

14 March 2022

Hon Jacqui Dean
Chair
Petitions Select Committee

To the Petitions Select Committee

Tēnā koutou

Please accept this submission in support of Petition 2020/183, requesting that the House of Representatives urge the Government to restore and extend the screening programme for breast cancer, the leading cause of death for women under 65, by adding breast-screening participation as a Health System Indicator, aiming to screen 70% of eligible women, and screening women aged 70-74.

Since the Covid-19 lockdowns, participation in BreastScreen Aotearoa's mammogram screening programme has dropped to levels below 10 years ago. The Government should prioritise women's health by adding breast screening participation to the Health System Indicators, investing to regain BSA's agreed target of 70% coverage of women aged 45-69, extending to 70-74 like other countries, and providing funding and resources to process the entire Covid-19 backlog within six months.

In the short time since the petition was received by the House of Representatives, new data has been released that reinforces the urgency of this request. The latest information is included in this submission.

Breast Cancer Foundation NZ has prepared this submission in its role as an advocate for early detection of breast cancer; we are not a potential recipient of funding.

Thank you for the opportunity to submit to the Committee on behalf of the more than 10,000 concerned New Zealanders who signed the petition. I request an opportunity to address the committee in person in Wellington (or online if necessary).

I look forward to meeting you.

Nāku noa, nā



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Patron: Dame Rosemary Horton DNZM, QSO, QSM

Executive Summary

- BreastScreen Aotearoa (BSA) provides mammograms to women aged 45-69, with the aim of detecting breast cancer early, at a stage where it is easier to treat and more survivable. The programme has achieved a 34% reduction in overall breast cancer mortality in New Zealand women (28% reduction in Māori women and 40% reduction in Pacific women).¹
- Pre-Covid, BSA was meeting its target of screening 70% of eligible women, but the programme was under pressure. The shortage of mammographers (MITs) and radiologists meant some BSA regional providers struggled to give timely first-screens to new enrollees, while others were forced to stretch the two-year interval between mammograms by several months.
- Covid-19 made all this much worse. During the 2020-2021 lockdowns, breast screening was cancelled in Level 4, then ran at greatly reduced capacity in Level 3. By October 2021 the screening backlog had ballooned to 54,000 women, with all regions affected. A catch-up effort by BSA over the normally quiet Christmas period reduced this to 51,000 by February 2022. (Source: National Screening Unit).
- **Today, screening participation is the lowest it has been in more than 10 years, with Māori and Pacific women worst affected.**²
- Wāhine Māori have a 33% higher chance of dying of their breast cancer and Pacific women a 52% higher chance³. Many of these deaths are avoidable: studies show that when their cancer is found on a mammogram, their survival is the same as non-Māori or European women.^{4 5}
- Ethnicity is just one factor that puts some women at much higher risk of breast cancer death; other risk factors are having a large tumour, a stage 3 or 4 tumour, a high grade tumour, an aggressive tumour subtype, and being of younger (<45) or older (70+) age.
- These high-risk factors explain why, despite improvements in survival, New Zealand lost 692 women to breast cancer in 2019⁶, and why **breast cancer is the leading cause of death for New Zealand women under 65**⁷ across all causes of mortality.
- 97% of women with stage 1 breast cancer survive 10 years, but 10-year survival for a stage 3 cancer is only 71%³ – nearly a third of women die. Most stage 1 tumours cannot be felt; a mammogram is the only way to find them. Women enrolled in breast screening who find a lump between mammograms are **four times more likely to have stage 3 or 4 cancer** than if their cancer is found on a regular mammogram.⁸
- When a lump turns out to be a stage 3 cancer, it costs twice as much to treat as stage 1⁹. Sadly, women with stage 3 cancer are 10 times more likely to die than those with stage 1.

¹ Cohort and Case Control Analyses of Breast Cancer Mortality: BreastScreen Aotearoa 1999-2011, December 2015, by Stephen Morrell, Richard Taylor, David Roder, Bridget Robson. Ministry of Health

² BreastScreen Aotearoa DHB Coverage Report <https://minhealthnz.shinyapps.io/nsu-bsa-coverage-dhb/>

³ Breast Cancer Foundation NZ, 2022. 30,000 voices: Informing a better future for breast cancer in Aotearoa New Zealand, Te Rēhita Mate Ūtaetae - Breast Cancer Foundation National Register 2003-2020

⁴ Seneviratne S, et al, 2015. Impact of mammographic screening on ethnic and socioeconomic inequities in breast cancer stage at diagnosis and survival. BMC Public Health 15: 46.

⁵ Lawrenson R, et al. How to improve outcomes for women with breast cancer in New Zealand. 2018. University of Waikato

⁶ Ministry of Health Mortality Data 2019

⁷ Ministry of Health, Mortality Web Tool ICD Chapter and Subgroup (2014-2018)

⁸ de Munck, L. Impact of mammographic screening and advanced cancer definition on the percentage of advanced-stage cancers in a steady-state breast screening programme in the Netherlands, British Journal of Cancer (2020) 123:1191–1197

⁹ Lao, C et al. 2021. Breast cancer costs in New Zealand's public health system. NZMJ Vol 134 No 1545

