.9% respectively at 180 days). The proportion of women with follow-up histology within either 90 or 180 days has increased since the previous report for women aged 25-29 years (from 79.5% to 81.7% at 90 days; 87.3% to 88.2% at 180 days), 35-39 years (from 80.7% to 88.1% at 90 days; 87.0% to 93.2% at 180 days), and 50-54 years (from 65.3% to 72.7% at 90 days; 73.5% to 79.1% at 180 days).

Women with no follow-up tests

The proportion of women with no record of a follow-up test has increased slightly since the previous period, from 6.7% to 7.0% at 180 days.

Trends by DHB were complex, but reductions in the proportion of women with no follow-up test recorded were greatest in Auckland, Hutt Valley, and Whanganui. In some cases decreases were seen in the current reporting period following an increase in the previous period, or vice versa, and so may not be part of a trend (for example in Auckland, Canterbury and Waikato).

Trends varied by ethnicity. In the current monitoring period, there were higher proportions of Māori women, Pacific women, and Asian women for whom there was no follow-up test record. In Māori women the proportion of women with no follow-up tests recorded at 180 days increased from 10.8% to 11.3%. For Pacific women the increase was from 9.2% to 12.7% at 180 days. For Asian women, the increase was from 9.7% to 10.5% at 180 days. The proportion of European/ Other women with no follow-up test recorded at 180 days was the same as it was in the previous reporting period (5.3%).

Comments

The proportion of women with a follow-up test of any kind provides useful additional information. While 15.1% of women with high grade cytology reports had no record of a histology report within 180 days, the proportion without a record of a follow-up test of any kind was much lower (7.0%). Consistent with previous monitoring reports, over half of the women with no follow-up histology recorded do have a record of some other follow-up test (colposcopy, cytology or an HPV test). This provides reassurance that the majority of women without histology have not been lost to follow-up.

In recent reports (Reports 30-33), the proportion of women with no follow-up test at 360 days was also reported on, in addition to the proportion of women with no follow-up test at 180 days. In the current report, follow-up data to 360 days was not available for all women with high grade cytology, because the cytology sample could have been collected up to 30 June 2010, and the data download used for this analysis represents data on the NCSP Register at 1 March 2011. Therefore, the proportion of women with no follow-up test at 360 days has not been included in this report. It is anticipated that this situation will continue in future reports – that is, follow-up at 360 days will not be reported as 360 days of follow-up will not be available for all women,

due to the timing of the data download from the NCSP Register required to produce regular reports in a timely manner.

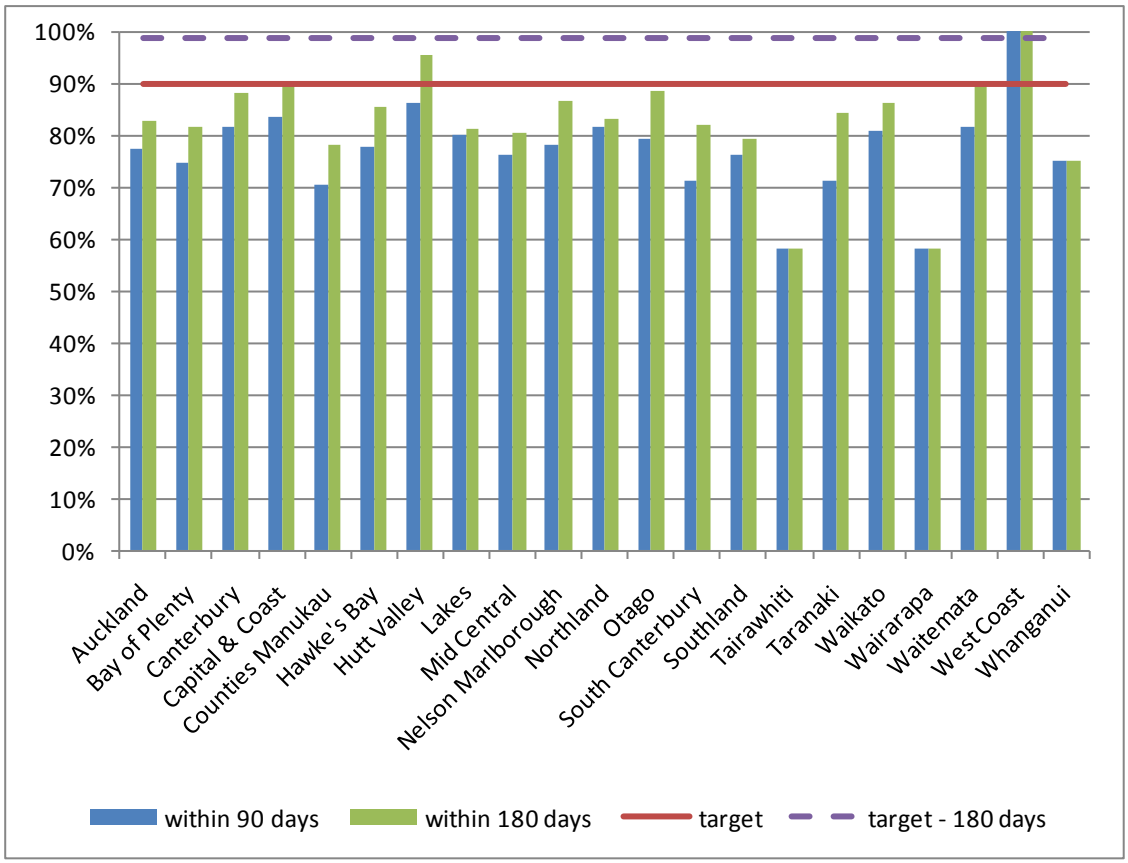
Note that while all *cytology results* which indicated that a woman was under specialist management were excluded from the measure of follow-up, not all *women* who had these cytology results were. If all cytology results for a woman indicated that she was under specialist management, she was excluded. 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 this measure to assess follow up had Bethesda recommendation codes which 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)/ refusal to attend
iii) wait time issue

Risk is also related to the degree of abnormality including microinvasive/invasive carcinoma. Women who do not/ 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 Performance Management Analysts ensure that priority is given to follow-up of these women through DHBs. Risk is also related to the degree of abnormality including microinvasive/invasive carcinoma.

Figure 30 - Proportion of women (ages 20-69 years) 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 18 - Women (ages 20-69 years) with a histology report within 90 days of a high grade cytology report, by DHB and ethnicity

	Māori		Pacific		Asian		European/Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	14	77.8	9	56.3	27	57.4468	146	84.9
Bay of Plenty	23	76.7	-	-	0	0.0	51	77.3
Canterbury	23	82.1	3	50.0	7	87.5	202	82.4
Capital & Coast	4	44.4	4	100.0	3	100.0	56	87.5
Counties Manukau	31	66.0	15	55.6	26	70.3	68	77.3
Hawke's Bay	13	54.2	2	100.0	1	50.0	65	85.5
Hutt Valley	5	71.4	-	-	1	100.0	32	88.9
Lakes	23	69.7	-	-	1	100.0	41	87.2
Mid Central	11	68.8	-	-	-	-	44	78.6
Nelson Marlborough	8	61.5	0	0.0	7	100.0	50	80.6
Northland	15	65.2	1	100.0	1	100.0	36	90.0
Otago	3	100.0	1	50.0	1	100.0	65	79.3
South Canterbury	2	66.7	1	100.0	1	100.0	16	69.6
Southland	2	33.3	1	100.0	2	66.7	43	81.1
Tairawhiti	3	50.0	-	-	-	-	4	66.7
Taranaki	9	81.8	-	-	3	75.0	38	69.1
Waikato	46	78.0	2	66.7	8	80.0	127	82.5
Wairarapa	3	75.0	-	-	-	-	4	50.0
Waitemata	20	60.6	11	73.3	35	83.3	169	85.4
West Coast	1	100.0	-	-	1	100.0	10	100.0
Whanganui	5	83.3	-	-	-	-	10	71.4
Total	**264**	**69.5**	**50**	**63.3**	**125**	**72.7**	**1,277**	**82.1**

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

Table 19 - Women (ages 20-69 years) with a histology report within 180 days of a high grade cytology report, by DHB and ethnicity

	Māori		Pacific		Asian		European/Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	16	88.9	10	62.5	31	66.0	153	89.0
Bay of Plenty	24	80.0	-	-	2	66.7	55	83.3
Canterbury	25	89.3	5	83.3	7	87.5	216	88.2
Capital & Coast	6	66.7	4	100.0	3	100.0	59	92.2
Counties Manukau	34	72.3	19	70.4	28	75.7	75	85.2
Hawke's Bay	17	70.8	2	100.0	1	50.0	69	90.8
Hutt Valley	7	100.0	-	-	1	100.0	34	94.4
Lakes	24	72.7	-	-	1	100.0	41	87.2
Mid Central	13	81.3	-	-	-	-	45	80.4
Nelson Marlborough	10	76.9	0	0.0	7	100.0	55	88.7
Northland	16	69.6	1	100.0	1	100.0	36	90.0
Otago	3	100.0	2	100.0	1	100.0	72	87.8
South Canterbury	3	100.0	1	100.0	1	100.0	18	78.3
Southland	2	33.3	1	100.0	2	66.7	45	84.9
Tairawhiti	3	50.0	-	-	-	-	4	66.7
Taranaki	10	90.9	-	-	3	75.0	46	83.6
Waikato	49	83.1	3	100.0	9	90.0	134	87.0
Wairarapa	3	75.0	-	-	-	-	4	50.0
Waitemata	27	81.8	13	86.7	38	90.5	180	90.9
West Coast	1	100.0	-	-	1	100.0	10	100.0
Whanganui	5	83.3	-	-	-	-	10	71.4
Total	**298**	**78.4**	**61**	**77.2**	**137**	**79.7**	**1,361**	**87.5**

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

Table 20 - Women (ages 20-69 years) with a histology report within 90 days of a high grade cytology report, by DHB and age

	20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	35	74.5	57	87.7	32	72.7	27	93.1	12	66.7	12	85.7	6	60.0	10	62.5	5	83.3	0	0.0	196
Bay of Plenty	14	73.7	21	91.3	9	69.2	11	78.6	7	87.5	2	40.0	5	62.5	2	40.0	1	100.0	2	66.7	74
Canterbury	63	81.8	63	86.3	41	93.2	21	75.0	17	89.5	11	73.3	12	75.0	2	40.0	2	50.0	3	50.0	235
Capital & Coast	14	82.4	20	87.0	12	85.7	10	90.9	5	83.3	2	100.0	1	50.0	2	66.7	1	100.0	0	0.0	67
Counties Manukau	21	58.3	32	74.4	22	64.7	16	84.2	14	77.8	17	77.3	11	100.0	5	55.6	2	50.0	0	0.0	140
Hawke's Bay	9	50.0	11	68.8	15	88.2	22	95.7	5	83.3	5	100.0	8	88.9	3	60.0	3	60.0	-	-	81
Hutt Valley	9	90.0	12	85.7	5	71.4	4	100.0	3	100.0	1	100.0	1	100.0	1	100.0	1	50.0	1	100.0	38
Lakes	13	81.3	16	69.6	11	91.7	11	91.7	1	50.0	7	77.8	1	50.0	2	100.0	2	100.0	1	100.0	65
Mid Central	11	64.7	10	71.4	9	69.2	9	100.0	7	100.0	2	66.7	3	75.0	3	100.0	0	0.0	1	100.0	55
Nelson	17	68.0	12	75.0	8	100.0	11	91.7	5	100.0	4	100.0	4	57.1	3	100.0	-	-	1	33.3	65
Marlborough																					
Northland	12	85.7	11	84.6	5	71.4	9	100.0	2	66.7	6	85.7	4	100.0	0	0.0	3	75.0	1	100.0	53
Otago	15	75.0	13	86.7	8	88.9	10	83.3	7	100.0	7	100.0	4	57.1	2	40.0	1	33.3	3	100.0	70
South Canterbury	4	66.7	2	66.7	4	80.0	2	100.0	4	80.0	1	50.0	1	50.0	1	50.0	-	-	1	100.0	20
Southland	13	76.5	11	84.6	10	90.9	5	83.3	1	50.0	2	100.0	3	60.0	1	50.0	1	33.3	1	50.0	48
Tairawhiti	2	50.0	1	50.0	2	100.0	1	100.0	-	-	1	50.0	-	-	-	-	0	0.0	-	-	7
Taranaki	7	77.8	14	73.7	7	63.6	6	85.7	9	81.8	3	100.0	1	50.0	3	75.0	0	0.0	0	0.0	50
Waikato	38	82.6	36	76.6	25	78.1	33	91.7	13	76.5	15	88.2	7	70.0	5	50.0	4	100.0	7	100.0	183
Wairarapa	3	75.0	1	100.0	1	33.3	1	100.0	-	-	1	100.0	-	-	-	-	-	-	0	0.0	7
Waitemata	50	82.0	49	89.1	31	79.5	32	82.1	31	86.1	22	84.6	8	80.0	7	63.6	3	42.9	2	50.0	235
West Coast	3	100.0	5	100.0	1	100.0	2	100.0	1	100.0	-	-	-	-	-	-	-	-	-	-	12
Whanganui	4	100.0	4	50.0	2	100.0	2	100.0	1	100.0	2	100.0	-	-	0	0.0	-	-	-	-	15
Total	**357**	**76.0**	**401**	**81.7**	**260**	**79.3**	**245**	**88.1**	**145**	**82.9**	**123**	**82.6**	**80**	**72.7**	**52**	**57.8**	**29**	**59.2**	**24**	**52.2**	**1,716**

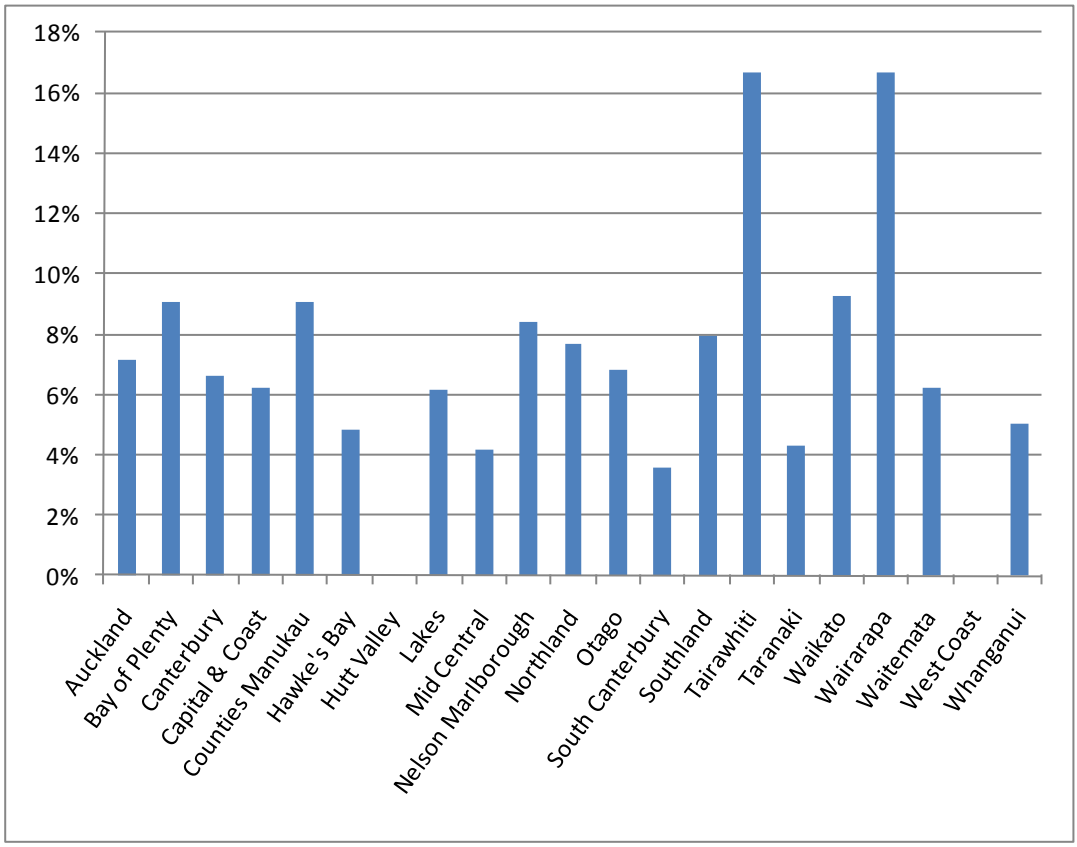
'– ' indicates there were no women in this sub-category with a high grade cytology report

Table 21 - Women (ages 20-69 years) with a histology report within 180 days of a high grade cytology report, by DHB and age

	20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	36	76.6	59	90.8	36	81.8	27	93.1	15	83.3	12	85.7	7	70.0	12	75.0	5	83.3	1	25.0	210
Bay of Plenty	16	84.2	21	91.3	10	76.9	14	100.0	7	87.5	2	40.0	6	75.0	2	40.0	1	100.0	2	66.7	81
Canterbury	66	85.7	69	94.5	41	93.2	25	89.3	18	94.7	11	73.3	13	81.3	3	60.0	2	50.0	5	83.3	253
Capital & Coast	15	88.2	21	91.3	14	100.0	10	90.9	5	83.3	2	100.0	1	50.0	3	100.0	1	100.0	0	0.0	72
Counties Manukau	23	63.9	35	81.4	27	79.4	16	84.2	17	94.4	17	77.3	11	100.0	7	77.8	2	50.0	1	33.3	156
Hawke's Bay	14	77.8	13	81.3	15	88.2	23	100.0	5	83.3	5	100.0	8	88.9	3	60.0	3	60.0	-	-	89
Hutt Valley	10	100.0	13	92.9	7	100.0	4	100.0	3	100.0	1	100.0	1	100.0	1	100.0	1	50.0	1	100.0	42
Lakes	13	81.3	17	73.9	11	91.7	11	91.7	1	50.0	7	77.8	1	50.0	2	100.0	2	100.0	1	100.0	66
Mid Central	13	76.5	11	78.6	9	69.2	9	100.0	7	100.0	2	66.7	3	75.0	3	100.0	0	0.0	1	100.0	58
Nelson Marlborough	20	80.0	14	87.5	8	100.0	11	91.7	5	100.0	4	100.0	6	85.7	3	100.0	-	-	1	33.3	72
Northland	12	85.7	11	84.6	5	71.4	9	100.0	2	66.7	7	100.0	4	100.0	0	0.0	3	75.0	1	100.0	54
Otago	19	95.0	14	93.3	8	88.9	11	91.7	7	100.0	7	100.0	5	71.4	3	60.0	1	33.3	3	100.0	78
South Canterbury	5	83.3	3	100.0	4	80.0	2	100.0	5	100.0	1	50.0	1	50.0	1	50.0	-	-	1	100.0	23
Southland	14	82.4	11	84.6	10	90.9	6	100.0	1	50.0	2	100.0	3	60.0	1	50.0	1	33.3	1	50.0	50
Tairawhiti	2	50.0	1	50.0	2	100.0	1	100.0	-	-	1	50.0	-	-	-	-	0	0.0	-	-	7
Taranaki	8	88.9	17	89.5	10	90.9	7	100.0	10	90.9	3	100.0	1	50.0	3	75.0	0	0.0	0	0.0	59
Waikato	40	87.0	41	87.2	26	81.3	34	94.4	15	88.2	15	88.2	7	70.0	6	60.0	4	100.0	7	100.0	195
Wairarapa	3	75.0	1	100.0	1	33.3	1	100.0	-	-	1	100.0	-	-	-	-	-	-	0	0.0	7
Waitemata	54	88.5	52	94.5	35	89.7	34	87.2	34	94.4	24	92.3	9	90.0	10	90.9	4	57.1	2	50.0	258
West Coast	3	100.0	5	100.0	1	100.0	2	100.0	1	100.0	-	-	-	-	-	-	-	-	-	-	12
Whanganui	4	100.0	4	50.0	2	100.0	2	100.0	1	100.0	2	100.0	-	-	0	0.0	-	-	-	-	15
Total	**390**	**83.0**	**433**	**88.2**	**282**	**86.0**	**259**	**93.2**	**159**	**90.9**	**126**	**84.6**	**87**	**79.1**	**63**	**70.0**	**30**	**61.2**	**28**	**60.9**	**1,857**

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

Figure 31 – Proportion of women (ages 20-69 years) without any follow-up test within 180 days of a high grade cytology report, by DHB



Indicator 7 – Colposcopy indicators

Definition	The calculation of these indicators is under development, and will include measures such as: 1. Waiting time for colposcopic assessment of abnormal cytology results. 2. Adequacy of recording at colposcopy. 3. Minimum colposcopy volumes. 4. Correlation between colposcopy and histology 5. Adequacy of treatment Some of these measures are still being defined.
Current Situation	Colposcopy data is being collected on the NCSP Register, but data relating to the time period of this report are believed to be incomplete, therefore measures were not calculated for the current reporting period. Data completeness is improving, and it is anticipated that these colposcopy indicators will be reported upon in future.

Indicator 8 – HPV tests

Definition

Triage of low grade cytology

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 (ie abnormal cytology results relating to specimens taken in the preceding five years), the following are reported on:

- The number and proportion of women with a subsequent HPV triage test (by age group, and cytology laboratory)
- Women with an invalid HPV test result, as a proportion of those with a subsequent HPV test (by age group, and laboratory which performed the HPV test)
- Women with positive HPV triage result, as a proportion of women with a valid HPV test (by age group, and cytology laboratory)

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 (ie 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 attending for cytology due to symptoms.