- ***All the high-risk factors for breast cancer death can be prevented or mitigated by screening. For many women, a BSA mammogram is the difference between survival and death.***
- If Māori survival were to go back to where it was 10 years ago, wāhine would be twice as likely to die within five years as they are today¹⁰. The BreastScreen Aotearoa programme has been instrumental in the survival gains achieved in recent years, and these gains are now at risk.
- With its current resources, BSA does not have the ability to perform 50,000 catch-up mammograms in an accelerated timeframe. Without major, targeted investment, the catch-up will take much longer and, indeed, may never happen for some women.
- Breast Cancer Foundation NZ calculates that \$15m allocated in Budget 2022 would help enable rapid catch-up in line with the overarching goal in the Budget Policy Statement of “accelerating the rebuild from the impact of Covid-19”. This investment will address the screening crisis caused by Covid-19 and will also put BSA in a position to manage the future needs it has outlined, including extending the screening age upper limit from 69 to 74.
- The age extension was promised in the 2017 Coalition Agreement, following a 2016 petition submitted by Breast Cancer Foundation NZ (*Petition 2014/61 of Evangelia Henderson on behalf of the New Zealand Breast Cancer Foundation and 10,000 others*).¹¹ New Zealand women’s risk of breast cancer is higher at age 70 than at 50¹². New Zealand studies have found that women aged 70-74 have more stage 3 and 4 diagnoses than women aged 45-59¹⁰, and that screened women aged 70-75 have a 55% lower risk of dying of their breast cancer than unscreened.¹³
- We are aware of the potential conflict in requesting the inclusion of more women into the BSA programme during a time of massive backlog. However, the resource needed for age extension is minuscule compared to the additional capacity required to catch up the backlog, enrol newly eligible women in a timely fashion and end the current trend of extending the gap between mammograms.
- ***Kiwi women – and their families – are on the front line of the post-Covid screening crisis:*** 47-year-old GP Dr Heidi MacRae’s regular mammogram was cancelled during Covid, but when she developed a persistent low-grade fever, she organised her own mammogram. She was diagnosed with aggressive triple negative breast cancer, the deadliest form of breast cancer.

“I’m now part-way through a six-month course of weekly chemotherapy. The side effects are cumulative and I have some really good days, but some days where I’m so tired and achy with no energy at all. I have lost my hair. My brain has turned to custard, and I have the usual nausea and bowel symptoms. But this is all manageable because the treatment is going to make me better....If I had waited until December when my screening mammogram had been rescheduled to, my tumour might’ve already spread to my lymph nodes or metastasized....I couldn’t feel the breast lump at all, I had none of the typical signs of breast cancer.”
- To achieve the right focus on breast screening, “Participation in the breast screening programme” should be added to the Health System Indicators. This will help to address the equity gap in breast cancer incidence, to drive the necessary increased investment in BreastScreen Aotearoa, and to improve outcomes for breast cancer, the leading cause of death for women under 65 in Aotearoa New Zealand.

¹⁰ Breast Cancer Foundation NZ, 2022. 30,000 voices: Informing a better future for breast cancer in Aotearoa New Zealand, Te Rēhita Mate Ūtaetae - Breast Cancer Foundation National Register 2003-2020

¹¹ NZ House of Representatives, 2016. PETITION 2014/61 OF EVANGELIA HENDERSON Report of the Health Committee

¹² Ministry of Health, 2018. Response to email enquiry.

¹³ Kwok, H., *Breast Cancer Screening Beyond 70 Years Old*. 2015, BreastScreen Aotearoa Counties Manukau

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Written submission to the Petitions Select Committee concerning

Petition of Breast Cancer Foundation NZ: Restore and extend screening for breast cancer

Petition request

That the House of Representatives urge the Government to restore and extend the screening programme for breast cancer, the leading cause of death for women under 65, by adding breast-screening participation as a Health System Indicator, aiming to screen 70% of eligible women, and screening women aged 70-74.

Petition reason

Since the Covid-19 lockdowns, participation in BreastScreen Aotearoa's (BSA) mammogram screening programme has dropped to levels below 10 years ago. We believe the Government needs to prioritise women's health by adding breast screening participation to the Health System Indicators, investing to regain BSA's agreed target of 70% coverage of women aged 45-69, extending to 70-74 like other countries, and providing funding and resources to process the entire Covid-19 backlog within six months.

1. BreastScreen Aotearoa: a life-saver for Kiwi women

- In 1998, BreastScreen Aotearoa (BSA) initiated a breast screening programme for women aged 50-64. In 2004, eligibility was extended five years each side, to encompass women aged 45-69.
- The aim of BSA is "to reduce women's morbidity and mortality from breast cancer by identifying cancers at an early stage, allowing treatment to be commenced sooner than might otherwise have been possible".¹⁴ Screening is only for well women, who have no lump or other symptom of breast cancer. Without screening, their cancers would not be found until later.
- BSA has succeeded in achieving its aim of reducing mortality. An evaluation of the screening programme's effectiveness showed that from 1999-2011, screening produced a 34% reduction in overall breast cancer mortality in New Zealand women (28% reduction in Māori women and 40% reduction in Pacific women). Regular screening lowered the risk further.¹⁵
- For women with a screen-detected cancer, breast cancer mortality was 45% lower than for women whose cancers were detected outside the screening programme.¹⁵
- The evaluation also found that prognostic indicators were more favourable (e.g. smaller tumours, less likely to have spread) for screened than for unscreened women.¹⁵
- Breast screening is the main means of detecting ductal carcinoma *in situ* (DCIS), a pre-cancerous condition that can become invasive cancer. In New Zealand, 88% of all DCIS diagnoses are found through screening.