The following measures are also reported on:

- Invalid HPV tests, as a proportion of all HPV triage tests, by HPV test technology
- Number of days between the collection dates recorded for the cytology sample and the HPV test sample, by laboratory

HPV test volumes

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

	In some cases, the laboratory performing the cytology differs from that performing the HPV test. Measures reported by laboratory which show i) the proportion of women with a triage test, and ii) the proportion of those with a positive HPV test, are based on the laboratory which performed the cytology. Measures reporting on the proportion of HPV test results which are valid versus invalid, or the number of HPV tests processed, are based on the laboratory which performed the HPV test. Measures reported by age are based on the age of the women on the date that the cytology sample was collected.
Target	This is a new measure, and targets have not yet been set.
Current Situation	***Triage of low grade cytology*** There were 1,270 women aged less than 30 years and 2,237 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 2,734 women aged less than 30 years and 1,731 women aged 30 years or more. Among these women, 91.7% of women aged 30 years or more with an ASC-US cytology result, and 88.0% of women aged 30 years or more with an LSIL cytology result are recorded as having a subsequent HPV test (Table 55, Table 56). These proportions ranged 29.0% (Medlab Central) to 99.6% (Diagnostic Medlab Ltd) for ASC-US cytology results and from 45.9% (Medlab Central) to 99.9% (Diagnostic Medlab Ltd) for LSIL cytology results (Figure 32, Table 55, Table 56). 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 substantially lower. Subsequent HPV tests are recorded in the NCSP Register for 1.1% of women aged less than 30 years with ASC-US results, and 0.5% of women aged less than 30 years with LSIL results. These proportions ranged from 0% (LabPLUS, Medlab Central, Pathlab, Southern Community Labs Christchurch) to 4.7% (Canterbury Health Laboratories) for women with ASC-US results, and from 0% (LabPLUS, Medlab South Christchurch) to 3.0% (Canterbury Health Laboratories) for women with LSIL results (Figure 33, Table 55, Table 56). The proportion of women aged 30 years or more whose HPV test results were invalid was very small (Figure 34, Table 57, Table 58). It was less than 2% in all laboratories (maximum: 1.6% for ASC-US at Aotea Pathology Ltd; Table 58). The proportion was also very small for all HPV test technologies, and was non-zero only for Roche Amplicor (0.6%) (Figure 38). No HPV triage tests relating to the current monitoring period were performed using Amplicor PCR, Digene HC2 or Roche Linear Array (Table 59).

Among women aged 30 years or more with valid HPV triage test results, the proportion who were positive for high risk HPV was 27% for women with ASC-US results, and 57% for women with LSIL results. These proportions varied by laboratory from 9% (Canterbury Health Laboratories) to 53% (Aotea Pathology) for women with ASC-US cytology (Figure 35), and from 0% (LabPLUS) to 71% (Aotea Pathology Ltd) for women with LSIL cytology, however there were only four women with triage tests following LSIL results at LabPLUS. Considering only laboratories with ten or more women with triage tests following LSIL results, the proportion of women aged 30 years or more who were positive for high risk HPV ranged from 48% (Canterbury Health Laboratories) to 71% (Aotea Pathology Ltd) (Figure 36).

The proportion of women whose HPV triage test was positive also varied by age. HPV positivity generally decreased with increasing age (Figure 37, Table 22, Table 23). HPV positivity among women aged 60 years or more with LSIL cytology appears higher than in some younger women, although these results are based on smaller numbers of women (Table 23).

Virtually all HPV triage tests were performed on specimens collected at the same time as the cytology specimen (ie assumed to be reflex testing from LBC samples). Overall 97.8% of HPV triage tests were performed on cervical specimens collected at the same time as cytology specimens (ranging from 94.0% at Aotea Pathology to 99.9% at Diagnostic Medlab Ltd) (Table 24).

HPV test volumes

There were 14,411 samples received by laboratories for HPV testing within the current reporting period. These are reported on further in Table 25 to Table 27.

Virtually all (99.9%) samples for HPV testing were from women aged 20-69 years. The large majority of women (90.9%) were aged 30 years or more (Table 25).

The majority of HPV test samples (83.4%) were performed on cervical samples from European/Other women, and the number of HPV tests performed was smallest among Pacific women (367, or 2.5% of all HPV tests) (Table 26).

The number of samples received by laboratories for HPV testing ranged from 441 (LabPLUS; 3.1% of all HPV tests) to 3,852 (Southern Community Labs; 26.7% of all HPV tests) (Table 27).

Trends

HPV triage tests

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 has increased substantially since the previous report, from 60.5% to 91.7% for women with ASC-US results, and from 61.6% to 88.0% for women with LSIL results (Figure 63, Figure 64). The proportion of women aged less than 30 years with a subsequent HPV test has decreased

slightly.

The proportion of women whose tests are invalid remains very small.

The proportion of women aged 30 years or more who test positive for a high risk HPV type is very similar to that reported in the previous monitoring report. Among women with ASC-US results there was a slight increase from 25% in the previous report to 27% in the current report, and for LSIL a slight decrease from 59% in the previous report to 57% in the current report. Trends are shown by laboratory in Figure 65 and Figure 66, and by age in Figure 67 and Figure 68.

HPV test volumes

More samples were received at laboratories for HPV testing in the current reporting period (14,411) than in the previous monitoring report (11,278) – an increase of approximately 28%. As HPV testing is a comparatively new recommendation, an increase is not unexpected. This increase has not occurred equally across all age groups, ethnic groups, or laboratories, however. Increases have been most pronounced among women aged 50 years or more (>35%); among Asian and Pacific woman (>50%); and in Diagnostic Medlab Ltd, LabPLUS and Pathlab (>90%). Trends are shown by age in Figure 69, laboratory in Figure 70, and ethnicity in Figure 71.

The proportion of samples for HPV testing which related to woman aged less than 30 years was somewhat lower in the current reporting period (9.1%), compared to the previous period (11.0%).

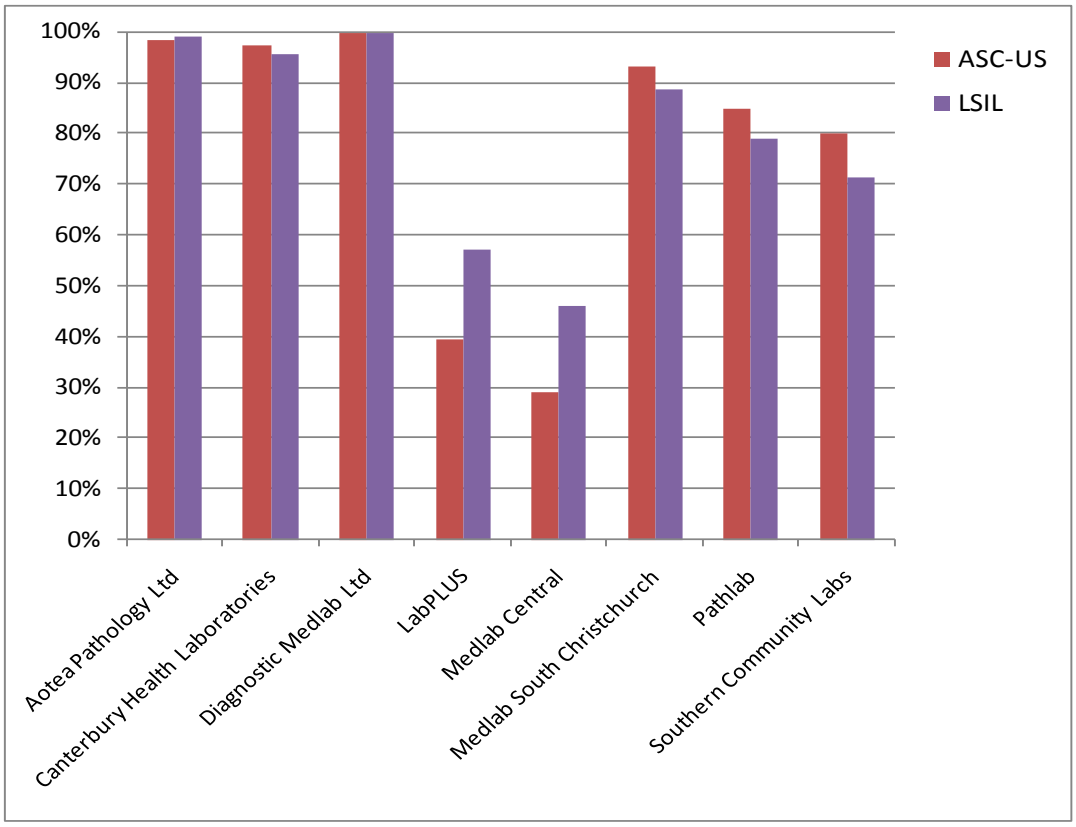
Comments

HPV triage is not included in the NCSP 2008 Guidelines for women aged less than 30 years old. We explored age further among the 27 women aged less than 30 years with a record of a subsequent HPV test to determine if many of these women may have been aged 29 at the time of their cytology sample. The 27 women with a subsequent HPV test ranged in age from 19 years to 29 years at the time of their cytology sample, and their median age was 26 years. Four women were aged 29 years at the time of their cytology sample. It is possible that some of these women may have turned 30 by the time of their cytology result, and that this was the reason HPV triage was performed, however this is difficult to ascertain with accuracy from the NCSP Register data.

It is not possible to determine directly from the NCSP Register whether the same cervical LBC sample was used to perform both the cytology test and the HPV test. To estimate the extent to which this occurs, the collection dates recorded for the samples used for each test were compared. It is assumed that samples used for a cytology test and an HPV test which were collected on the same date indicate that the same LBC sample was used for both tests. It is possible that HPV test samples with a collection date within 4 weeks of the cytology sample collection date are also taken from the same LBC vial, since laboratories are required to hold LBC vials for a minimum of four weeks.

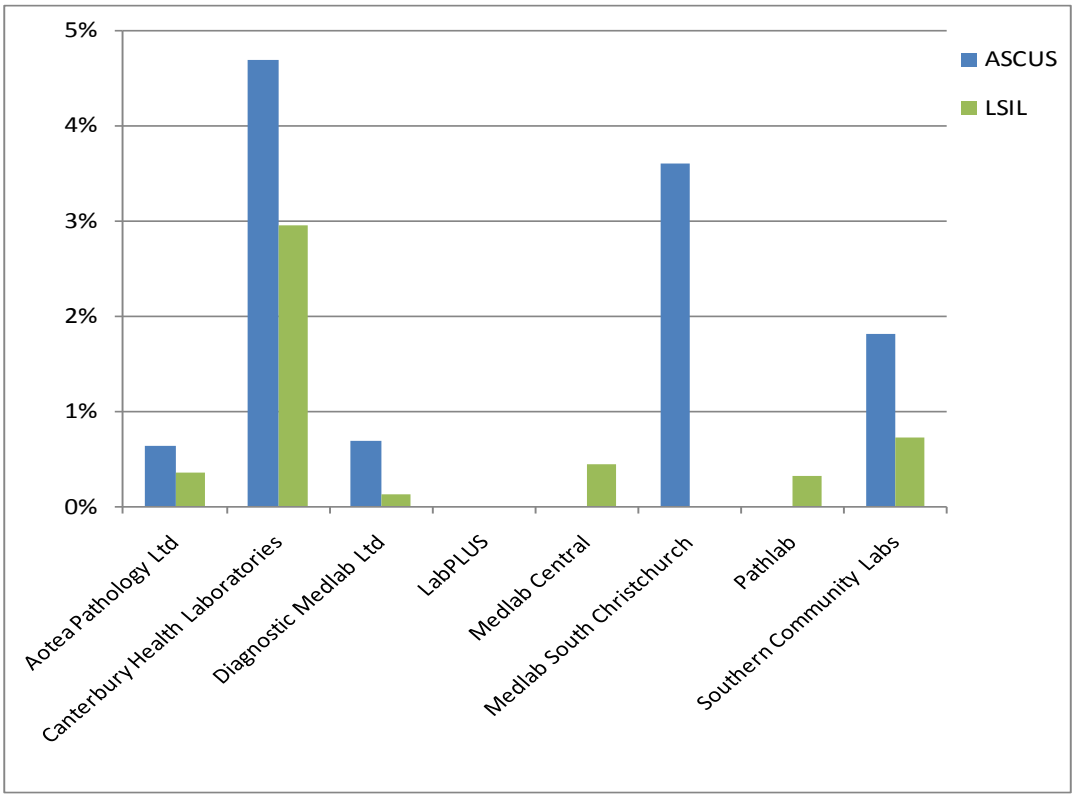
The NCSP Register does not contain codes for all HPV test technologies used. In particular, there is no code for cobas® 4800 (Roche); these tests appear to be coded as either Roche Amplicor or Other.

Figure 32 – 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 33 – Proportion of women (aged less than 30 years) 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 34 - Proportion of women (aged 30 years or more) with low grade cytology whose subsequent HPV triage test result is invalid, by laboratory and cytology result

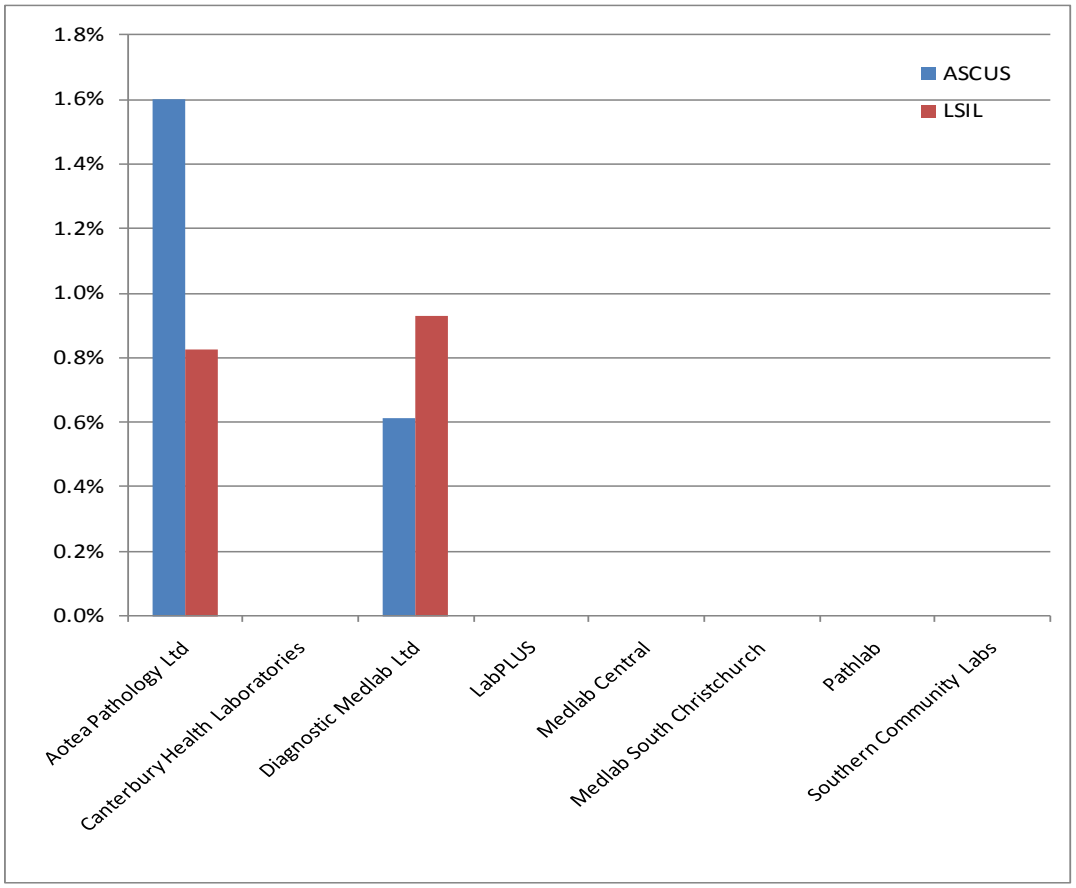


Figure 35 - Proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more) , by cytology laboratory

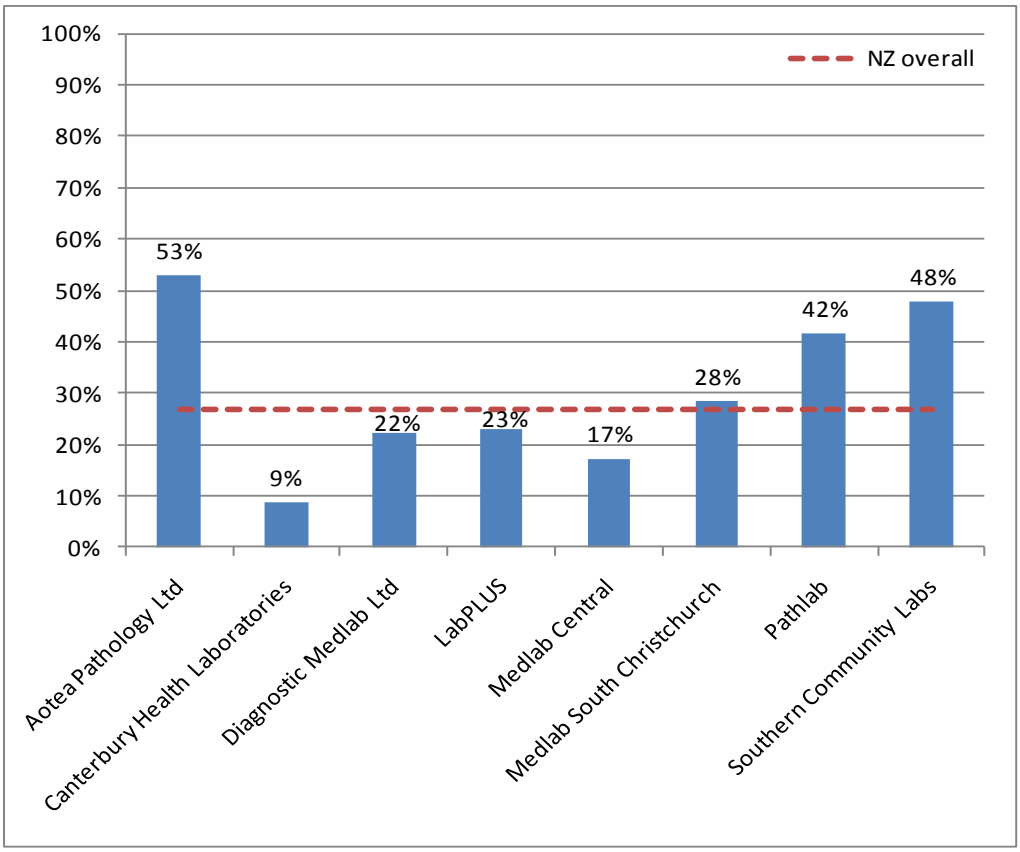


Figure 36 - Proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more) , by cytology laboratory

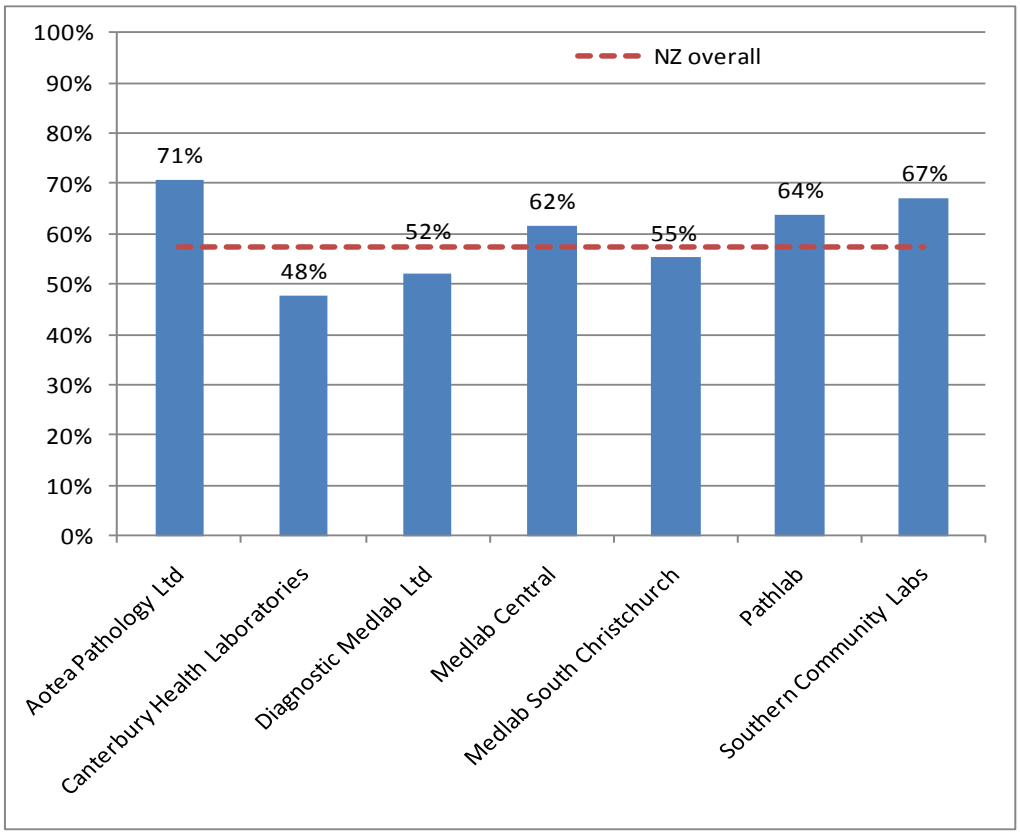
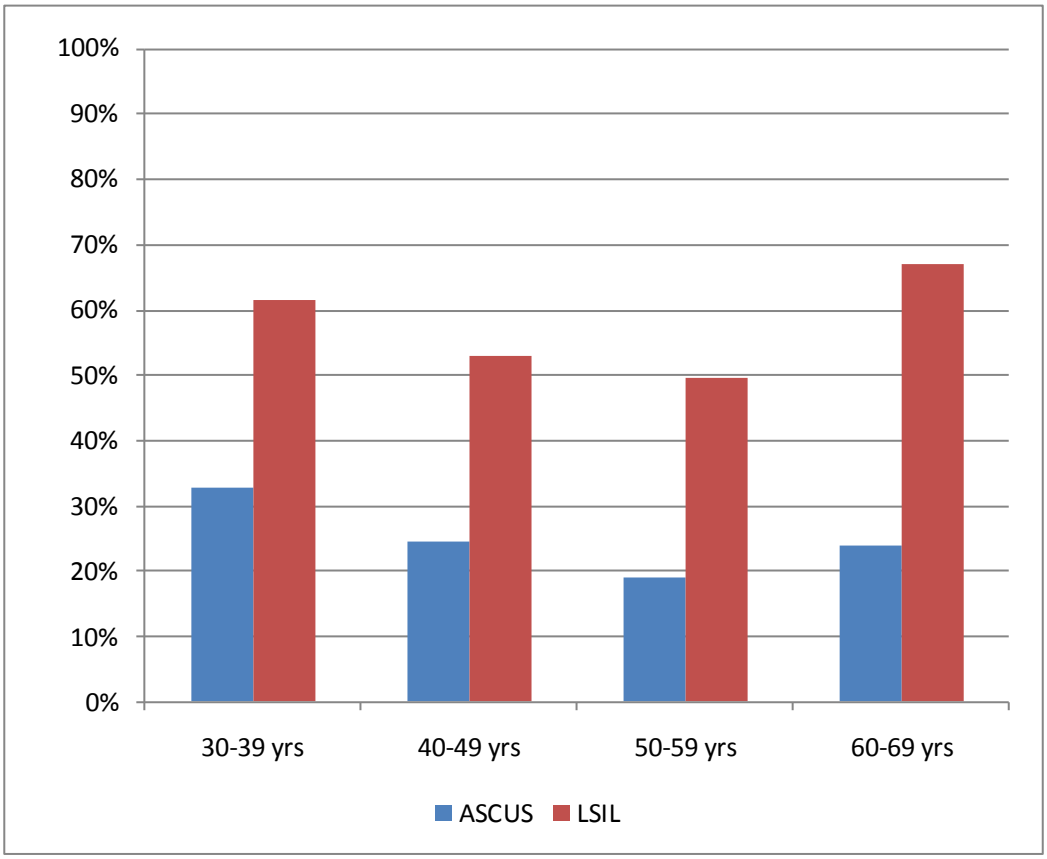
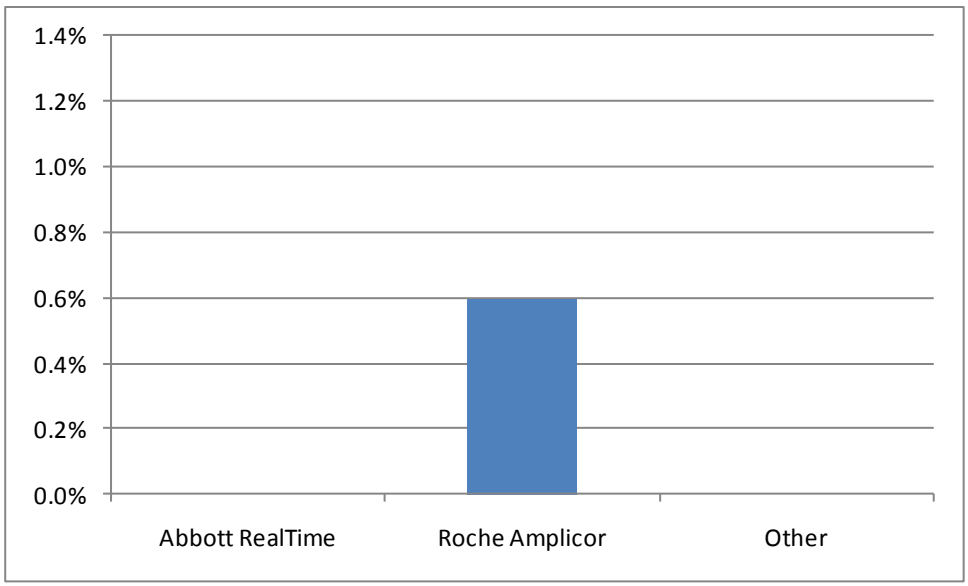


Figure 37 – Proportion of women with an HPV triage test who are HPV positive, by age and cytology result



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 (14 women and nine women respectively).

Figure 38 - Proportion of HPV triage tests where the result was invalid, by HPV test type



No triage tests of the following HPV test type were recorded:Amplicor PCR, Digene HC2, Roche Linear Array

Table 22 - 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		aged 70+ yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Aotea Pathology Ltd	1	123	1	100.0	38	71.7	19	44.2	3	18.8	3	33.3	2	100.0
Canterbury Health Laboratories	3	218	1	33.3	6	7.6	8	10.4	1	2.4	4	19.0	0	0.0
Diagnostic Medlab Ltd	3	1133	1	33.3	111	27.5	85	21.7	39	15.4	15	19.2	3	50.0
LabPLUS	0	13	0	0.0	1	16.7	0	0.0	1	50.0	1	50.0	0	0.0
Medlab Central	0	29	0	0.0	3	33.3	1	12.5	0	0.0	1	25.0	0	0.0
Medlab South Christchurch	4	215	2	50.0	33	37.1	15	18.5	11	34.4	2	15.4	0	0.0
Pathlab	0	171	0	0.0	28	47.5	27	45.8	9	30.0	6	27.3	1	100.0
Southern Community Labs	3	140	1	33.3	26	54.2	19	42.2	14	48.3	8	44.4	0	0.0
Total	**14**	**2,042**	**6**	**42.9**	**246**	**33.0**	**174**	**24.6**	**78**	**18.9**	**40**	**24.0**	**6**	**66.7**

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

Table 23 - 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)											
	<30 yrs	30+yrs	<30 yrs		30-39yrs		40-49yrs		50-59yrs		60-69yrs		Aged 70+yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Aotea Pathology Ltd	1	120	1	100.0	48	77.4	23	62.2	12	80.0	2	33.3	0	0.0
Canterbury Health Laboratories	4	111	4	11.0	22	46.8	21	48.8	9	50.0	1	33.3	0	0.0
Diagnostic Medlab Ltd	1	745	0	0.0	198	57.1	121	48.2	45	40.9	24	66.7	1	100.0
LabPLUS	0	4	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Medlab Central	1	39	0	0.0	16	76.2	6	60.0	1	14.3	1	100.0	0	0.0
Medlab South Christchurch	0	94	-	-	28	63.6	15	50.0	7	41.2	2	66.7	0	0.0
Pathlab	1	155	0	0.0	52	67.5	22	53.7	17	65.4	8	72.7	0	0.0
Southern Community Labs	5	247	5	100.0	80	67.2	58	65.9	21	63.6	7	100.0	0	0.0
Total	**13**	**1,515**	**10**	**76.9**	**444**	**61.7**	**266**	**53.1**	**112**	**49.6**	**45**	**67.2**	**1**	**100.0**

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

Table 24 – Time elapsed between the collection dates of cytology sample and the HPV sample, by laboratory

Laboratory	Time between cytology sample and subsequent HPV test sample									
	Same day (reflex test)		1 day - 4 weeks		>4 – 12 weeks		>12 – 26 weeks		>26 weeks	
	N	%	N	%	N	%	N	%	N	%
Aotea Pathology Ltd	233	94.0	15	6.0	0	0.0	0	0.0	0	0.0
Canterbury Health Laboratories	335	99.7	0	0.0	0	0.0	1	0.3	0	0.0
Diagnostic Medlab Ltd	1895	99.9	0	0.0	1	0.1	0	0.0	0	0.0
LabPLUS	16	94.1	1	5.9	0	0.0	0	0.0	0	0.0
Medlab Central	68	98.6	0	0.0	1	1.4	0	0.0	0	0.0
Medlab South Christchurch	309	98.7	1	0.3	1	0.3	2	0.6	0	0.0
Pathlab	313	95.7	4	1.2	9	2.8	1	0.3	0	0.0
Southern Community Labs	389	98.5	1	0.3	3	0.8	2	0.5	0	0.0
Total	**3,558**	**98.8**	**22**	**0.6**	**15**	**0.4**	**6**	**0.2**	**0**	**0.0**

Table 25 – Volume of HPV test samples received by laboratories during the monitoring period, by age

	HPV tests received*	
Age	**N**	**% of national total**
<20	15	0.1
20-24	452	3.1
25-29	845	5.9
30-34	2,054	14.3
35-39	2,641	18.3
40-44	2,376	16.5
45-49	2,145	14.9
50-54	1,592	11.0
55-59	1,083	7.5
60-64	733	5.1
65-69	382	2.7
70+	93	0.6
Total	**14,411**	**100.0**

** HPV tests received which were performed for any purpose*

Table 26 - Volume of HPV test samples received by laboratories during the monitoring period, by ethnicity

	HPV tests received*	
Ethnicity	**N**	**% of national total**
Māori	1,283	8.9
Pacific	367	2.5
Asian	736	5.1
European/Other	12,025	83.4
Total	**14,411**	**100.0**

** HPV tests received which were performed for any purpose*

Table 27 – Volume of HPV test samples received during the monitoring period, by laboratory

	HPV tests received*	
Laboratory	**N**	**% of national total**
Aotea Pathology Ltd	1,277	8.9
Canterbury Health Laboratories	1,701	11.8
Diagnostic Medlab Ltd	3,128	21.7
LabPLUS	441	3.1
Medlab Central	705	4.9
Medlab South Christchurch	1,895	13.1
Pathlab	1,412	9.8
Southern Community Labs	3,852	26.7
Total	**14,411**	**100.0**

** HPV tests received which were performed for any purpose*

Appendix A – Additional data

Indicator 1 - Coverage

Table 28 - Coverage by age (women 20-69 years screened in the three years prior to 31 December 2010, as a proportion of hysterectomy-adjusted female population)

Age (years)	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
20-24	155,305	84,452	54.4
25-29	147,162	97,606	66.3
30-34	141,012	101,964	72.3
35-39	153,271	118,079	77.0
40-44	154,804	122,363	79.0
45-49	148,257	119,942	80.9
50-54	125,747	101,683	80.9
55-59	101,752	79,861	78.5
60-64	90,611	66,271	73.1
65-69	70,504	44,755	63.5
TOTAL	**1,288,425**	**936,976**	**72.7**

Target: 75%; Coverage calculated using population projection for end-2010 based on 2006 Census data

Table 29 - Coverage by DHB (women 25-69 years screened in the three years prior to 31 December 2010, as a proportion of hysterectomy-adjusted female population)

DHB	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
Auckland	129,812	94,825	73.0
Bay of Plenty	53,096	41,434	78.0
Canterbury	130,570	98,778	75.7
Capital & Coast	80,293	64,093	79.8
Counties Manukau	126,135	85,899	68.1
Hawke's Bay	38,720	30,286	78.2
Hutt Valley	37,066	28,703	77.4
Lakes	26,147	20,126	77.0
Mid Central	41,098	30,444	74.1
Nelson Marlborough	35,812	28,428	79.4
Northland	39,348	29,201	74.2
Otago	46,675	36,999	79.3
South Canterbury	13,724	10,553	76.9
Southland	28,983	22,024	76.0
Tairawhiti	11,547	8,215	71.1
Taranaki	26,986	22,472	83.3
Waikato	90,547	67,871	75.0
Wairarapa	9,929	7,974	80.3
Waitemata	143,005	106,764	74.7
West Coast	8,336	5,812	69.7
Whanganui	15,294	11,337	74.1
Total	**1,133,121**	**852,238**	**75.2**

Target: 75%; Coverage calculated using population projection for end-2010 based on 2006 Census data
Excludes 286 women for whom DHB could not be determined

Table 30 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 31 December 2010, as a proportion of hysterectomy-adjusted female population)

Ethnicity	Hysterectomy-adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years)	
		N	%
Māori	147,653	83,347	56.4
Pacific	65,830	40,084	60.9
Asian	141,042	76,536	54.3
European/Other	778,595	652,557	83.8
Total	**1,133,121**	**852,524**	**75.2**

Coverage calculated using population projection for end-2010 based on 2006 Census data

Table 31 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 31 December 2010, as a proportion of hysterectomy-adjusted female population) – counts weighted using ethnicity adjustors to correct for undercounting in NCSP Register

Ethnicity	Hysterectomy-adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years; adjusted for ethnicity misclassification)	
		N	%
Māori	147,653	99,284	67.2
Pacific	65,830	44,436	67.5
Asian	141,042	99,705	70.7
European/Other	778,595	606,856	77.9

Coverage calculated using population projection for end-2010 based on 2006 Census data

Table 32 - Coverage by ethnicity (women 20-69 years screened in the three years prior to 31 December 2010, as a proportion of hysterectomy-adjusted female population) – counts weighted using ethnicity adjustors to correct for undercounting in NCSP Register

Ethnicity	Hysterectomy-adjusted population (ages 20-69 years)	Women screened in the last 3 years (ages 20-69 years; adjusted for ethnicity misclassification)	
		N	%
Māori	177,413	116,785	65.8
Pacific	78,460	49,949	63.7
Asian	165,567	104,667	63.2
European/ Other	866,985	660,232	76.2

Coverage calculated using population projection for end-2010 based on 2006 Census data

Table 33 - Coverage by age (women 20-69 years screened in the five years prior to 31 December 2010, as a proportion of hysterectomy-adjusted female population)

Age (years)	Hysterectomy-adjusted population	Number of women screened in last 5 years	% screened in the last 5 years
20-24	155,305	91,204	58.7
25-29	147,162	118,182	80.3
30-34	141,012	121,434	86.1
35-39	153,271	138,315	90.2
40-44	154,804	141,775	91.6
45-49	148,257	138,675	93.5
50-54	125,747	117,516	93.5
55-59	101,752	91,568	90.0
60-64	90,611	75,626	83.5
65-69	70,504	51,887	73.6
TOTAL	**1,288,425**	**1,086,182**	**84.3**

Coverage calculated using population projection for end-2010 based on 2006 Census data

Table 34 - Coverage by DHB (women aged 25-69 years screened in the five years prior to 31 December 2010, as a proportion of hysterectomy-adjusted female population)

DHB	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
Auckland	129,812	112,020	86.3
Bay of Plenty	53,096	48,146	90.7
Canterbury	130,570	115,367	88.4
Capital & Coast	80,293	74,298	92.5
Counties Manukau	126,135	101,594	80.5
Hawke's Bay	38,720	35,034	90.5
Hutt Valley	37,066	33,666	90.8
Lakes	26,147	23,447	89.7
Mid Central	41,098	35,297	85.9
Nelson Marlborough	35,812	32,910	91.9
Northland	39,348	34,254	87.1
Otago	46,675	42,547	91.2
South Canterbury	13,724	12,293	89.6
Southland	28,983	25,681	88.6
Tairawhiti	11,547	10,019	86.8
Taranaki	26,986	25,742	95.4
Waikato	90,547	79,245	87.5
Wairarapa	9,929	9,019	90.8
Waitemata	143,005	123,883	86.6
West Coast	8,336	6,834	82.0
Whanganui	15,294	13,289	86.9
Total	**1,133,121**	**994,585**	**87.8**

Coverage calculated using population projection for end-2010 based on 2006 Census data
Excludes 393 women for whom DHB could not be determined

Table 35 - Coverage by ethnicity – women aged 25-69 years screened in the five years prior to 31 December 2010, as a proportion of hysterectomy-adjusted female population

Ethnicity	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
Māori	147,653	101,375	68.7
Pacific	65,830	48,253	73.3
Asian	141,042	89,224	63.3
European/Other	778,595	756,126	97.1
TOTAL	**1,133,121**	**994,978**	**87.8**

Coverage calculated using population projection for end-2010 based on 2006 Census data

Table 36 - Women screened under 20 years of age, and aged 15-19 years, in the three years prior to 31 December 2010, by DHB.

DHB	Number of women screened in last 3 years		% of population* aged 15-19 years screened
	aged < 20 years	aged 15-19 years	
Auckland	1,697	1,688	11.1
Bay of Plenty	584	582	8.2
Canterbury	2,644	2,630	14.7
Capital & Coast	904	901	9.1
Counties Manukau	2,099	2,085	10.5
Hawke's Bay	622	619	11.5
Hutt Valley	481	478	9.1
Lakes	306	306	8.4
Mid Central	432	430	6.5
Nelson Marlborough	413	413	10.0
Northland	427	422	8.0
Otago	789	783	9.7
South Canterbury	270	265	15.3
Southland	390	390	11.7
Tairawhiti	175	174	10.2
Taranaki	355	354	9.6
Waikato	960	958	7.1
Wairarapa	168	167	13.4
Waitemata	2,298	2,286	11.6
West Coast	105	105	10.0
Whanganui	137	136	6.1
Total	**16,256**	**16,172**	**10.3**

** Population used is the population projection for end-2010 based on 2006 Census data*
Excludes seven women for whom DHB could not be determined, and one woman who was aged zero years at the time of her cervical sample

Table 37 – Women screened under 20 years of age, as a proportion of all women screened in the three years to 31 December 2010, by DHB

DHB	Number of women screened in last 3 years		Proportion of women screened who were aged < 20 years (%)
	aged < 20 years	all ages	
Auckland	1,697	105,719	1.6
Bay of Plenty	584	46,704	1.3
Canterbury	2,644	112,696	2.3
Capital & Coast	904	73,087	1.2
Counties Manukau	2,099	96,654	2.2
Hawke's Bay	622	34,255	1.8
Hutt Valley	481	32,237	1.5
Lakes	306	22,524	1.4
Mid Central	432	35,121	1.2
Nelson Marlborough	413	31,439	1.3
Northland	427	32,671	1.3
Otago	789	43,354	1.8
South Canterbury	270	11,824	2.3
Southland	390	24,875	1.6
Tairawhiti	175	9,353	1.9
Taranaki	355	25,392	1.4
Waikato	960	77,296	1.2
Wairarapa	168	8,968	1.9
Waitemata	2,298	119,150	1.9
West Coast	105	6,477	1.6
Whanganui	137	12,780	1.1
Total	**16,256**	**962,576**	**1.7**

Excludes seven women for whom DHB could not be determined, and one woman who was aged zero years at the time of her cervical sample

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 2010, by DHB

DHB	Number of women screened in last 3 years aged 10-19 years	aged 18-19 years	% aged 18-19 years
Auckland	1,697	1,340	79.0
Bay of Plenty	584	466	79.8
Canterbury	2,644	2,086	78.9
Capital & Coast	904	792	87.6
Counties Manukau	2,099	1,570	74.8
Hawke's Bay	622	496	79.7
Hutt Valley	481	388	80.7
Lakes	306	239	78.1
Mid Central	432	393	91.0
Nelson Marlborough	413	334	80.9
Northland	427	342	80.1
Otago	789	634	80.4
South Canterbury	270	189	70.0
Southland	390	313	80.3
Tairawhiti	175	129	73.7
Taranaki	355	281	79.2
Waikato	960	833	86.8
Wairarapa	168	119	70.8
Waitemata	2,298	1,722	74.9
West Coast	105	81	77.1
Whanganui	137	104	75.9
Unspecified	*7*	*4*	*57.1*
Total	**16,263**	**12,855**	**79.0**

Table 39 - Women aged 25-69 years screened in the three years to 31 December 2010, as a proportion of i) the hysterectomy-adjusted NZ female population and ii) the total NZ female population, by DHB

DHB	Women screened in the the last 3 years (hysterectomy-adjusted)	(no hysterectomy adjustment)
Auckland	73.0	67.4
Bay of Plenty	78.0	68.6
Canterbury	75.7	66.9
Capital & Coast	79.8	72.4
Counties Manukau	68.1	62.6
Hawke's Bay	78.2	68.9
Hutt Valley	77.4	69.4
Lakes	77.0	68.6
Mid Central	74.1	65.4
Nelson Marlborough	79.4	68.9
Northland	74.2	65.1
Otago	79.3	69.5
South Canterbury	76.9	66.2
Southland	76.0	67.3
Tairawhiti	71.1	63.9
Taranaki	83.3	73.1
Waikato	75.0	66.6
Wairarapa	80.3	69.4
Waitemata	74.7	67.1
West Coast	69.7	60.7
Whanganui	74.1	64.9

NZ female population used is the population projection for end-2010 based on 2006 Census data

Indicator 2 – First screening events

Table 40 - Age distribution of first screening events for the period 1 July to 31 December 2010

Age	Women with first events	% of first events (ages 20-69 yrs) which occurred in that age group
20-24	10,010	46.9
25-29	3,237	15.2
30-34	2,204	10.3
35-39	1,643	7.7
40-44	1,252	5.9
45-49	981	4.6
50-54	699	3.3
55-59	549	2.6
60-64	477	2.2
65-69	307	1.4
20-69 yrs	**21,359**	

Note: Percentage = number of first screens in age group divided by total number of first screens multiplied by 100

Indicator 3 – Withdrawals

Table 41 - Withdrawal rates by DHB for the period 1 July to 31 December 2010

DHB	Enrolled at start	Women withdrawn	
		N	%
Auckland	166,544	4	0.002
Bay of Plenty	65,282	3	0.005
Canterbury	159,548	3	0.002
Capital & Coast	104,330	3	0.003
Counties Manukau	142,626	5	0.004
Hawke's Bay	47,662	2	0.004
Hutt Valley	48,164	-	0.000
Lakes	33,049	1	0.003
Mid Central	49,924	1	0.002
Nelson Marlborough	42,731	6	0.014
Northland	46,371	5	0.011
Otago	59,719	4	0.007
South Canterbury	16,095	1	0.006
Southland	35,278	-	0.000
Tairawhiti	14,097	-	0.000
Taranaki	33,842	-	0.000
Waikato	109,438	5	0.005
Wairarapa	11,544	-	0.000
Waitemata	166,479	7	0.004
West Coast	9,252	-	0.000
Whanganui	18,652	-	0.000
Unspecified	*1,888*	*2*	*0.106*
Total	**1,382,515**	**52**	**0.004**

Table corrected October 2012.