¹⁴ National Screening Unit website <https://www.nsu.govt.nz/health-professionals/breastscreen-aotearoa> accessed 15 February 2022

¹⁵ Cohort and Case Control Analyses of Breast Cancer Mortality: BreastScreen Aotearoa 1999-2011, December 2015, by Stephen Morrell, Richard Taylor, David Roder, Bridget Robson. Ministry of Health

- As screening participation has improved over time, the proportion of small cancers and stage 1 cancers has increased.¹⁶ These cancers are more treatable and more survivable.
- A recent study put New Zealand's 10-year breast cancer-specific survival (excluding deaths from other causes) at 86%¹⁶, a big jump on the 80% 10-year survival reported to 2012¹⁷. While there have been improvements in early breast cancer treatments over recent years (including changes in radiation therapy and the availability of Herceptin), the growth in breast screening deserves a significant share of the credit. The same study showed women who found a lump were three times more likely to die of breast cancer than those with a screened diagnosis.
- Wāhine Māori have a 33% higher chance of dying of their breast cancer and Pacific women a 52% higher chance¹⁶; but studies show that when their cancer is found on a mammogram, their survival is the same as non-Māori or European women.^{18 19}
- Ethnicity is just one factor that puts some women at much higher risk of breast cancer death; others are having a large tumour, a stage 3 or 4 tumour, a high grade tumour, an aggressive tumour subtype, and being of younger (<45) or older (70+) age.
- These high-risk factors explain why, despite the improvements in survival, New Zealand lost 692 women to breast cancer in 2019²⁰, and why **breast cancer is the leading cause death for New Zealand women under 65**²¹ across all causes of mortality. Because although 97% of women with a stage 1 cancer survive 10 years, 10-year survival for a stage 3 cancer is only 71%¹⁶. Tumour stage is largely a factor of time to diagnosis; most stage 1 tumours cannot be felt and therefore require a mammogram to detect them. This is true of other risk factors; in fact, *all* the high-risk factors for breast cancer death can be either prevented or mitigated by early diagnosis through breast screening. For many women, a BreastScreen Aotearoa mammogram is the difference between survival and death.

2. Pre-Covid-19 BreastScreen Aotearoa participation and issues

- BSA has a target to screen 70% of eligible women. This is the coverage (participation) rate that studies have found produces a highly effective, life-saving screening programme. BSA measures coverage over rolling two-year periods, as women are eligible for a mammogram every two years. Prior to Covid-19, BSA had been achieving the 70% target for European and Pacific women since 2012; however Māori screening rates remained low, under 65%.
- Improving participation has put immense pressure on the BSA programme, with an increasing eligible population (a result of general population aging and population growth) and an IT system that has long been overloaded. After years of planning, the IT system was allocated \$55m in Budget 2021. The new IT platform will enable an opt-out screening service, which is expected to result in people who are not currently enrolled joining the programme. This is an excellent plan, but will add to the serious capacity issues that pre-dated Covid.

¹⁶ Breast Cancer Foundation NZ, 2022. 30,000 voices: Informing a better future for breast cancer in Aotearoa New Zealand, Te Rēhita Mate Ūtaetae - Breast Cancer Foundation National Register 2003-2020

¹⁷ V Harvey et al, 2015. Auckland Breast Cancer Register—12 Year Data; A special project of the Auckland Breast Cancer Study Group

¹⁸ Seneviratne S, et al, 2015. Impact of mammographic screening on ethnic and socioeconomic inequities in breast cancer stage at diagnosis and survival. BMC Public Health 15: 46.

¹⁹ R Lawrenson et al. How to improve outcomes for women with breast cancer in New Zealand. 2018. University of Waikato

²⁰ Ministry of Health Mortality Data 2019

²¹ Ministry of Health, Mortality Web Tool ICD Chapter and Subgroup (2014-2018)

- Staffing issues, in particular the shortage of mammographers (MITs) and radiologists, have impacted on provision of timely first-screens for new enrollees and the ability to maintain a two-year interval between subsequent mammograms. Before Covid, Breast Cancer Foundation NZ heard from some regional BSA providers that they were struggling to provide first mammograms to women within 60 days of enrolment (BSA’s target), with delays running out to a year. And some providers have been forced to extend the time between mammograms for non-priority populations. Recent additional Budget funding (\$9m over four years in Budget 2020 to meet price and volume pressures) has not adequately addressed these issues.
- BreastScreen Aotearoa is working to determine infrastructure needs such as mammography machines. We urge that the focus of this work should be a rapid catch-up. Investing now will have the downstream benefit of putting BSA in a strong state of readiness to handle the expanded reach that will result from the new IT system and opt-out approach in 2024.
- Despite ongoing resourcing challenges, BSA has mostly offered a gold-standard screening service to New Zealand women. In the two years ending January 2020, 579,788 women were screened, an overall coverage rate of 70.9% of eligible women.²² Breast Cancer Foundation NZ would like to commend BSA, the National Screening Unit and the Ministry of Health for its successes.
- ***However, both the participation gains and the mortality reductions are at risk as a result of the Covid-19 pandemic, for reasons outlined below.***

3. Impact of Covid-19 on breast screening – screening participation lowest in 10 years

- During the 2020-2021 Covid-19 lockdowns, breast screening was cancelled in Level 4, then ran at greatly reduced capacity in Level 3.
- The lockdowns created a screening backlog totalling 54,000 women by October 2021, with all regions affected. A major catch-up effort by BSA over the normally quiet Christmas / New Year period reduced this to 51,000 by February 2022. (*Source: National Screening Unit*).
- Another way to view the impact is through BSA coverage data. In the two years ending January 2022, BSA screened 496,625 women (83,000 fewer than in the two years to January 2020), giving an overall coverage rate of 63.1% of eligible women. This is a huge drop on the 70.9% participation pre-Covid. Tragically, the decline has been greatest among those most likely to die: Māori participation declined to 57.9%, Pacific to 60.6%.²²
- ***Screening participation is the lowest it has been in more than 10 years.***²²
- The National Screening unit has told BCFNZ it is working on a plan to eliminate the backlog, but at current resource levels this is likely to take more than two years for non-priority populations.
- Even if women are offered the opportunity to screen, they may not come back. Since screening is for “well women”, it is easy for it to slip down the list of personal priorities, and studies suggest that changes in health-seeking behaviours due to fear of catching Covid have affected some people’s willingness to attend clinic appointments. We know that it took BSA many years of hard work to bring overall and Pacific participation up to 70%, and to increase Māori participation. It would be risky to assume that all those women will come back.