Indicator 4 – Early re-screening

Table 42 - Early re-screening by five-year age group, 1 July to 31 December 2010 (cohort method)

Age	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
20-24	1,150	366	31.8
25-29	3,877	1,008	26.0
30-34	4,297	1,060	24.7
35-39	5,457	1,369	25.1
40-44	5,992	1,514	25.3
45-49	6,065	1,559	25.7
50-54	5,119	1,318	25.7
55-59	3,994	973	24.4
60-64	3,362	688	20.5
65-69	2,246	404	18.0
TOTAL	**41,559**	**10,259**	**24.7**

Table 43 - Early re-screening by DHB, 1 July to 31 December 2010 (cohort method)

DHB	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Auckland	4,750	1,519	32.0
Bay of Plenty	2,087	562	26.9
Canterbury	5,064	1,149	22.7
Capital & Coast	3,238	798	24.6
Counties Manukau	3,960	962	24.3
Hawke's Bay	1,433	316	22.1
Hutt Valley	1,493	230	15.4
Lakes	1,045	341	32.6
Mid Central	1,314	218	16.6
Nelson Marlborough	1,384	249	18.0
Northland	1,302	358	27.5
Otago	1,806	307	17.0
South Canterbury	545	124	22.8
Southland	1,047	182	17.4
Tairawhiti	389	77	19.8
Taranaki	1,153	142	12.3
Waikato	3,114	502	16.1
Wairarapa	382	122	31.9
Waitemata	5,249	1,950	37.1
West Coast	245	50	20.4
Whanganui	514	94	18.3
Unspecified	*45*	*7*	*15.6*
Total	**41,559**	**10,259**	**24.7**

Table 44 - Early re-screening by ethnicity, 1 July to 31 December 2010 (cohort method)

Ethnicity	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Māori	3,688	875	23.7
Pacific	1,577	331	21.0
Asian	3,263	955	29.3
European/Other	33,031	8,098	24.5
Total	**41,559**	**10,259**	**24.7**

Indicator 5 – Laboratory indicators

Indicator 5.2 – Accuracy of cytology predicting HSIL

Table 45 - Positive predictive value of a report of HSIL+SC cytology by laboratory, 1 July to 31 December 2010

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Aotea Pathology Ltd	66	93.0	46	69.7	5	7.0	71
Canterbury Health Laboratories	105	91.3	91	86.7	10	8.7	115
Diagnostic Medlab Ltd	303	87.8	221	72.9	42	12.2	345
LabPLUS	169	90.9	139	82.2	17	9.1	186
Medlab Central	83	83.0	63	75.9	17	17.0	100
Medlab South Christchurch	98	88.3	83	84.7	13	11.7	111
Pathlab	112	89.6	97	86.6	13	10.4	125
Southern Community Labs Ch-Ch	336	85.7	278	82.7	56	14.3	392
Southern Community Labs Dunedin	113	91.1	102	90.3	11	8.9	124
Total	**1,385**	**88.3**	**1,120**	**80.9**	**184**	**11.7**	**1,569**

Target: 65% - 85%

Table 46 - Positive predictive value of a report of ASC-H cytology by laboratory, 1 July to 31 December 2010

Laboratory	Histology available		Abnormality confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Aotea Pathology Ltd	53	79.1	27	50.9	14	20.9	67
Canterbury Health Laboratories	100	81.3	74	74.0	23	18.7	123
Diagnostic Medlab Ltd	218	77.0	83	38.1	65	23.0	283
LabPLUS	123	71.5	66	53.7	49	28.5	172
Medlab Central	58	71.6	34	58.6	23	28.4	81
Medlab South Christchurch	105	75.0	61	58.1	35	25.0	140
Pathlab	85	67.5	36	42.4	41	32.5	126
Southern Community Labs Ch-Ch	70	67.3	35	50.0	34	23.7	104
Southern Community Labs Dunedin	17	89.5	9	52.9	2	10.5	19
Total	**829**	**74.3**	**425**	**51.3**	**286**	**25.7**	**1,115**

Table 47 - Positive predictive value of a report of ASC-H + HSIL + SC cytology by laboratory, 1 July to 31 December 2010

Laboratory	Histology available		Abnormality confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Aotea Pathology Ltd	119	86.2	73	61.3	19	13.8	138
Canterbury Health Laboratories	205	86.1	165	80.5	33	13.9	238
Diagnostic Medlab Ltd	521	83.0	304	58.3	107	17.0	628
LabPLUS	292	81.6	205	70.2	66	18.4	358
Medlab Central	141	77.9	97	68.8	40	22.1	181
Medlab South Christchurch	203	80.9	144	70.9	48	19.1	251
Pathlab	197	78.5	133	67.5	54	21.5	251
Southern Community Labs Ch-Ch	406	81.9	313	77.1	90	18.1	496
Southern Community Labs Dunedin	130	90.9	111	85.4	13	9.1	143
Total	**2,214**	**82.5**	**1,545**	**69.8**	**470**	**17.5**	**2,684**

Indicator 5.5 – Laboratory turnaround time

Table 48 - Timeliness of cytology reporting by laboratory, 1 July to 31 December 2010

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
Aotea Pathology Ltd	4,494	19.5	18,192	78.9	22,686	98.4	369	1.6	23,055
Canterbury Health Laboratories	8,625	79.5	1,785	16.4	10,410	95.9	442	4.1	10,852
Diagnostic Medlab Ltd	55,969	97.5	721	1.3	56,690	98.7	731	1.3	57,421
LabPLUS	3,472	62.2	1,444	25.9	4,916	88.0	668	12.0	5,584
Medlab Central	11,728	70.8	312	1.9	12,040	72.7	4,519	27.3	16,559
Medlab South Christchurch	14,877	100.0	-	0.0	14,877	100.0	-	0.0	14,877
Pathlab	17,528	83.4	3,119	14.8	20,647	98.2	376	1.8	21,023
Southern Community Labs	51,793	79.7	12,863	19.8	64,656	99.5	300	0.5	64,956
Total	**168,486**	**78.6**	**38,436**	**17.9**	**206,922**	**96.5**	**7,405**	**3.5**	**214,327**

Target: 90 % within seven working days and 100% within 15 working days.

** 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 reporting period. Indicator 5.1 shows the total number of cytology samples* taken *within the reporting period.*

Table 49 - Timeliness of histology reporting by laboratory, 1 July to 31 December 2010

Laboratory	Laboratory turnaround time - histology								
	Within 5 days		6-15 days		Total within 15 days		More than 15 days		Total*
	N	%	N	%	N	%	N	%	N
Aotea Pathology Ltd	312	89.1	30	8.6	342	97.7	8	2.3	**350**
Canterbury Health Laboratories	1,467	85.9	209	12.2	1,676	98.2	31	1.8	**1,707**
Diagnostic Medlab Ltd	1,478	81.2	331	18.2	1,809	99.4	11	0.6	**1,820**
Hutt Hospital Laboratory	138	53.5	120	46.5	258	100.0	-	0.0	**258**
LabPLUS	343	47.0	237	32.5	580	79.5	150	20.5	**730**
Medlab Central	121	76.6	28	17.7	149	94.3	9	5.7	**158**
Medlab South Christchurch	181	100.0	-	0.0	181	100.0	-	0.0	**181**
Memorial Hospital Hastings Lab	61	96.8	2	3.2	63	100.0	-	0.0	**63**
Middlemore Hospital Laboratory	828	80.2	136	13.2	964	93.4	68	6.6	**1,032**
Nelson Hospital Laboratory	441	86.5	57	11.2	498	97.6	12	2.4	**510**
North Shore Hospital Laboratory	1,026	85.3	96	8.0	1,122	93.3	81	6.7	**1,203**
Northland Pathology Laboratory	236	93.3	16	6.3	252	99.6	1	0.4	**253**
Pathlab	659	69.2	231	24.3	890	93.5	62	6.5	**952**
Southern Community Labs	1,816	94.0	84	4.4	1,900	98.4	31	1.6	**1,931**
Taranaki Medlab	225	99.1	2	0.9	227	100.0	-	0.0	**227**
Waikato Hospital Laboratory	20	74.1	7	25.9	27	100.0	-	0.0	**27**
Wellington Hospital Laboratory	340	58.6	231	39.8	571	98.4	9	1.6	**580**
Total	**9,692**	**80.9**	**1,817**	**15.2**	**11,509**	**96.1**	**473**	**3.9**	**11,982**

Target: 90% within five working days and 100% within a reasonable time period of receipt of the sample

** 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 reporting period, while 5.4 includes all histology samples* taken *within the reporting period*

Table 50 – Timeliness of reporting for cytology with associated HPV triage testing by laboratory, 1 July to 31 December 2010

	Laboratory turnaround time – cytology with HPV triage testing				
	Within 15 days		More than 15 days		Total
Laboratory	**N**	**%**	**N**	**%**	**N**
Aotea Pathology Ltd	56	23.9	178	76.1	234
Canterbury Health Laboratories	182	56.0	143	44.0	325
Diagnostic Medlab Ltd	1,789	98.9	20	1.1	1,809
LabPLUS	4	36.4	7	63.6	11
Medlab Central	64	94.1	4	5.9	68
Medlab South Christchurch	310	100.0	-	0.0	310
Pathlab	290	93.5	20	6.5	310
Southern Community Labs	292	79.6	75	20.4	367
Total	**2,987**	**87.0**	**447**	**13.0**	**3,434**

Tests in women with low grade cytology results; excludes tests in women with abnormal cytology in the five preceding years or those aged less than 30 years

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

Table 51 – Women (ages 20-69 years) 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	253	196	77.5	210	83.0
Bay of Plenty	99	74	74.7	81	81.8
Canterbury	287	235	81.9	253	88.2
Capital & Coast	80	67	83.8	72	90.0
Counties Manukau	199	140	70.4	156	78.4
Hawke's Bay	104	81	77.9	89	85.6
Hutt Valley	44	38	86.4	42	95.5
Lakes	81	65	80.2	66	81.5
Mid Central	72	55	76.4	58	80.6
Nelson Marlborough	83	65	78.3	72	86.7
Northland	65	53	81.5	54	83.1
Otago	88	70	79.5	78	88.6
South Canterbury	28	20	71.4	23	82.1
Southland	63	48	76.2	50	79.4
Tairawhiti	12	7	58.3	7	58.3
Taranaki	70	50	71.4	59	84.3
Waikato	226	183	81.0	195	86.3
Wairarapa	12	7	58.3	7	58.3
Waitemata	288	235	81.6	258	89.6
West Coast	12	12	100.0	12	100.0
Whanganui	20	15	75.0	15	75.0
Total	**2,186**	**1,716**	**78.5**	**1,857**	**84.9**

Table 52 - Women (ages 20-69 years) with a histology report within 90 and 180 days of a high grade cytology report, by age

Age (years)	High grade Cytolgy	Follow-Up histology Within 90 days		Follow-up histology Within 180 days	
	N	N	%	N	%
20-24	470	357	76.0	390	83.0
25-29	491	401	81.7	433	88.2
30-34	328	260	79.3	282	86.0
35-39	278	245	88.1	259	93.2
40-44	175	145	82.9	159	90.9
45-49	149	123	82.6	126	84.6
50-54	110	80	72.7	87	79.1
55-59	90	52	57.8	63	70.0
60-64	49	29	59.2	30	61.2
65-69	46	24	52.2	28	60.9
Total	**2,186**	**1,716**	**78.5**	**1,857**	**84.9**

Table 53 - Women (ages 20-69 years) without any follow-up test within 180 days of a high grade cytology report, by DHB

DHB	High-grade cytology	Without a follow-up test by 180 days	
	N	N	%
Auckland	253	18	7.1
Bay of Plenty	99	9	9.1
Canterbury	287	19	6.6
Capital & Coast	80	5	6.3
Counties Manukau	199	18	9.0
Hawke's Bay	104	5	4.8
Hutt Valley	44	-	0.0
Lakes	81	5	6.2
Mid Central	72	3	4.2
Nelson Marlborough	83	7	8.4
Northland	65	5	7.7
Otago	88	6	6.8
South Canterbury	28	1	3.6
Southland	63	5	7.9
Tairawhiti	12	2	16.7
Taranaki	70	3	4.3
Waikato	226	21	9.3
Wairarapa	12	2	16.7
Waitemata	288	18	6.3
West Coast	12	-	0.0
Whanganui	20	1	5.0
Total	**2,186**	**153**	**7.0**

Table 54 - Women (ages 20-69 years) without any follow-up test within 180 days of a high grade cytology report, by ethnicity

Ethnicity	High-grade cytology	Without a follow-up test by 180 days	
	N	N	%
Māori	380	43	11.3
Pacific	79	10	12.7
Asian	172	18	10.5
European/Other	1,555	82	5.3
Total	**2,186**	**153**	**7.0**

Indicator 8 – HPV tests

Table 55 – Triage* testing of women with ASC-US cytology, by laboratory and age

	Total ASC-US results		Women with a subsequent HPV test			
	women aged < 30yrs	women aged 30+ yrs	women aged < 30yrs		women aged 30+ yrs	
Laboratory†	**N**	**N**	**N**	**%**	**N**	**%**
Aotea Pathology Ltd	158	127	1	0.6	125	98.4
Canterbury Health Laboratories	64	224	3	4.7	218	97.3
Diagnostic Medlab Ltd	436	1,145	3	0.7	1,140	99.6
LabPLUS	97	33	0	0.0	13	39.4
Medlab Central	84	100	0	0.0	29	29.0
Medlab South Christchurch	111	231	4	3.6	215	93.1
Pathlab	154	202	0	0.0	171	84.7
Southern Community Labs Ch-Ch	10	3	0	0.0	2	66.7
Southern Community Labs Dunedin	156	172	3	1.9	138	80.2
Total	**1,270**	**2,237**	**14**	**1.1**	**2,051**	**91.7**

** As defined on page 79. Excludes tests in women with abnormal cytology in the five preceding years*

† 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 56 – Triage* testing of women with LSIL cytology

	Total LSIL results		Women with an HPV test			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
Laboratory†	**N**	**N**	**N**	**%**	**N**	**%**
Aotea Pathology Ltd	284	122	1	0.4	121	99.2
Canterbury Health Laboratories	135	116	4	3.0	111	95.7
Diagnostic Medlab Ltd	816	753	1	0.1	752	99.9
LabPLUS	98	7	0	0.0	4	57.1
Medlab Central	229	85	1	0.4	39	45.9
Medlab South Christchurch	184	106	0	0.0	94	88.7
Pathlab	303	196	1	0.3	155	79.1
Southern Community Labs Ch-Ch	24	7	0	0.0	4	57.1
Southern Community Labs Dunedin	661	339	5	0.8	243	71.7
Total	**2,734**	**1,731**	**13**	**0.5**	**1523**	**88.0**

** As defined on page 79. Excludes tests in women with abnormal cytology in the five preceding years*

† 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 57 – Invalid HPV triage* tests following ASC-US cytology, by laboratory

	Total ASC-US results		Women with invalid HPV results			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
Laboratory†	**N**	**N**	**N**	**%**	**N**	**%**
Aotea Pathology Ltd	1	125	0	0	2	1.6
Canterbury Health Laboratories	4	221	0	0	0	0.0
Diagnostic Medlab Ltd	3	1,140	0	0	7	0.6
LabPLUS	0	14	0	0	0	0.0
Medlab Central	0	29	0	0	0	0.0
Medlab South Christchurch	3	212	0	0	0	0.0
Pathlab	0	169	0	0	0	0.0
Southern Community Labs Ch-Ch	0	2	0	0	0	0.0
Southern Community Labs Dunedin	3	139	0	0	0	0.0
Total	**14**	**2,051**	**0**	**0**	**9**	**0.4**

** As defined on page 79. Excludes tests in women with abnormal cytology in the five preceding years*

† 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 HPV test, therefore laboratory totals may differ from those in Table 55

Table 58 – Invalid HPV triage* tests following LSIL cytology, by laboratory

	Total LSIL results		Women with invalid HPV results			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
Laboratory	**N**	**N**	**N**	**%**	**N**	**%**
Aotea Pathology Ltd	1	121	0	0	1	0.8
Canterbury Health Laboratories	4	112	0	0	0	0.0
Diagnostic Medlab Ltd	1	754	0	0	7	0.9
LabPLUS	0	4	0	0	0	0.0
Medlab Central	1	38	0	0	0	0.0
Medlab South Christchurch	0	94	0	0	0	0.0
Pathlab	1	154	0	0	0	0.0
Southern Community Labs Ch-Ch	0	3	0	0	0	0.0
Southern Community Labs Dunedin	5	243	0	0	0	0.0
Total	**13**	**1,523**	**0**	**0**	**8**	**0.5**

** As defined on page 79. Excludes tests in women with abnormal cytology in the five preceding years*

† 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 HPV test, therefore laboratory totals may differ from those in Table 56

Table 59 – Validity of HPV triage tests, by test technology

Test technology	Total HPV triage test results	Invalid		Valid	
	N	**N**	**%**	**N**	**%**
Abbott RealTime	736	-	0	736	100
Amplicor PCR	-	-	0.0	-	0.0
Digene HC2	-	-	0.0	-	0.0
Roche Amplicor	2,847	17	0.6	2,830	99.4
Roche Linear Array	-	-	0.0	-	0.0
Other	18	-	0.0	18	100.0
Total	**3,601**	**17**	**0.5**	**3,584**	**99.5**

Appendix B – Bethesda 2001 New Zealand Modified (2005)

TBS code	Descriptor
Specimen type	
CPS	Conventional pap smear
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 vaginalis
O2	There are fungal organisms morphologically consistent with Candida species
O3	There is a shift in microbiological flora suggestive of 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 smear should be taken at the usual screening interval
R2	Please repeat the smear within three months
R3	Please repeat the smear within three months of the end of pregnancy
R4	Please repeat the smear in three months
R5	Please repeat the smear in six months
R6	Please repeat the smear in 12 months
R7	Because a previous smear showed atypical squamous cells or low grade changes, please repeat the smear in 12 months
R8	Annual smears are indicated because of previous high grade abnormality
R9	Referral for specialist assessment is indicated
R10	Urgent referral for specialist assessment is indicated
R11	Further assessment is recommended
R12	Please repeat the smear 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
Atypia		M69700	M67000	CIN 1	7
HPV, koilocytosis, condyloma (NOS) Condyloma acuminatum	 M76700	M76700 M76720	M76700 M76720	HPV	9
Dysplasia / CIN NOS		M74000	M67015	CIN 1	10
CIN I (LSIL) (VAIN I when used with T81/ T82000)		M74006	M67016	CIN 1	11
CIN II (HSIL) (VAIN II when used with T81/ T82000)		M74007		CIN 2	15
CIN III (HSIL) (VAIN III when used with T81/ T82000) Carcinoma in situ		M74008 M80102 M80702	 M80102 M80702	CIN 3	16 17 18
HSIL NOS		M67017	M67017	HSIL	14
Polyp		M76800	M76800	Negative/benign	5
Other (Morphologic abnormality, not dysplastic or malignant)		M01000	M01000	Negative/benign	6
Microinvasive squamous cell carcinoma		M80765	M80763	Micro-invasive	19
Invasive squamous cell carcinoma		M80703	M80703	Invasive SCC	22
Benign glandular atypia		M81400	M67030	Negative/benign	8
Glandular dysplasia		M81401	M67031	Glandular dysplasia	12
Adenocarcinoma in situ		M81402	M81402	Adenocarc. in situ	13
Invasive adenocarcinoma		M81403	M81403	Invasive adenocarcinoma	21
Adenosquamous carcinoma		M85603	M85603	Adenosquamous carcinoma	20
Metastatic tumour		M80006	M80006	Other cancer	28
Undifferentiated carcinoma		M80203	M80203	Other cancer	23
Sarcoma		M88003	M88003	Other cancer	24
Other codes accepted	**Code stored on register**	**1986 Code**	**1993 Code**	**Diagnostic category**	**Rank**
Carcinosarcoma	M88003	M89803	M89803	Other cancer	25
Choriocarcinoma	M80003	M91003	M91003	Other cancer	26
Miscellaneous primary tumour	M80003	M80003	M80003	Other cancer	27
Small cell carcinoma	M80003	M80413	M80413	Other cancer	29
Malignant tumour, Small cell type	M80003	M80023	M80023	Other cancer	30
Melanoma	M80003	M87203	M87203	Other cancer	31
Other primary epithelial malignancy	M80003	M80103	M80103	Other cancer	32

** As defined by the NCSP Register histology diagnosis significance ranking*

Appendix D – Indicator Definitions Targets and Reporting Details

Positive predictive value calculations

Table 60 – 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/CIN2-3				p	x	x	b	b	b		
Squam MI 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		

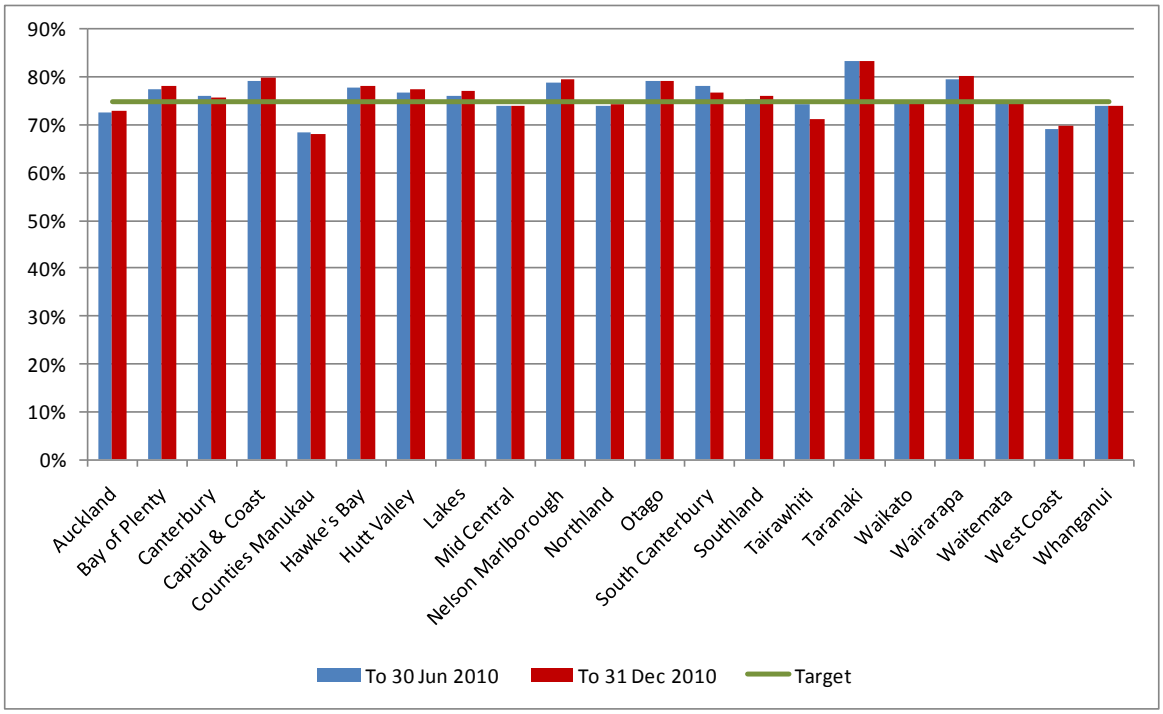
PPV% (ASC-H)= sum(p) / (sum(p)+sum(q))
PPV% (HSIL)= sum(x) / (sum(x)+sum(y))
PPV% (ASC-H+HSIL+SC)= (sum(p) + sum(x))/ (sum(p)+sum(q) +sum(x) + sum(y)

Appendix E – 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; CIN2 or 3: high grade
CIS	Carcinoma in situ. An older classification of CIN3. Abnormal cells that are confined to the surface epithelium of the cervix.
CPS	Conventional Pap (Papanicolaou) Smear
DHB	District Health Board
European/ Other	European women and women from non-Māori, non-Pacific, and non-Asian ethnic groups
HPV	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
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

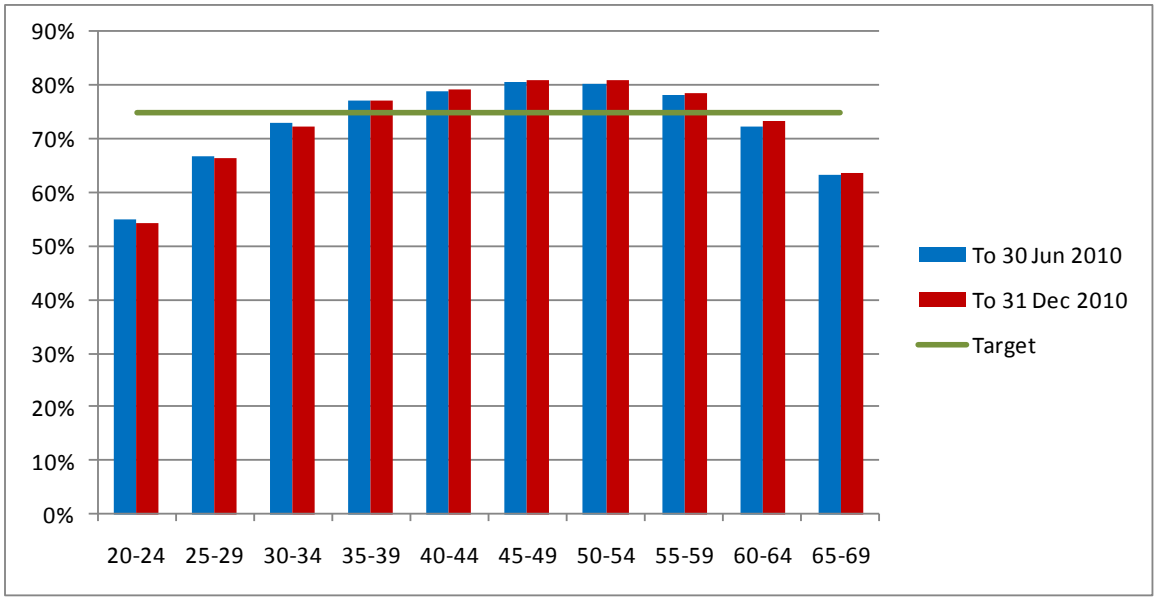
Appendix F – Trends

Figure 39 – Trends in the proportion of women aged 25-69 years screened in the previous three years, by DHB



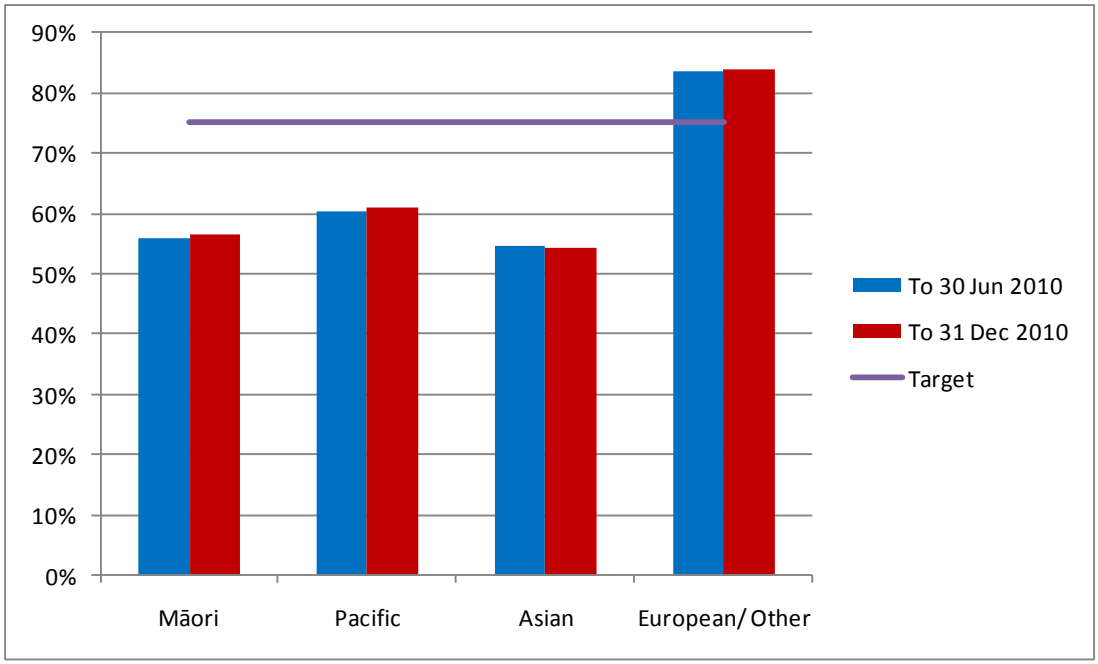
As a proportion of the NZ female population projection for end-2010 based on 2006 Census data, hysterectomy-adjusted

Figure 40 - Trends in the proportion of women aged 20-69 years screened in the previous three years, by age



As a proportion of the NZ female population projection for end-2010 based on 2006 Census data, hysterectomy-adjusted

Figure 41 - Trends in the proportion of women aged 25-69 years screened in the previous three years, by ethnicity



As a proportion of the NZ female population projection for end-2010 based on 2006 Census data, hysterectomy-adjusted

Figure 42 – Trends in the number of women screened in the previous three years who were aged less than 20 years at the time of their cervical sample, by DHB

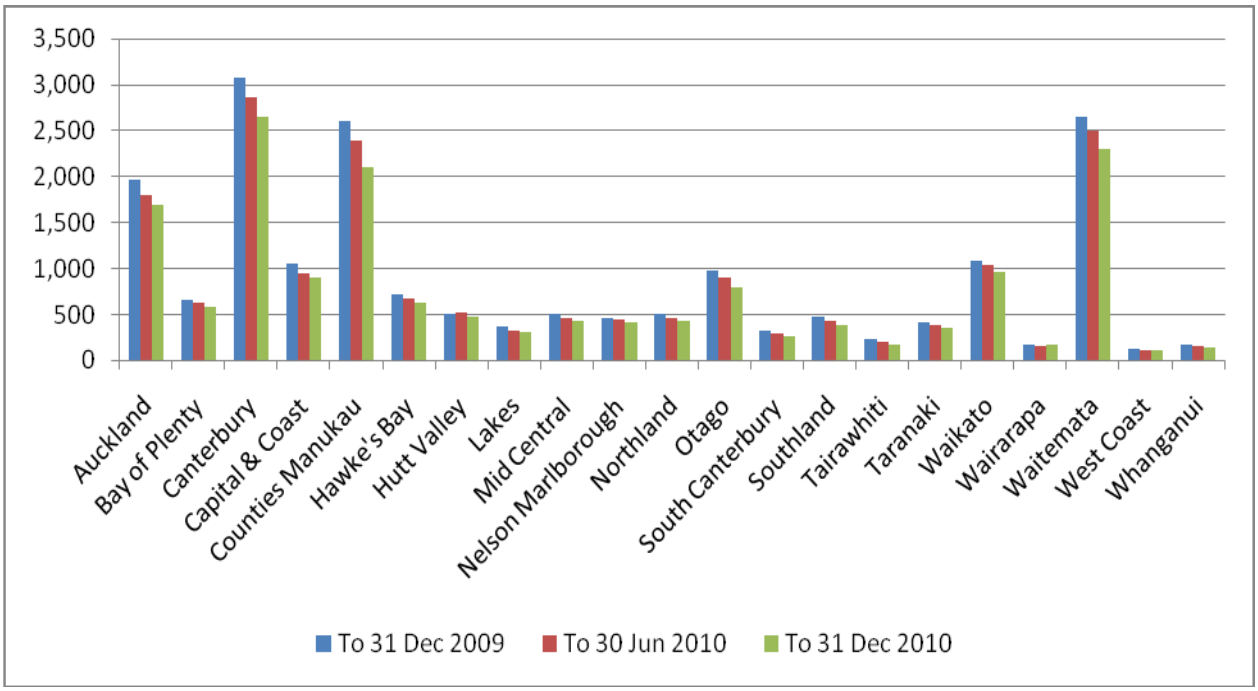


Figure 43 – Trends in the number of women with a first screening event, by DHB

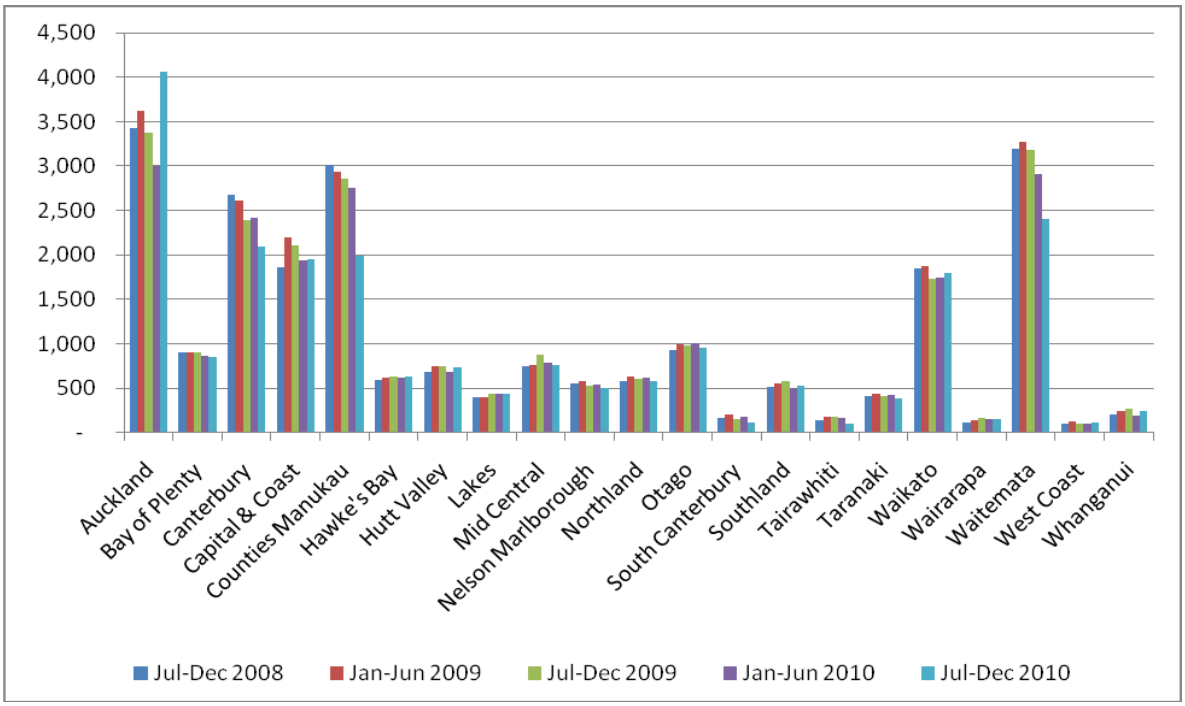


Figure 44 - Trends in the number of women with a first screening event, by age

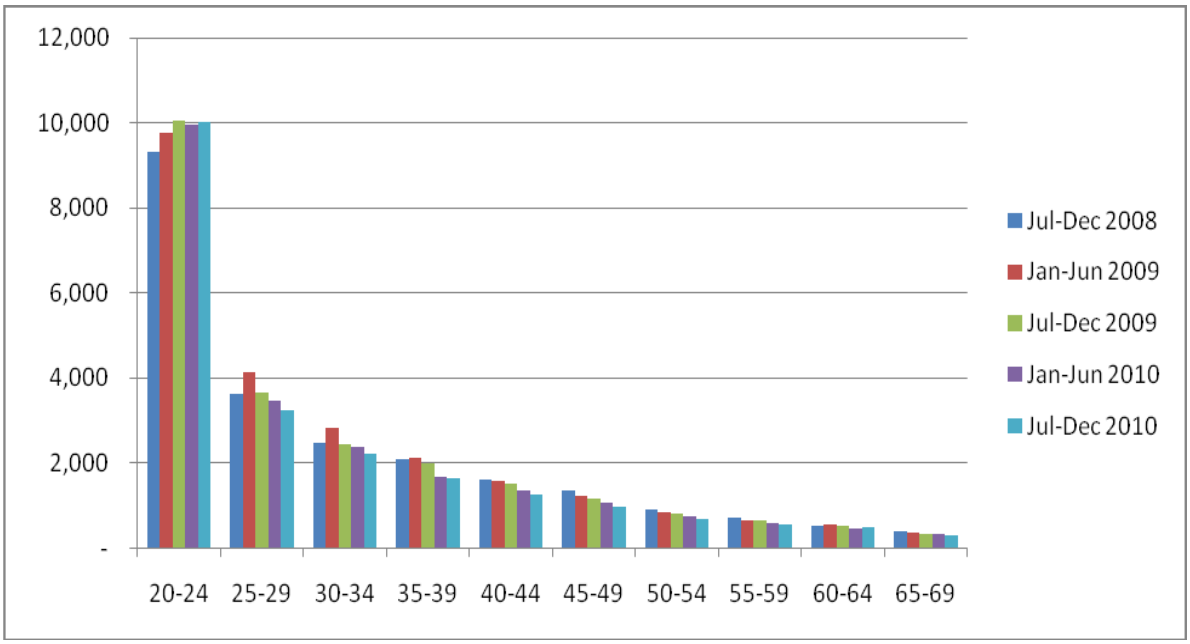


Figure 45 - Trends in the number of women with a first screening event, by ethnicity

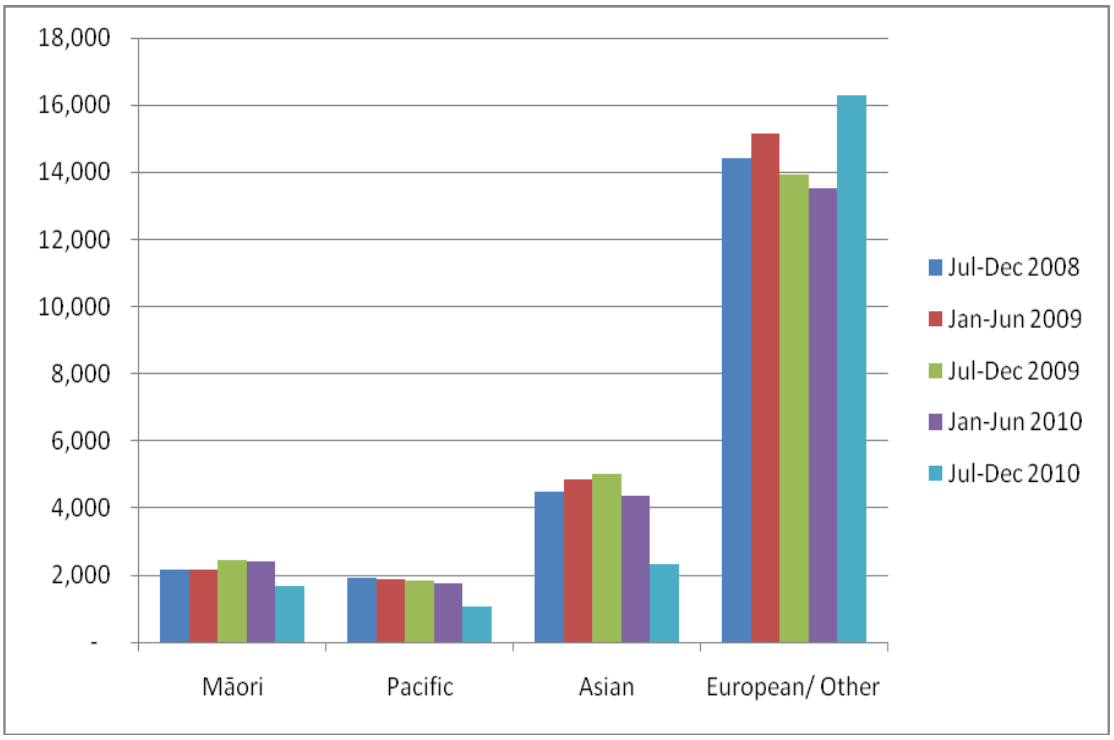


Figure 46 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

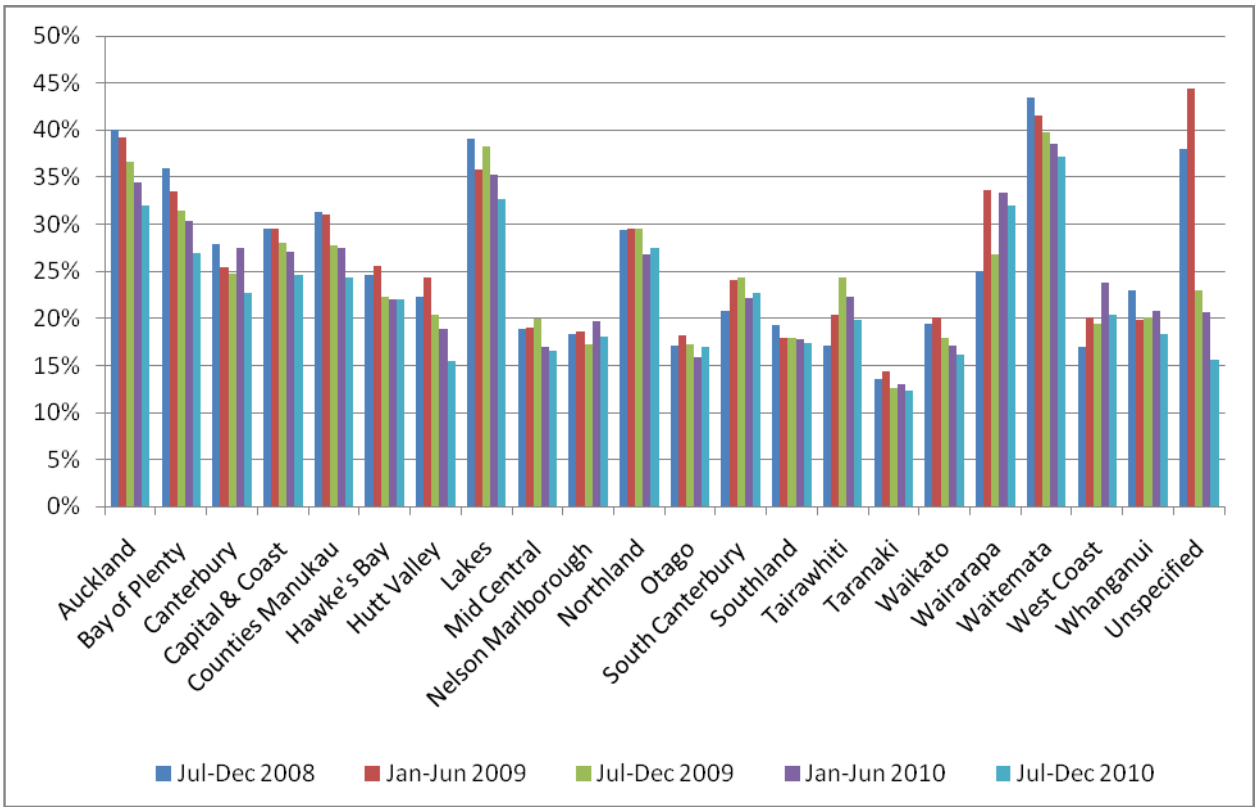


Figure 47 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by age

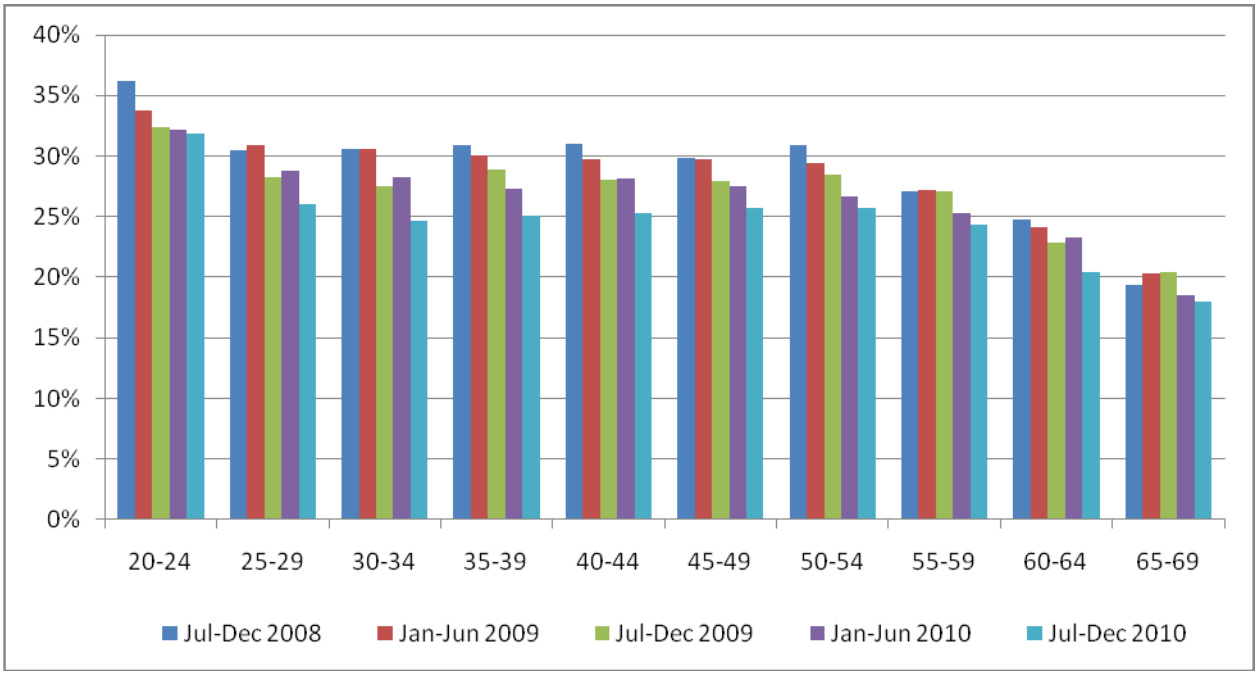


Figure 48 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity

Figure 49 – Trends in the proportion of LBC samples reported as unsatisfactory, by laboratory