²² BreastScreen Aotearoa DHB Coverage Report <https://minhealthnz.shinyapps.io/nsu-bsa-coverage-dhb/>

- If Māori survival were to go back to where it was 10 years ago, wāhine would be twice as likely to die within five years as they are today²³. The BreastScreen Aotearoa programme has been instrumental in the survival gains achieved in recent years, and these gains are now at risk.
- Without major, targeted investment, the catch-up will take much longer and, indeed, may never happen for some women.

4. Does a delay between mammograms matter?

Here we consider the evidence specific to women enrolled in a breast national breast screening programme. The pool of evidence is smaller, but highly relevant to New Zealand’s Covid backlog.

4.1 Impact of mammogram delays on cancer stage

- Based on BSA detection rates, the current backlog of 50,000 screening mammograms can be expected to result in 300 invasive breast cancer diagnoses, and about 45 DCIS (pre-invasive) diagnoses. With mammograms delayed, these cancers will be found later than they should be.
- To understand the impact of missing a mammogram and then finding a lump that turns out to be breast cancer, we can look at evidence around interval cancers (cancers discovered in the period between screening appointments). An international study found that among women enrolled in breast screening whose cancer was found on a mammogram, 4.9% of their cancers were stage 3 (high-risk, but curable) or stage 4 (incurable). For enrolled women with an interval cancer (i.e. who found a lump), four times as many cancers were stage 3 or 4 (19.4%).²⁴
- If that lump turns out to be a stage 3 cancer, which is much more likely than with a screened tumour, it will cost twice as much to treat in New Zealand as a stage 1 cancer²⁵; and women with stage 3 cancer are 10 times more likely to die than those with stage 1²³.
- BreastScreen Aotearoa reported that screened women diagnosed with breast cancer less than 2.5 years after their last mammogram were 12% more likely to have a localised cancer (one that hadn’t spread to lymph nodes or beyond) than women who’d had a longer gap between mammograms. Women with a shorter screening gap also had a 40% lower risk of having multiple tumours.²⁶

4.2 Impact of mammogram delays on mortality

- To understand the impact of the backlog on mortality, we can consider differences between BreastScreen Aotearoa “regular screeners”, who had less than 2.5 years between mammograms, and “irregular screeners”.
- BSA found that women with an average gap between mammograms of 2.5 years or less had an 81% lower breast cancer mortality risk than women who screened less often or less regularly.²⁶
- Among screened women who found a lump, those who screened regularly had 79% lower

²³ Breast Cancer Foundation NZ, 2022. 30,000 voices: Informing a better future for breast cancer in Aotearoa New Zealand, Te Rēhita Mate Ūtaetae - Breast Cancer Foundation National Register 2003-2020

²⁴ de Munck, L et al. Impact of mammographic screening and advanced cancer definition on the percentage of advanced-stage cancers in a steady-state breast screening programme in the Netherlands, *British Journal of Cancer* (2020) 123:1191–1197; <https://doi.org/10.1038/s41416-020-0968-6>

²⁵ Lao, C et al. 2021. Breast cancer costs in New Zealand’s public health system. *NZMJ* Vol 134 No 1545

²⁶ *Cohort and Case Control Analyses of Breast Cancer Mortality: BreastScreen Aotearoa 1999-2011*, December 2015, by Stephen Morrell, Richard Taylor, David Roder, Bridget Robson. Ministry of Health

breast cancer mortality than those who screened less regularly.²⁶

- For Pacific women, regular screening mammography was associated with an 86% reduction in breast cancer mortality compared to women who screened less frequently.²⁶

5. Barriers to restoring screening

- While we accept that BreastScreen Aotearoa is committed to restoring screening to 70%, this cannot be achieved without significant, targeted investment to address underlying problems that, even pre-Covid, were impacting on BSA's ability to deliver timely mammograms to every eligible woman.
- The shortage of mammographers / MITs (technicians who perform the mammograms) was widely acknowledged in the screening programme even before Covid-19.
- Whether the radiologists to read mammograms are in short supply, or are merely in the wrong places, is up for debate. But for practical purposes, we can say there has in recent years been a shortage of radiologists where they are needed.
- Before Covid-19, as mentioned, several regions were already extending the gap between mammograms, and delaying enrolment of women into the programme. With its current resources, BSA does not have the ability to perform 50,000 catch-up mammograms in an accelerated timeframe.
- Breast Cancer Foundation NZ has calculated that \$15m allocated in Budget 2022 would help enable rapid catch-up of the screening backlog, in line with the stated overarching goal in the Budget Policy Statement of "accelerating the rebuild from the impact of Covid-19". This is based on an estimated cost of \$240 per mammogram, including administration, totalling \$12 million for 50,000 mammograms. The additional \$3 million will enable a large-scale project to deliver a capacity surge with the support and ideas of stakeholders like ourselves, and potentially to support the first stage of rollout of the screening age extension (see below).

6. Age extension of screening to include women aged 70-74

6.1 Evidence and history

- New Zealand women's risk of breast cancer is higher at age 70 than at 50²⁷. New Zealand studies have found that women aged 70-74 have more stage 3 and 4 diagnoses than women aged 45-59 (20% vs 14.5%)²⁸, and that screened women aged 70-75 have a 55% lower risk of dying of their breast cancer than unscreened women (6.2% vs. 13.7%).²⁹
- A 2014 Australian study concluded that the population-level incidence of large cancers among women aged 70-74 years was on average 8% lower with each 10% increase in screening participation. There was a 3% reduction in cancers that had spread to the lymph nodes with each 10% increase in screening participation.³⁰

²⁷ Ministry of Health, 2018. Response to email enquiry.

²⁸ Breast Cancer Foundation NZ, 2022. 30,000 voices: Informing a better future for breast cancer in Aotearoa New Zealand, Te Rēhita Mate Ūtaetae - Breast Cancer Foundation National Register 2003-2020

²⁹ Kwok, H., *Breast Cancer Screening Beyond 70 Years Old*. 2015, BreastScreen Aotearoa Counties Manukau

³⁰ Nickson et al. *Breast cancer screening of women aged 70-74 years: results from a natural experiment across Australia*, *Breast Cancer Res Treat* (2014)

- Beyond the numbers mentioned above, this submission will not re-litigate the arguments and evidence for screening women aged 70-74; the Ministry of Health considers the evidence for the age extension to be sound.
- In 2016, Breast Cancer Foundation NZ submitted a parliamentary petition to extend the screening age upper limit from 69 to 74 (*Petition 2014/61 of Evangelia Henderson on behalf of the New Zealand Breast Cancer Foundation and 10,000 others*). The Health Committee at the time recommended to the Government that it investigate extending New Zealand's free national breast screening programme to women aged between 70 and 74³¹.
- The age extension was promised in the Coalition Agreement after the 2017 election, but has never been implemented, and no plan has been announced for the implementation.

6.2 Impact of and barriers to age extension

- BreastScreen Aotearoa's analysis of the impact of age extension acknowledged the scientific evidence justifying the extension. BSA concluded that mortality from breast cancer for women aged 70–74 years would reduce; mortality from breast cancer for women aged ≥75 might also reduce.³²
- The impact analysis proposed an equitable progressive rollout scenario that would see numbers growing incrementally, starting with 8,000 additional extra screens in year one. Given that BSA performed 290,000 screens per year pre-Covid, this would have minimal impact on the existing system.
- We are aware of the potential conflict in requesting the inclusion of more women into the BSA programme during a time of massive backlog. However, the resource needed for age extension is minuscule compared to the additional capacity required to catch up the backlog, enrol newly eligible women in a timely fashion and end the current trend of extending the gap between mammograms. In the first year, the age extension would add a total of 160 mammograms a week, spread across multiple sites within the eight regional providers. It would have no impact on the IT platform, as these women are already enrolled in BSA and already part of the notification process.

7. Health system indicators

- In 2021, the Minister of Health announced 12 Health System Indicators across six Government priorities. Only one of these related to cancer: *Participation in the bowel screening programme*. The aim of bowel screening is “to save lives by detecting bowel cancer at an early stage”.³³
- We do not object to bowel cancer screening participation as an indicator; the programme is new, and will have an impact on both men and women. However, from an equity perspective, Māori women have a 37% higher incidence of breast cancer than non-Māori³⁴, and one of the

³¹ NZ House of Representatives, 2016. PETITION 2014/61 OF EVANGELIA HENDERSON Report of the Health Committee

³² Ministry of Health NZ, 2019. Impact Analysis: Extending BreastScreen Aotearoa to include women aged 70-74 years.

³³ National Bowel Screening Programme, National Screening Unit website. <https://www.nsu.govt.nz/health-professionals/national-bowel-screening-programme>

³⁴ Ministry of Health NZ, Cancer: New registrations and Deaths (reported annually 2009-2018)

highest incidence rates in the world³⁵, while bowel cancer incidence is higher in Europeans³⁶. Pacific women historically had lower rates of breast cancer than European women, but the incidence has increased (one study suggests it is now 21% higher³⁷). Finding breast cancers early will have a relatively higher benefit for Māori and Pacific women than European women.

- We contend that adding “Participation in the breast screening programme” as a Health System Indicator would help address the equity gap in breast cancer incidence, would drive the necessary increased investment in BreastScreen Aotearoa, and would improve outcomes for breast cancer – the leading cause of death for women under 65 in Aotearoa New Zealand – for those most likely to die of it.

Conclusion

In conclusion, we reiterate our call for the rapid restoration of breast screening to pre-Covid levels, a kaupapa that will require significant investment to eliminate the backlog and address historic capacity issues. In addition, we ask for the promised age extension to 74 to be implemented. The inclusion of breast screening participation in the Health System Indicators will help ensure the right level of focus on breast cancer, the leading cause of death for New Zealand women – Māori, Pacific Island and all ethnicities – under 65.

Expanded evidence summary

8. Impact of breast screening on breast cancer mortality and survival

8.1 Survival reporting in the Breast Cancer Foundation National Register

In February 2022, Breast Cancer Foundation NZ published *30,000 voices: Informing a better future for breast cancer in Aotearoa New Zealand*, the first ever comprehensive report into data held in the register we have funded for 20 years, Te Rēhita Mate Ūtaetae - Breast Cancer Foundation National Register.