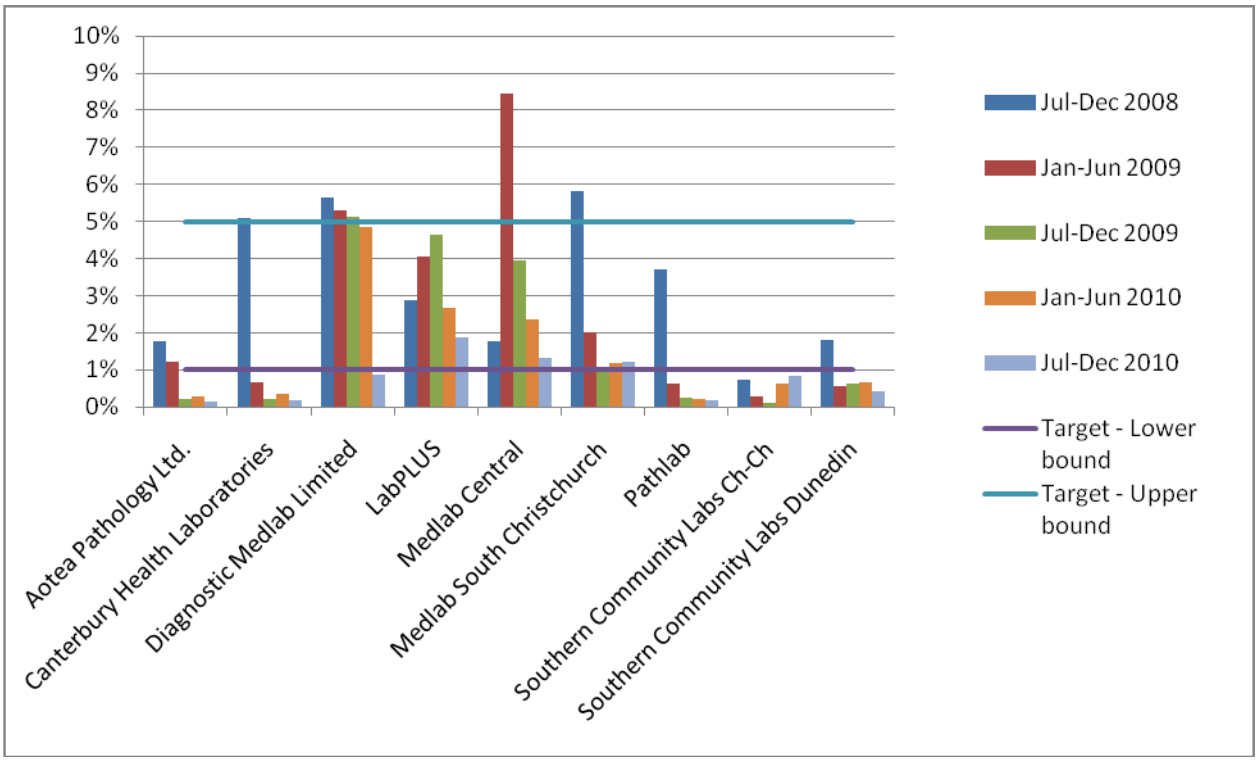


Figure 50 – Trends in the proportion of satisfactory cytology samples reported as negative, by laboratory

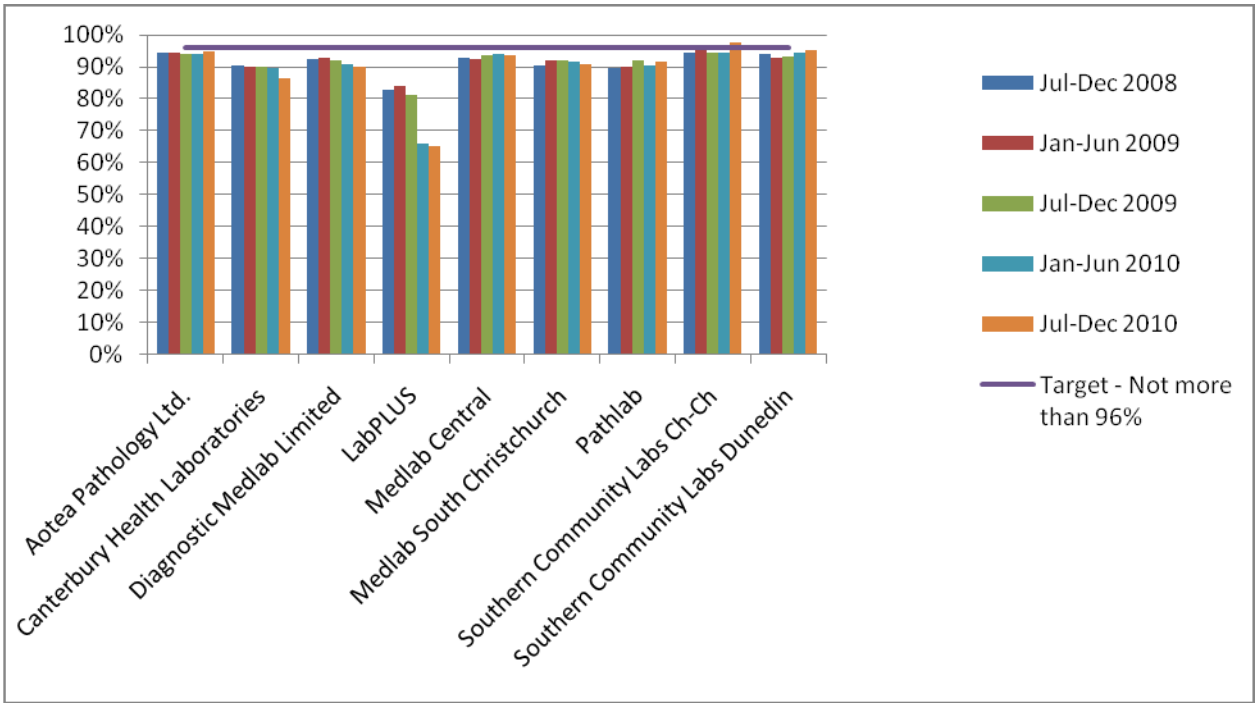


Figure 51 – Trends in the proportion of satisfactory cytology samples reported as abnormal, by laboratory

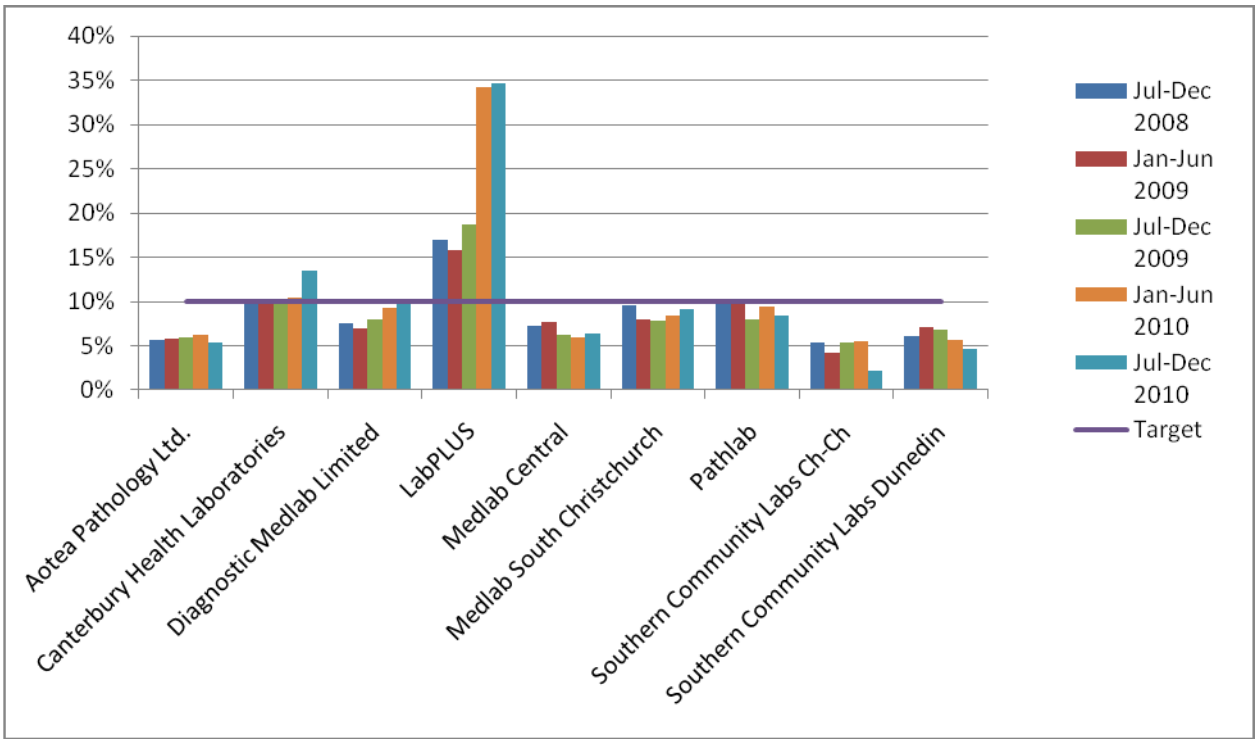


Figure 52 – Trends in the proportion of satisfactory cytology samples reported as HSIL, by laboratory

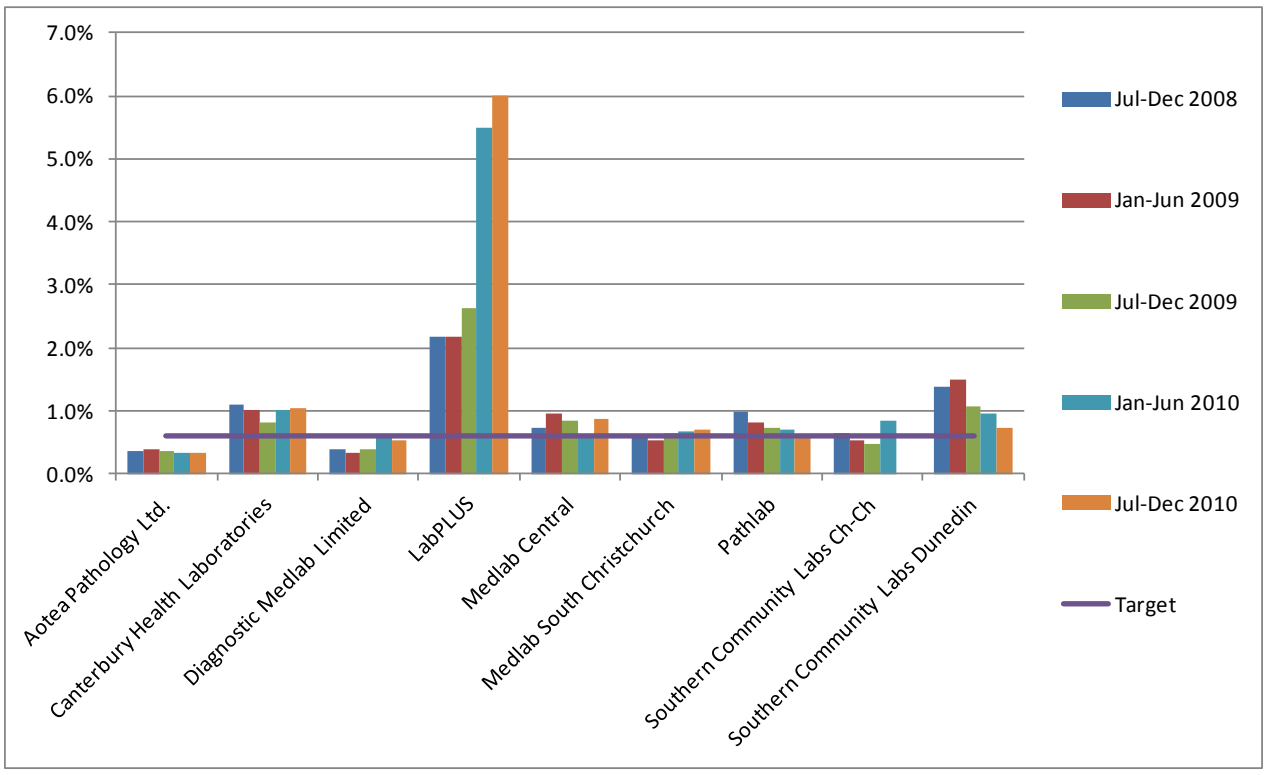


Figure 53 – Trends in positive predictive value of HSIL+SC cytology, by laboratory

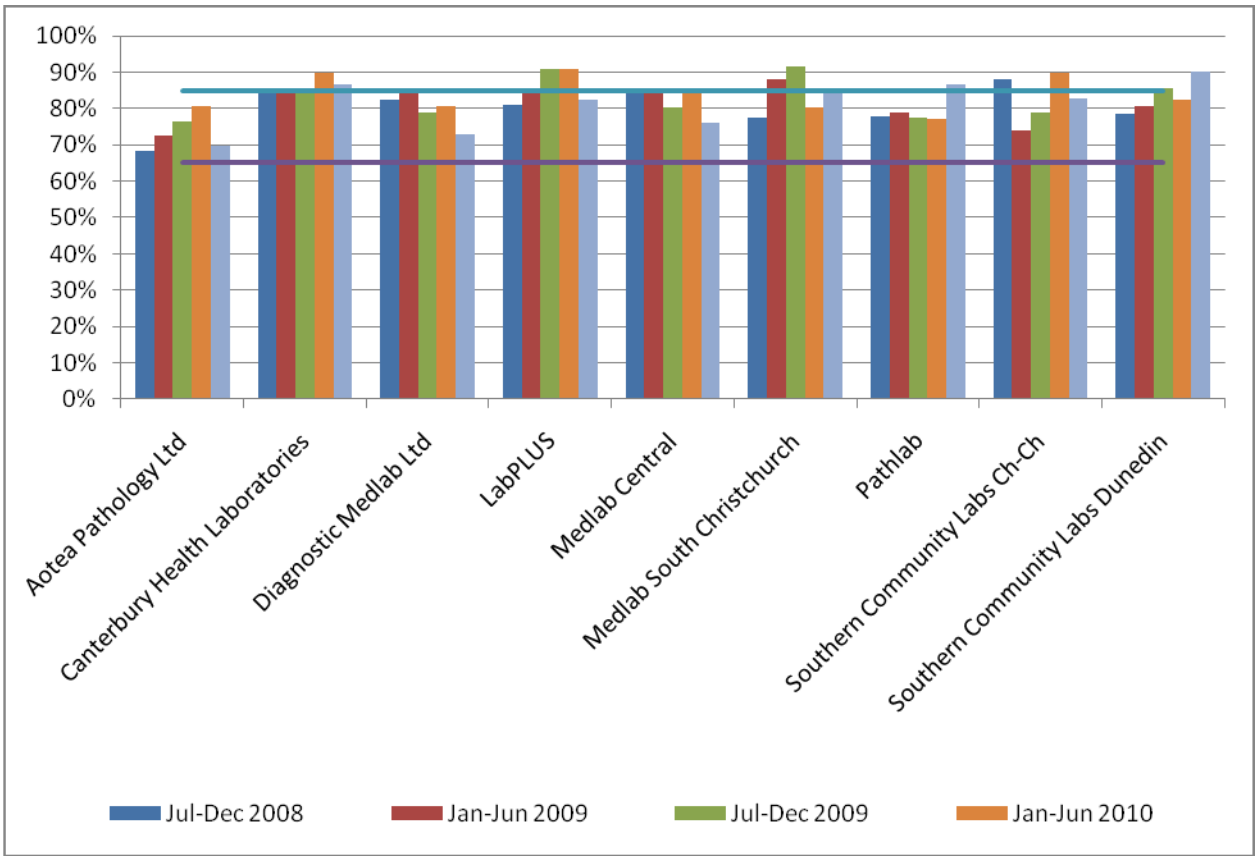


Figure 54 – Trends in positive predictive value of ASC-H+HSIL+SC cytology, by laboratory

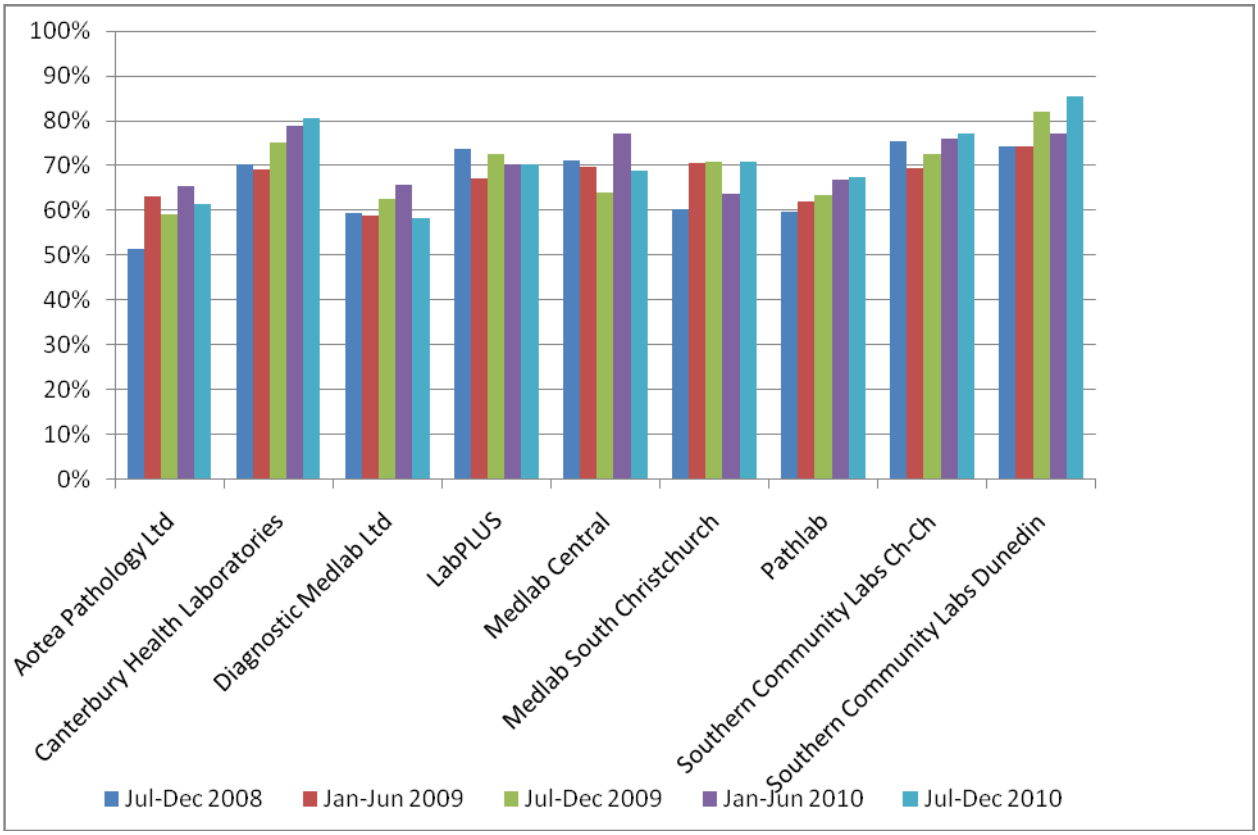


Figure 55 – Trends in the proportion of cytology results reported within seven working days, by laboratory

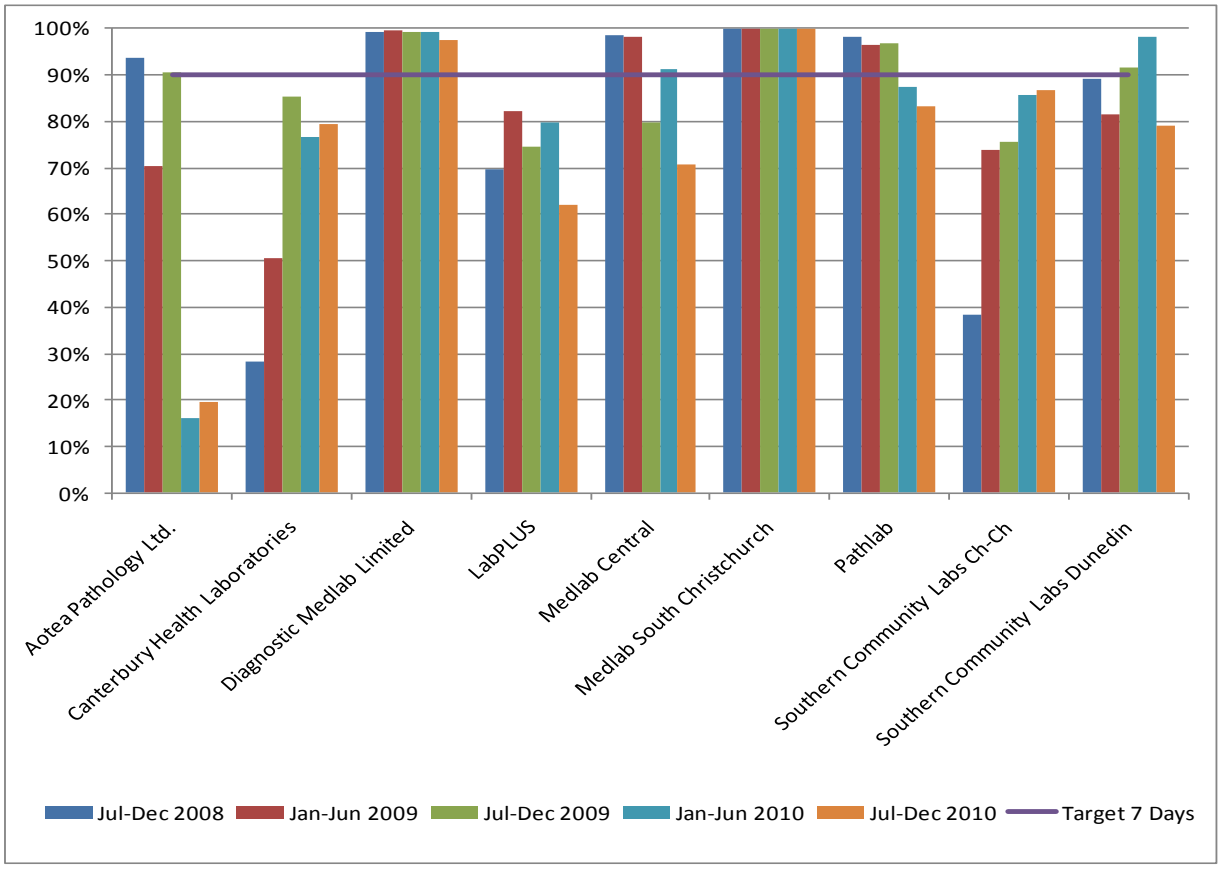


Figure 56 – Trends in the proportion of cytology results reported within fifteen working days, by laboratory