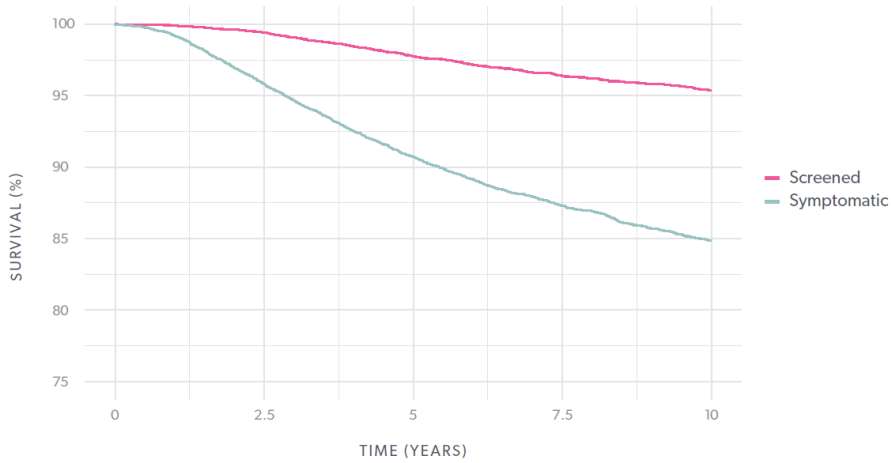
30,000 voices reports on diagnoses, treatment and survival for 30,000 women and 181 men diagnosed with breast cancer from 2003 to 2019. The report covers nine DHBs in the Auckland, Waikato, Wellington and Canterbury / West Coast regions, representing nearly 70% of national diagnoses in both public and private health systems. It analysed breast cancer-specific survival (excluding people who died from other causes) for both screened (mammogram from a public or private provider) and symptomatic (referred by their GP after finding a lump) women.

Women were three times more likely to die within 10 years if their breast cancer was symptomatic rather than screen-detected (Figure 1). When viewed by ethnicity (Figure 2), the confidence intervals between ethnicities overlap for 10-year survival, suggesting when a woman is diagnosed by screening mammogram, there is no difference in survival between ethnicities.

³⁵ Lawrenson, R., et al., Breast cancer inequities between Māori and non Māori women in Aotearoa/New Zealand. *European journal of cancer care*, 2016. 25(2): p. 225-230

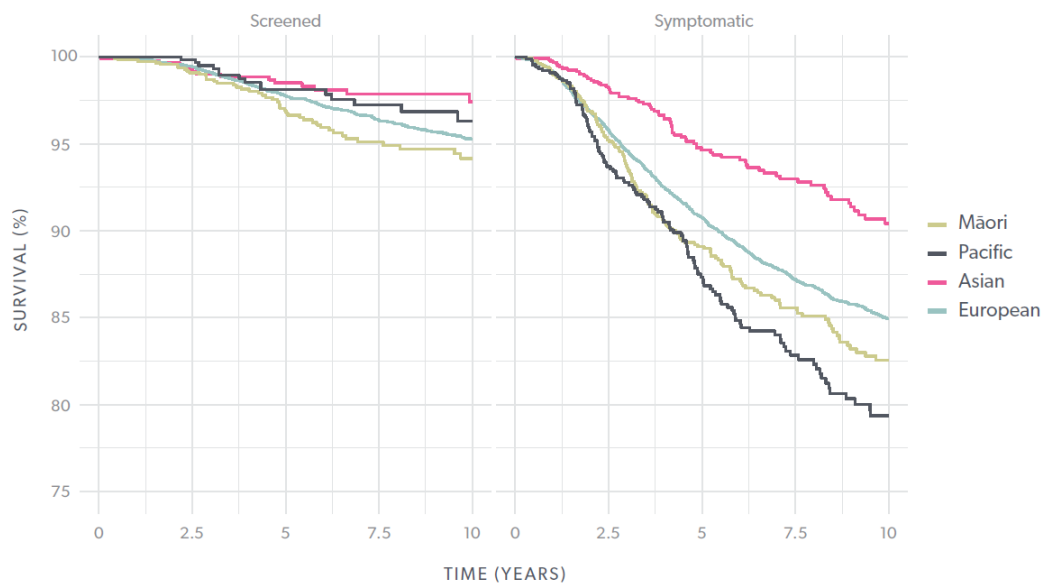
³⁶ Te Aho o Te Kahu, 2021. Cancer Control Agency, He Pūrongo Mate Pukupuku o Aotearoa 2020, The State of Cancer in New Zealand 2020.

³⁷ Teng, A.M., et al., Ethnic inequalities in cancer incidence and mortality: census-linked cohort studies with 87 million years of person-time follow-up. *BMC cancer*, 2016. 16(1): p. 1-14.



DETECTION METHOD	5-YEAR SURVIVAL	10-YEAR SURVIVAL
Screened	98% (97-98)	95% (95-96)
Symptomatic	91% (90-91)	85% (84-86)

Figure 1. Survival by detection method



ETHNICITY	5-YEAR SURVIVAL	10-YEAR SURVIVAL
Screened		
Māori	97% (96-98)	94% (92-96)
Pacific	98% (97-99)	98% (97-99)
Asian	99% (98-99)	97% (96-99)
European	98% (97-98)	95% (95-96)
Symptomatic		
Māori	89% (87-91)	83% (80-85)
Pacific	87% (85-90)	79% (76-83)
Asian	95% (93-96)	90% (88-93)
European	91% (90-91)	85% (84-86)

Figure 2. Survival by detection method by ethnicity

8.2 BreastScreen Aotearoa mortality evaluation

In 2015, BreastScreen Aotearoa published a comprehensive evaluation of breast cancer mortality inside and outside the screening programme. We reproduce here the Short Lay Summary from the 119-page report (Figure 3).

“

SHORT LAY SUMMARY:
BreastScreen Aotearoa (BSA) breast cancer mortality evaluation 1999-2011

Key Points:
The New Zealand (NZ) breast screening programme (BreastScreen Aotearoa) has reduced breast cancer mortality by a third in those screened.
This evaluation analysed data from the entire population of New Zealand women aged 45-69 years from the time the screening programme commenced in 1999 through to 2011. After adjusting for various factors, including recent screening participation rates,¹ the study found that, compared with women who were never screened, for screened women there has been a:

- 34% reduction in breast cancer mortality in NZ women
- 28% reduction in breast cancer mortality in Māori women (with projected 32% reduction at target screening coverage)
- 40% reduction in breast cancer mortality in Pacific women

Regular screening lowered the risk further. Compared to unscreened women, women who were screened regularly (at least 3 screens 30 months apart or less on average) had a 39% lower risk of death from breast cancer, and women who screened less regularly had a 31% lower risk. For women with a screen-detected cancer, breast cancer mortality was 45% lower than for women whose cancers were detected outside the screening programme.