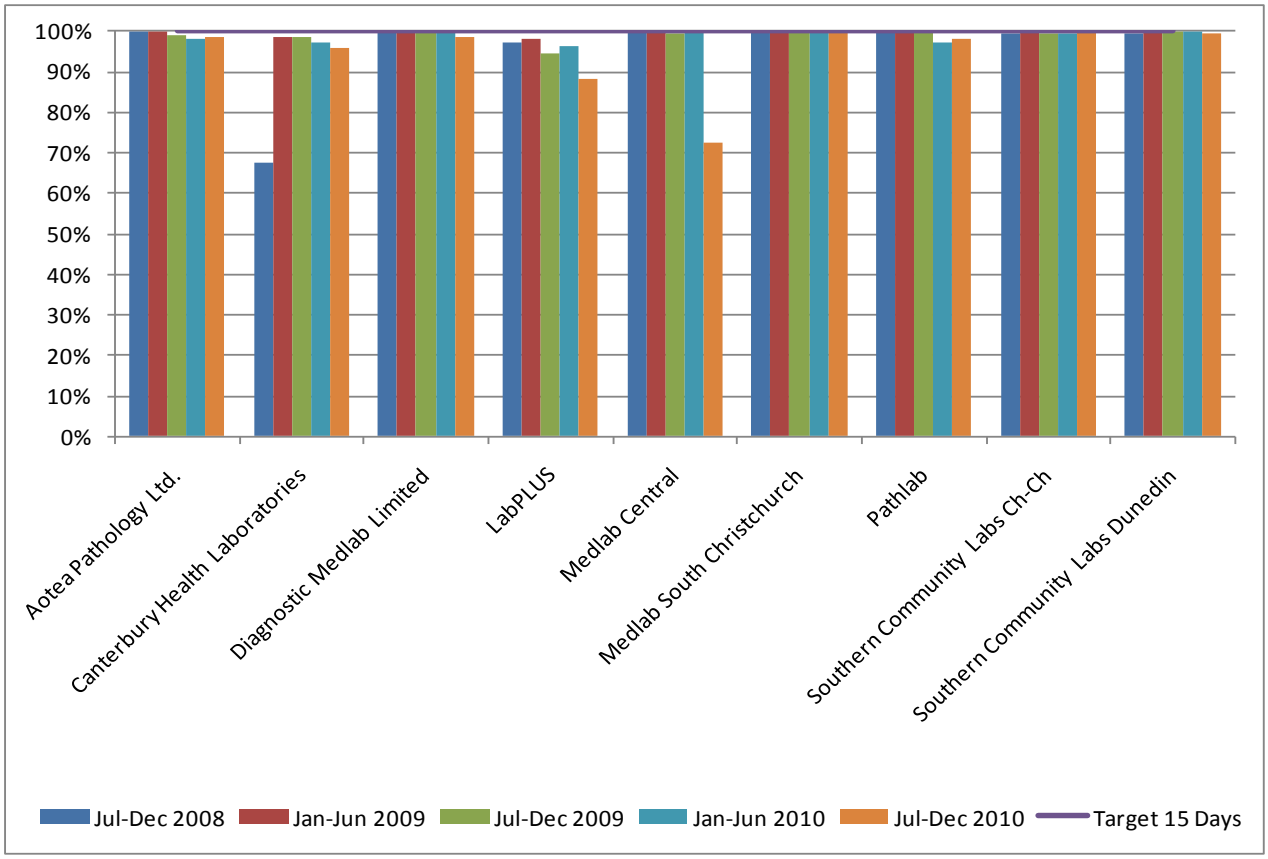


Figure 57 – Trends in the proportion of histology results reported within five working days, by laboratory

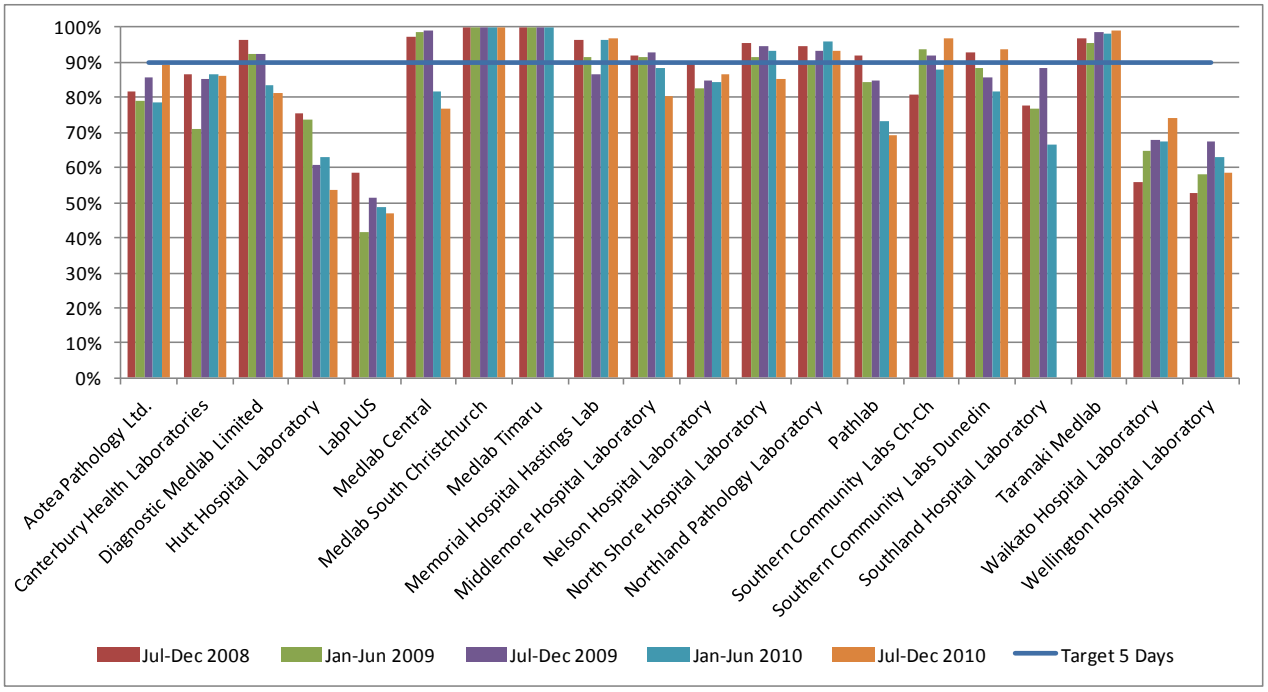


Figure 58 – Trends in the proportion of histology results reported within fifteen working days, by laboratory

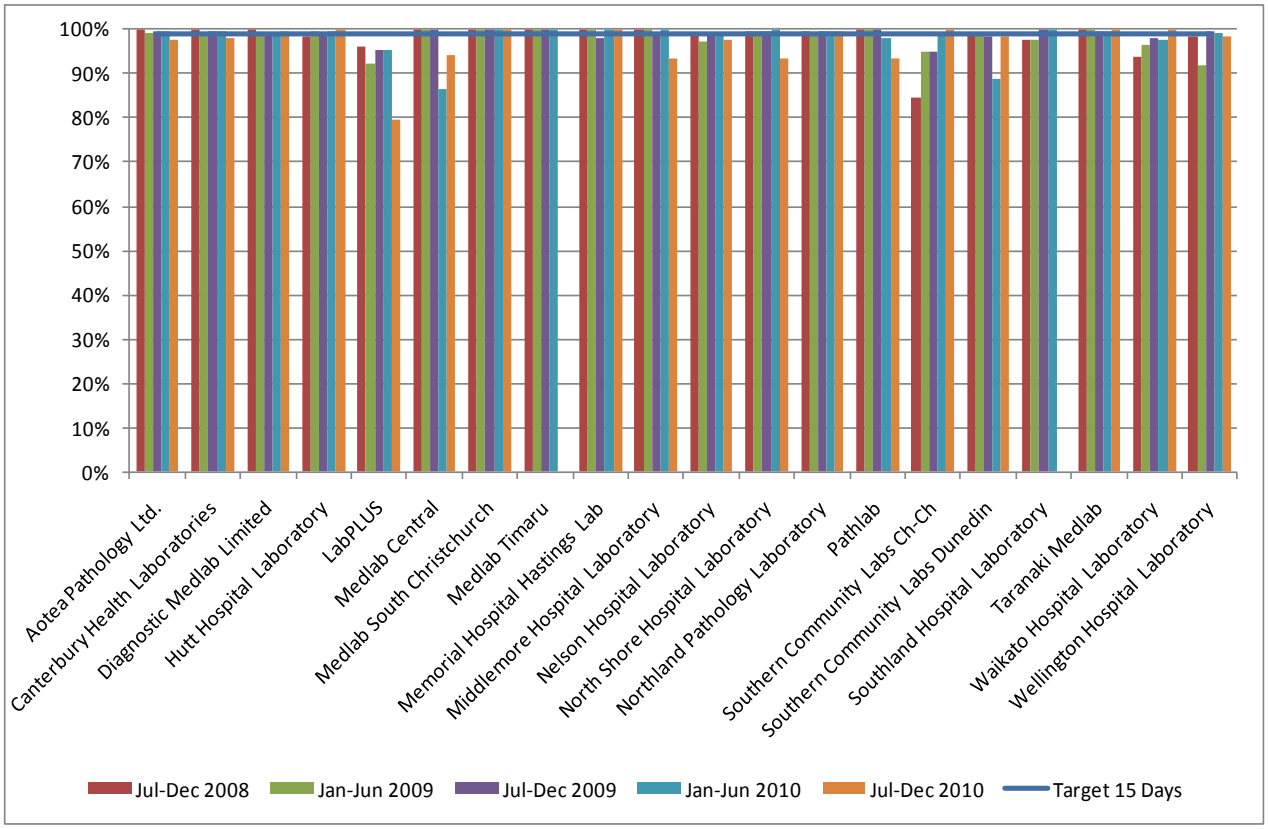


Figure 59 – Trends in the proportion of women with high grade cytology who have a histology report within 90 days, by DHB

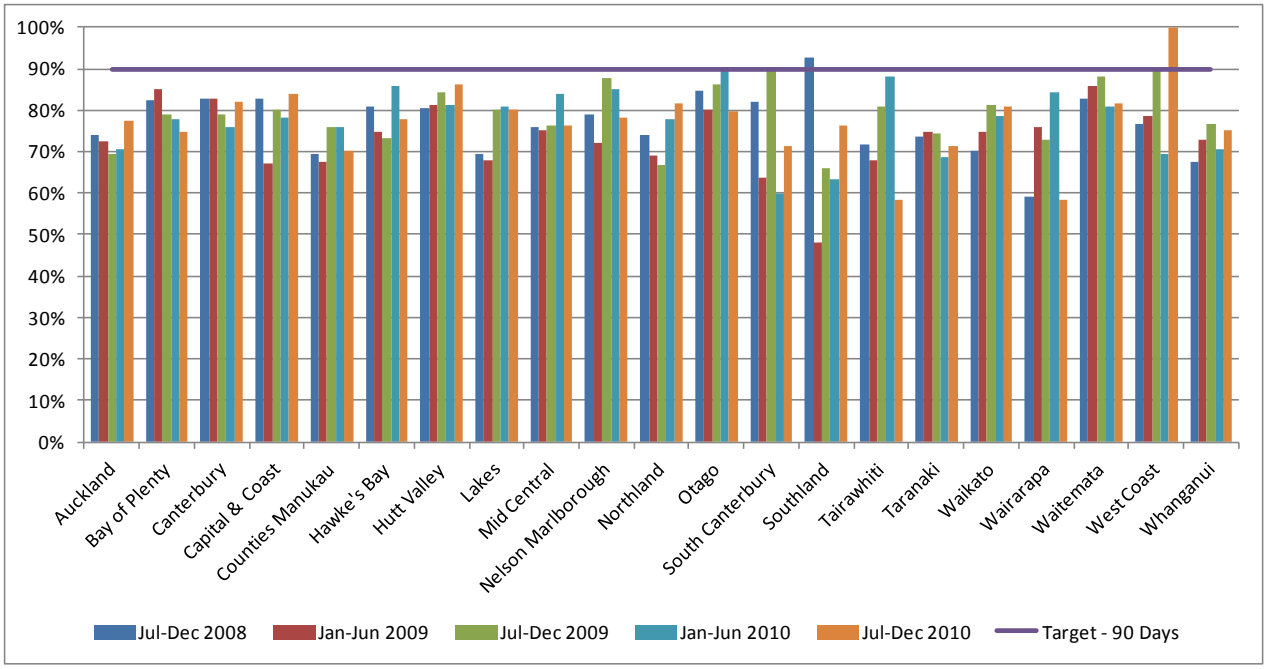


Figure 60 – Trends in the proportion of women with high grade cytology who have a histology report within 180 days, by DHB

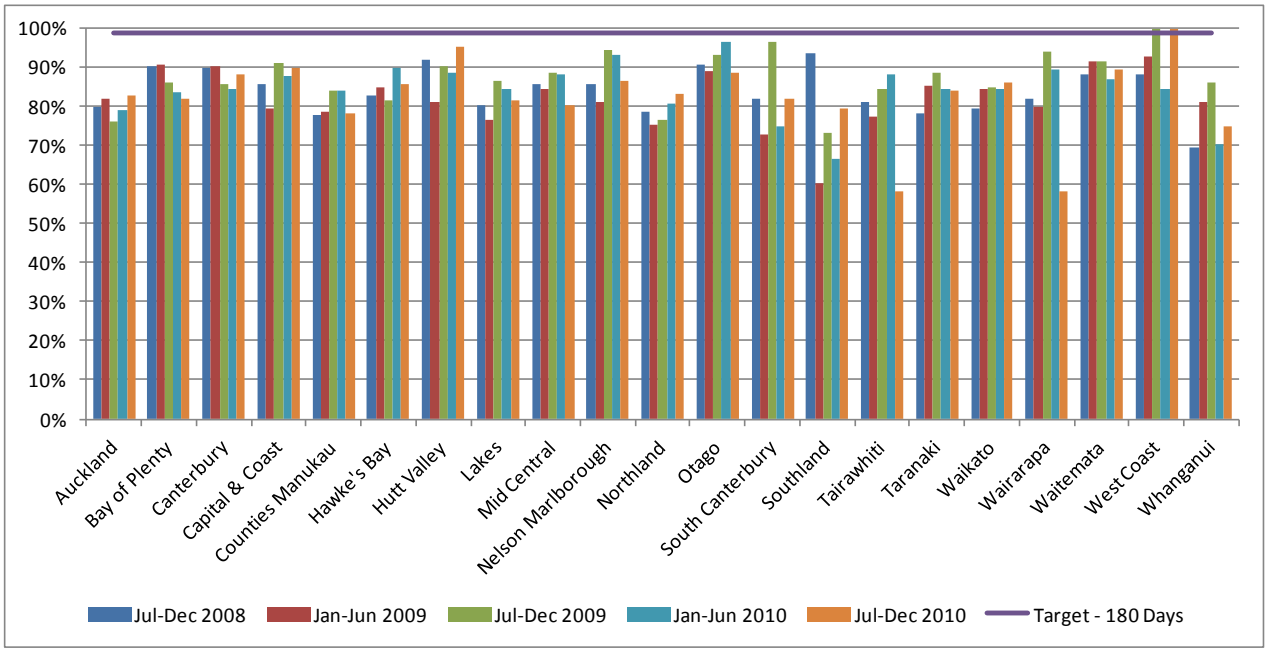


Figure 61 – Trends in the proportion of women with high grade cytology who have a histology report within 90 days, by ethnicity

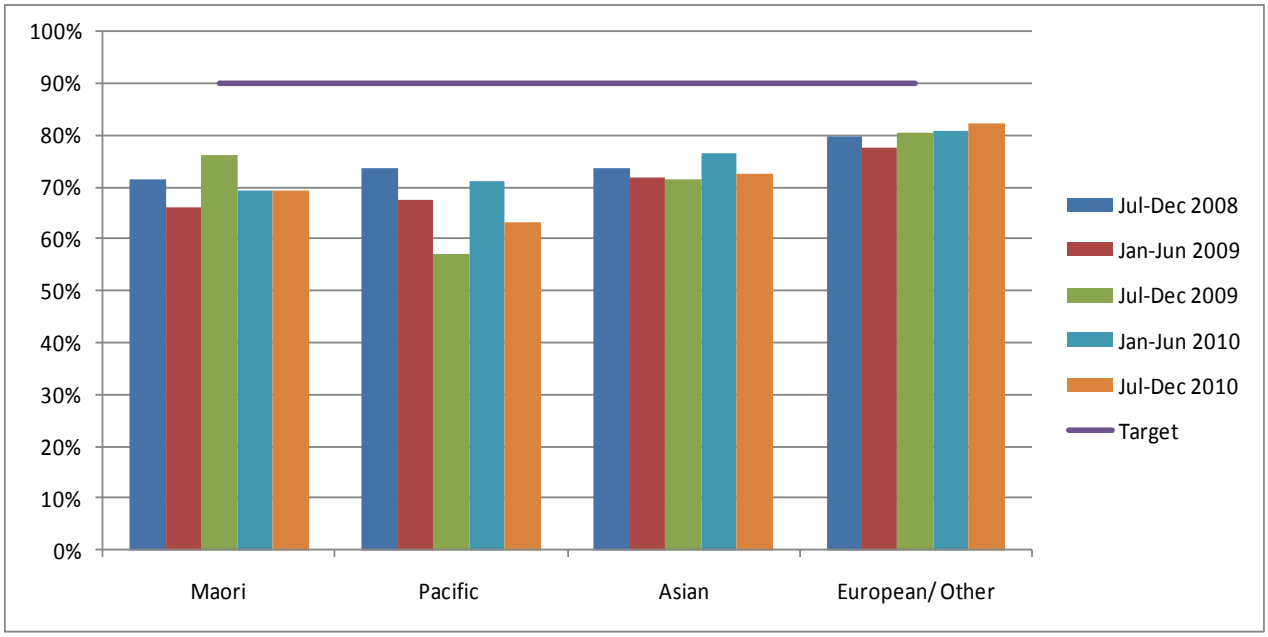


Figure 62 – Trends in the proportion of women with high grade cytology who have a histology report within 180 days, by ethnicity

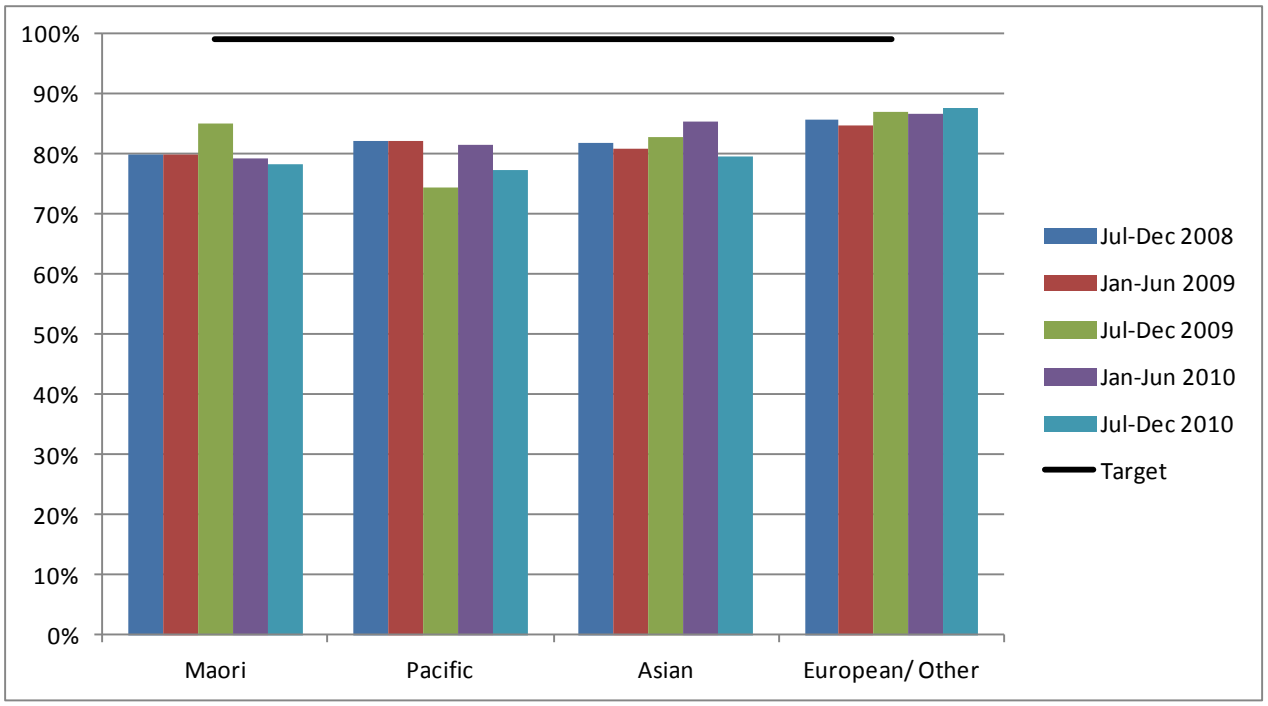
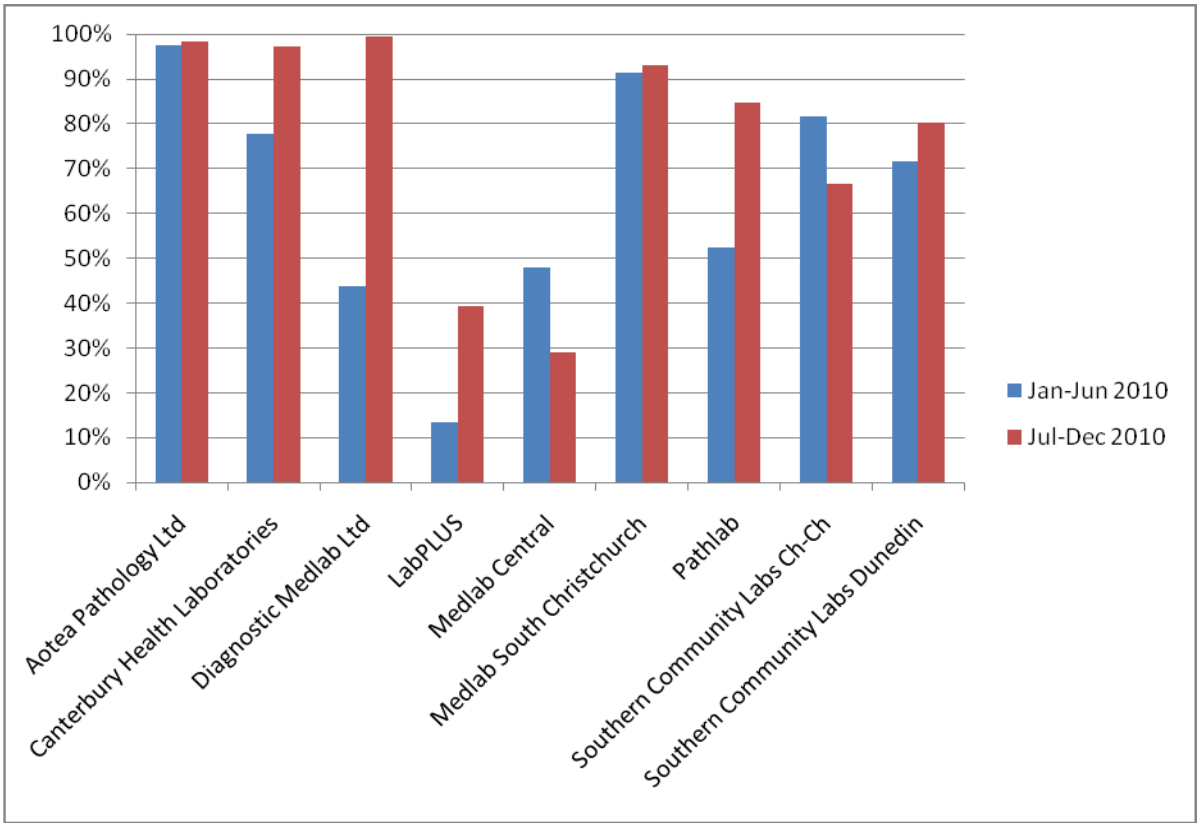
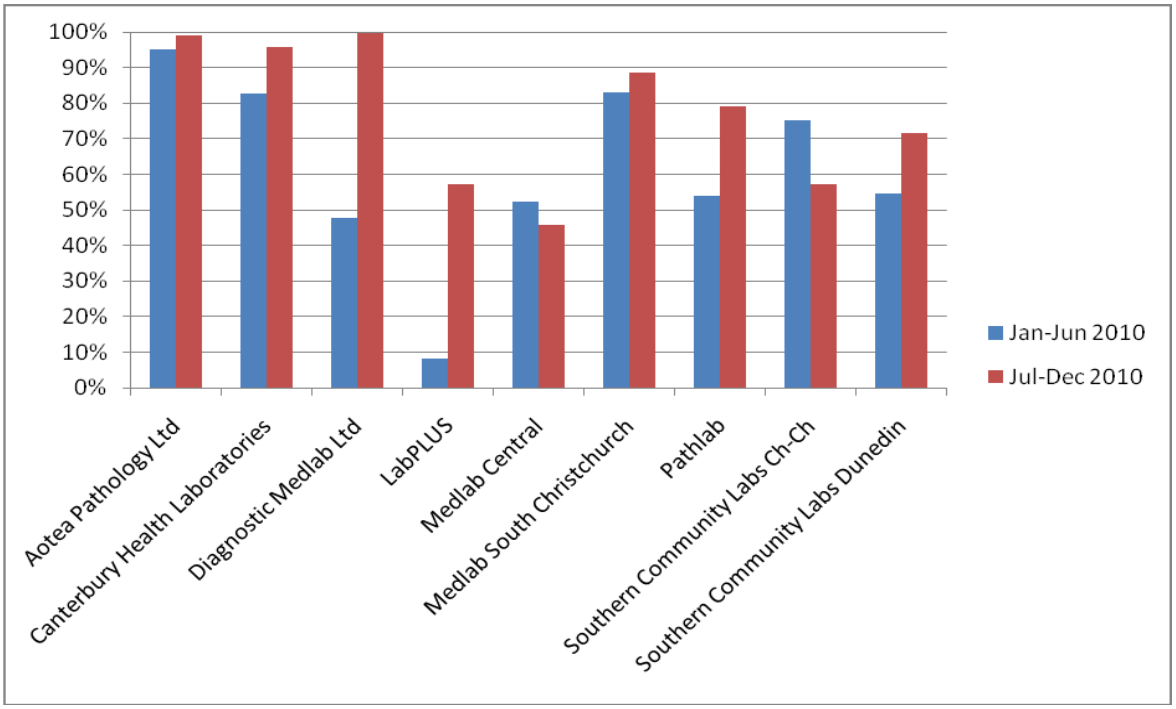