Among women who were diagnosed with breast cancer, prognostic indicators were more favourable (e.g. smaller tumours, less likely to have spread) for screened than for unscreened women, for regularly screened compared with irregularly screened women, and for women with screen-detected cancers than for those whose cancers were detected outside screening.

Conclusion:
These findings indicate:

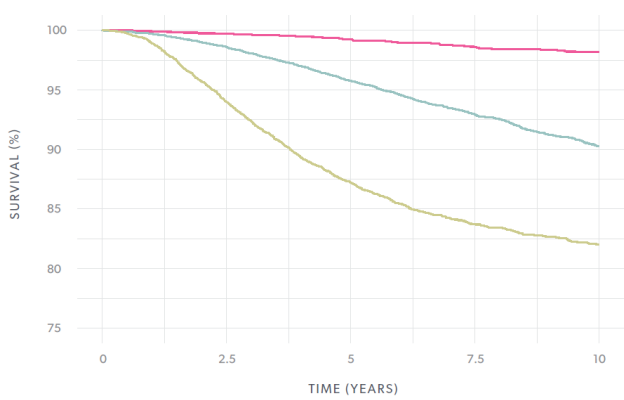
- A reduction in breast cancer mortality from screening comparable to that observed in the original randomised trials of around 30-35%.
- A larger breast cancer mortality reduction with more regular screening, and from screen-detected than cancers detected outside of screening.
- More favourable indicators of malignancy and spread at diagnosis in screened women and for screen-detected cancers, consistent with the mortality evidence indicating a favourable screening effect.
- With the recent increases in screening participation, it is evident that Māori women will experience a breast cancer mortality reduction from screening comparable to that found for all NZ women.

”

Figure 3. BSA Mortality Evaluation, Short Lay Summary

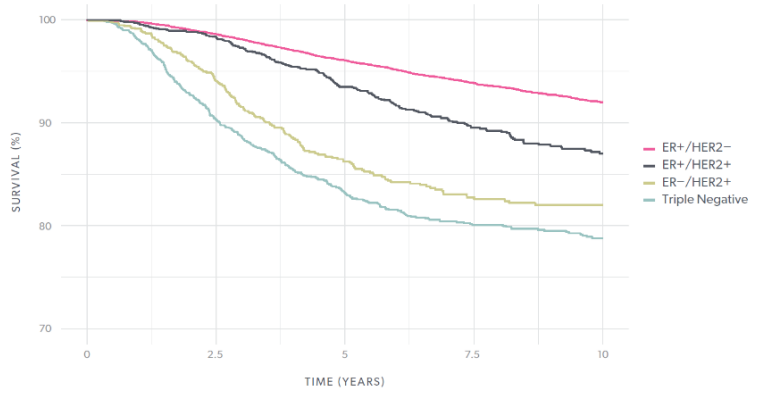
9. Impact of high-risk cancer features on survival

The *30,000 voices* report highlighted the high-risk cancer features that decrease a woman's chance of survival. Here, we present survival by tumour grade (Figure 4) which is a measure of aggressiveness, cancer subtype (Figure 5), cancer stage (Figure 6) and woman's age (Figure 7).



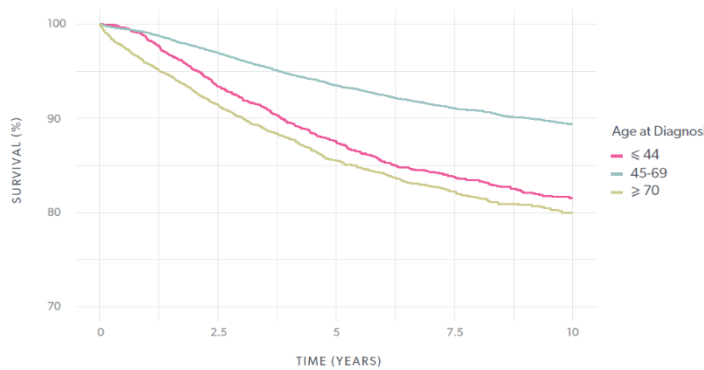
GRADE	5-YEAR SURVIVAL	10-YEAR SURVIVAL
1	99% (99-99)	98% (98-99)
2	96% (95-96)	90% (90-91)
3	87% (86-88)	82% (81-83)

Figure 4. Survival by tumour grade



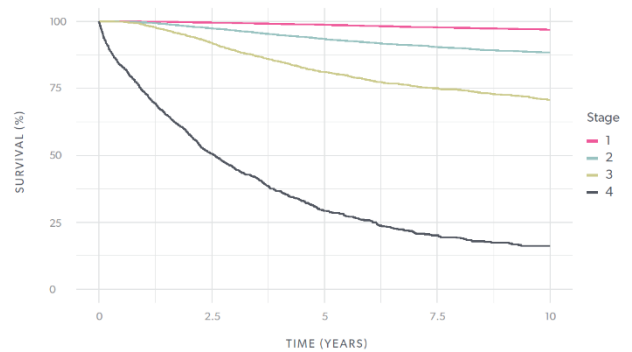
SUBTYPE	5-YEAR SURVIVAL	10-YEAR SURVIVAL
ER+/HER2-	96% (96-96)	92% (91-93)
ER+/HER2+	94% (92-95)	87% (85-89)
ER-/HER2+	86% (84-88)	82% (80-85)
Triple Negative	83% (82-85)	79% (77-81)

Figure 5. Survival by tumour subtype



AGE AT DIAGNOSIS	5-YEAR SURVIVAL	10-YEAR SURVIVAL
≤ 44	88% (86-89)	82% (80-83)
45-69	93% (93-94)	89% (89-90)
≥ 70	86% (84-87)	80% (79-81)

Figure 6. Survival by cancer stage



STAGE	5-YEAR SURVIVAL	10-YEAR SURVIVAL
1	99% (99-99)	97% (97-97)
2	93% (93-94)	88% (88-89)
3	81% (80-83)	71% (69-73)
4	29% (27-32)	16% (13-19)

Figure 7. Survival by age

9.1 Impact of breast screening on high-risk cancer features

Tumour stage is directly affected by time to diagnosis, with key components of stage being the tumour size and degree of spread to lymph nodes.