Figure 63 – Trends in the proportion of women (aged 30 years or more) with ASC-US cytology who have a subsequent HPV triage test, by laboratory*



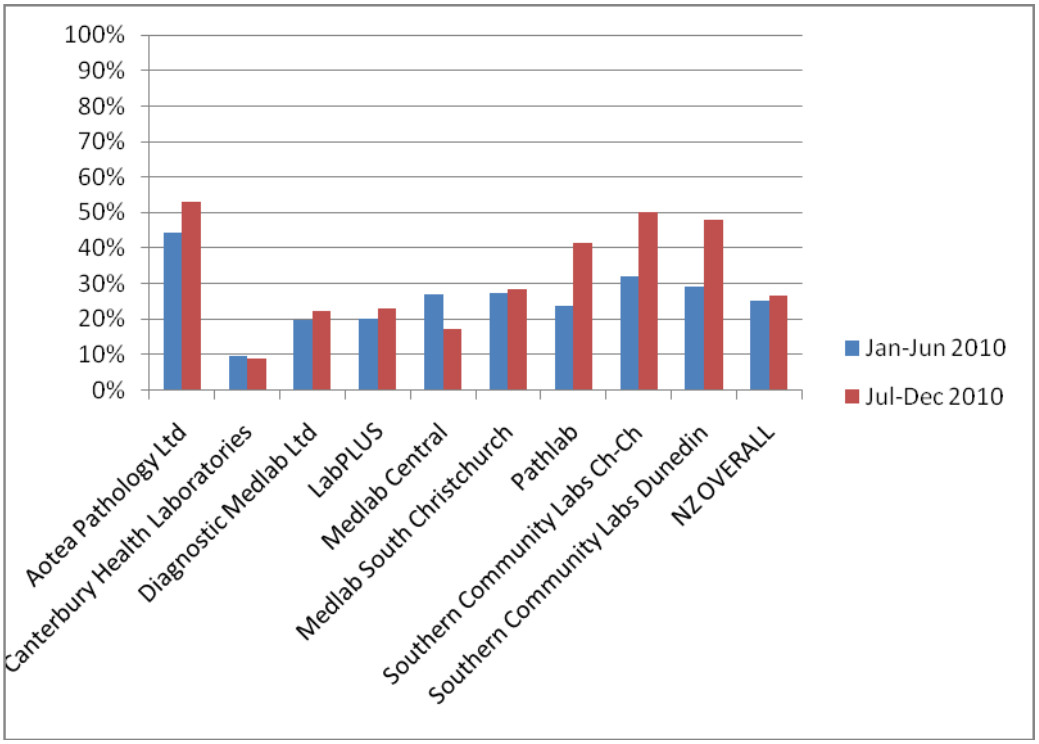
Excludes women with abnormal cytology in the five years preceding their low grade cytology sample
** Where the laboratory which performed the cytology test differs from the laboratory which performed the HPV test, classification is according to the laboratory which performed the cytology test*

Figure 64 – Trends in the proportion of women (aged 30 years or more) with LSIL cytology who have a subsequent HPV triage test, by laboratory*



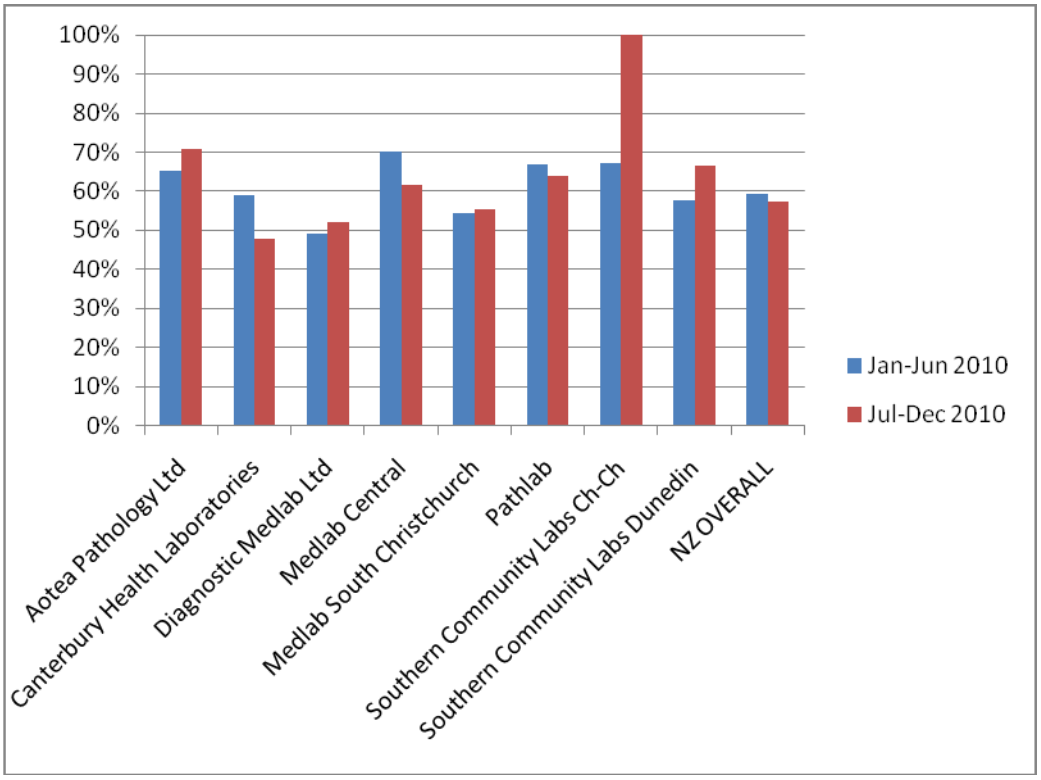
Excludes women with abnormal cytology in the five years preceding their low grade cytology sample
** Where the laboratory which performed the cytology test differs from the laboratory which performed the HPV test, classification is according to the laboratory which performed the cytology test*

Figure 65 – Trends in the proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more), by laboratory*



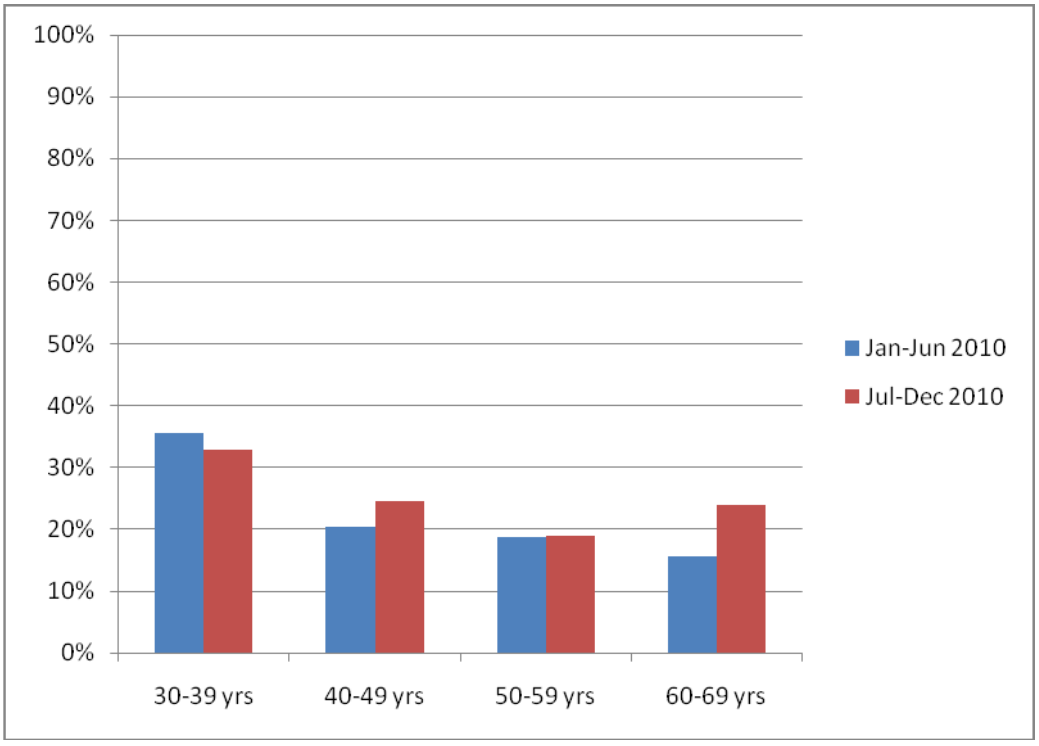
** Where the laboratory which performed the cytology test differs from the laboratory which performed the HPV test, classification is according to the laboratory which performed the cytology test*

Figure 66 – Trends in the proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more), by laboratory*



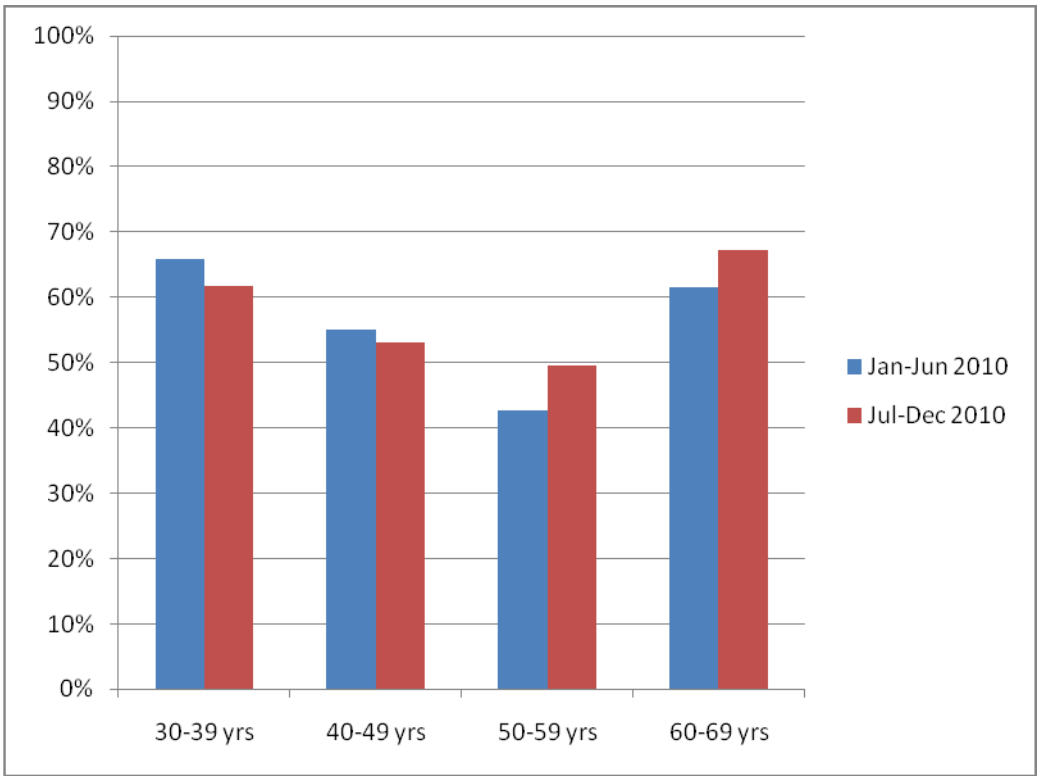
** Where the laboratory which performed the cytology test differs from the laboratory which performed the HPV test, classification is according to the laboratory which performed the cytology test*

Figure 67– Trends in the proportion of HPV triage tests which are positive following ASC-US cytology, by age



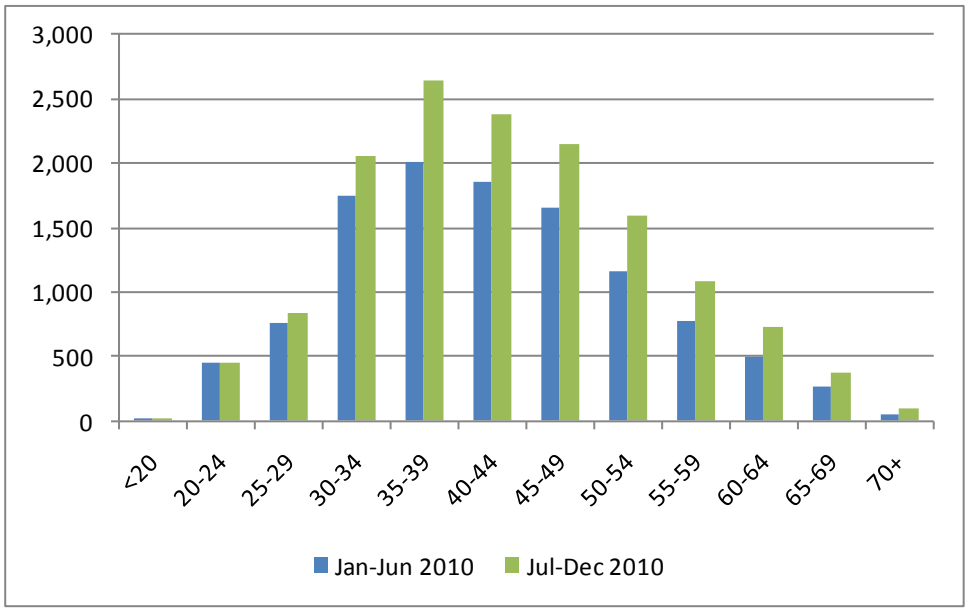
Based on the woman's age at the time of the cytology sample

Figure 68 – Trends in the proportion of HPV triage tests which are positive following LSIL cytology, by age



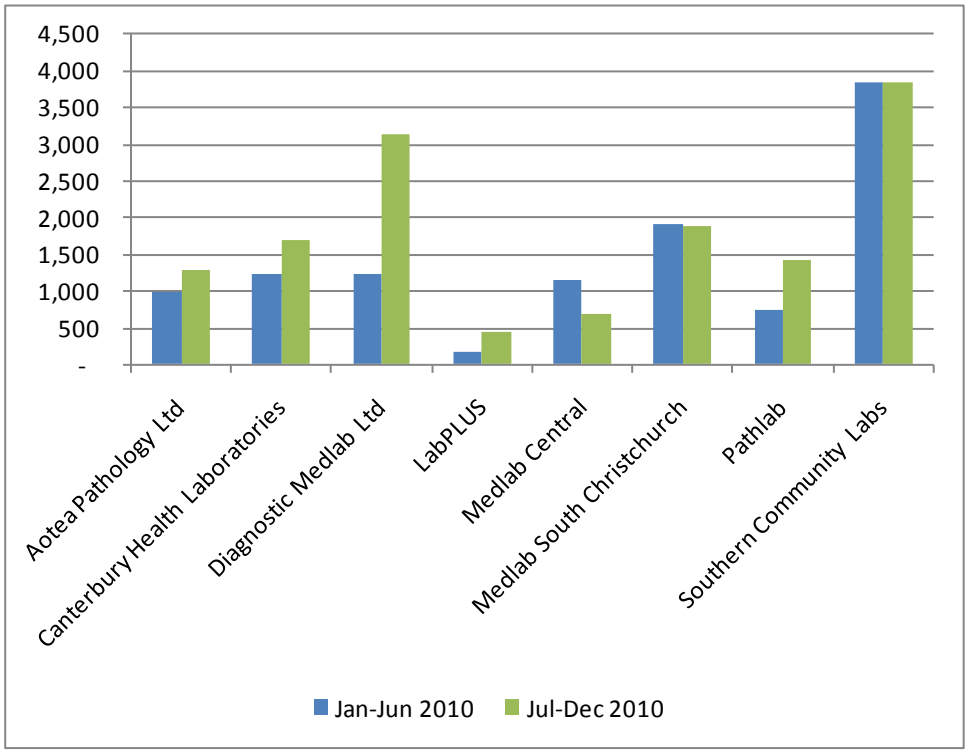
Based on the woman's age at the time of the cytology sample

Figure 69 – Trends in the volume of HPV test samples received, by age



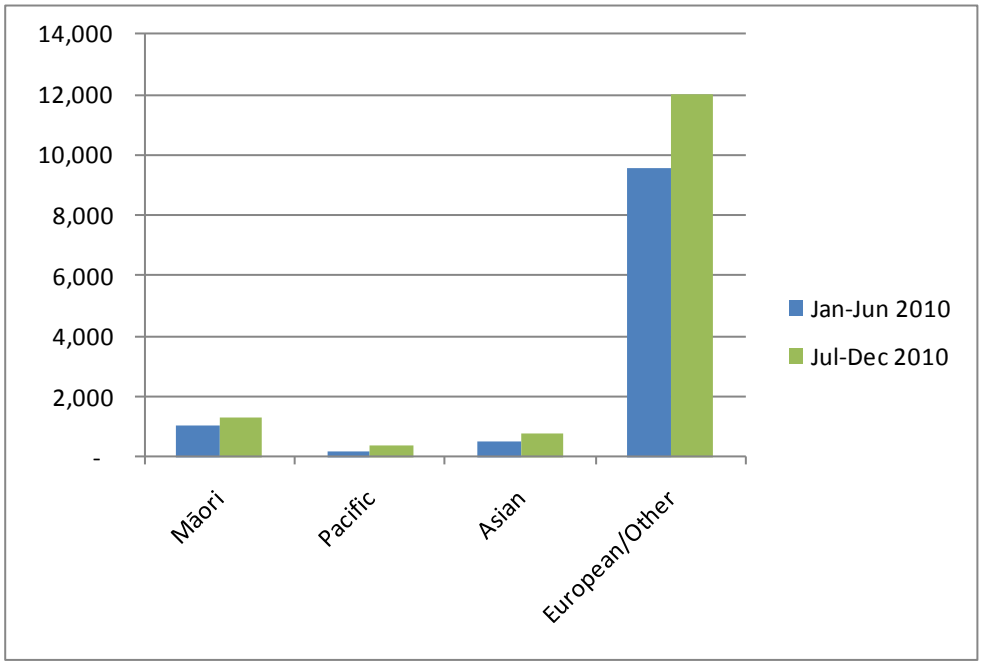
Includes all HPV tests, performed for any purpose
Based on the woman's age at the time of the cytology sample

Figure 70 - Trends in the volume of HPV test samples received, by laboratory



Includes all HPV tests, performed for any purpose

Figure 71 - Trends in the volume of HPV test samples received, by ethnicity



Includes all HPV tests, performed for any purpose