The other factors are intrinsic to the tumour (or in the case of age, to the woman), so do not change with later detection. However, finding these tumours on a mammogram means they are more likely to be smaller and more likely to respond to treatment, and thus more survivable.

Table 1 presents how these features can be mitigated by early detection.

High-risk factor	Relative risk of dying of breast cancer ³⁸	Breast screening reduces risk of dying?
Māori ethnicity	33% more likely to die within 10 years than European women	Yes. Survival is the same as non-Māori when cancer is found via screening. ³⁹
Pacific Island ethnicity	52% more likely to die within 10 years than European women	Yes. Survival is the same as European when cancer is found via screening. ⁴⁰
Age ≤44	10-year survival is 82%, compared with 89% for women 45-69. This means younger women are 64% more likely to die	Potentially, for women 40-44. A large UK study found screening from 40-49 reduced mortality by 25%. ⁴¹ Mammogram screening is not effective for women <40.
Age ≥70	10-year survival is 80%, compared with 89% for women 45-69	Yes, for women aged 70-75; evidence shows 55% lower mortality when cancers are found on mammogram. ⁴² Evidence is mixed for women 75+.
Finding a lump	Women who “find a lump” are three times more likely to die of breast cancer within 10 years than those with mammogram-detected cancer. Pacific women are 5 times more likely	Yes, mammograms find tumours before they can be felt as a lump. Tumours as small as 2mm can be seen on a mammogram, whereas most tumours cannot be felt until they are 1.5-2cm.
Grade 3 tumours	Three times more likely to die within 10 years than women with grade 1 tumours	Potentially. Delayed diagnosis does not affect grade, but a grade 3 tumour found via screening is more likely to be small / early stage, so more survivable.
Triple negative breast cancer subtype (TNBC)	10-year survival is 79%, compared with 96% for the lowest risk subtype	Potentially. Tumour subtype is not related to detection method, but stage 1 TNBC is much more survivable. ⁴³
ER-/HER2+ breast cancer subtype	10-year survival is 82%, compared with 96% for the lowest risk subtype	Potentially. As with triple negative breast cancer, ER-/HER2+ breast cancer is more survivable found earlier. ⁴³
Stage 3 cancer	10-year survival 71%, vs 97% for stage 1. Women with stage 3 cancer have a 10 times greater chance of dying within 10 years	Yes. Key determinants of tumour stage include tumour size and whether cancer has spread to lymph nodes. The later the diagnosis, the more likely a tumour is large and has spread to nodes.
Stage 4 / metastatic at diagnosis	23% five-year survival for women with initial diagnosis of cancer that has spread to another part of the body ⁴⁴	Yes. Early detection is the best way to reduce the number of breast cancers that have spread to another part of the body at initial diagnosis.

Table 1. High-risk factors for breast cancer death; potential for screening to prevent or mitigate

³⁸ Breast Cancer Foundation NZ, 2022. 30,000 voices: Informing a better future for breast cancer in Aotearoa New Zealand, Te Rēhita Mate Ūtaetae - Breast Cancer Foundation National Register 2003-2020

³⁹ Seneviratne S, et al, 2015. Impact of mammographic screening on ethnic and socioeconomic inequities in breast cancer stage at diagnosis and survival. BMC Public Health 15: 46.

⁴⁰ R Lawrenson et al. How to improve outcomes for women with breast cancer in New Zealand. 2018. University of Waikato

⁴¹ Duffy, S.W., et al., Effect of mammographic screening from age 40 years on breast cancer mortality (UK Age trial): final results of a randomised, controlled trial. The Lancet Oncology, 2020. **21**(9): p. 1165-1172.

⁴² Kwok, H., *Breast Cancer Screening Beyond 70 Years Old*. 2015, BreastScreen Aotearoa Counties Manukau

⁴³ Parise CA, Caggiano V. 2014. Breast Cancer Survival Defined by the ER/PR/HER2 Subtypes and a Surrogate Classification according to Tumor Grade and Immunohistochemical Biomarkers. J Cancer Epidemiol. 2014:469251.

⁴⁴ Breast Cancer Foundation NZ, 2018. “I’m still here” Insights into living – and dying – with advanced breast cancer in NZ

The percentage of screen-detected mammograms has increased over time for all ethnicities (Table 2), probably due both to increased participation in BSA and the move to digital mammography. Over that same period, there was an observed increase in the ratio of small tumours for Māori and Pacific women, and a decrease in very large tumours (Figure 8). There was also an increase in the percentage of stage 1 tumours, and a decrease in stage 3 and 4 tumours (Figure 9).

	2003-2005	2006-2008	2009-2011	2012-2014	2015-2017	2018-2019
Screened	37.2%	40.4%	47.2%	45.8%	46.9%	46.4%
Symptomatic	62.8%	59.6%	52.8%	54.2%	53.1%	53.6%

Table 2. Screened vs symptomatic diagnoses over time

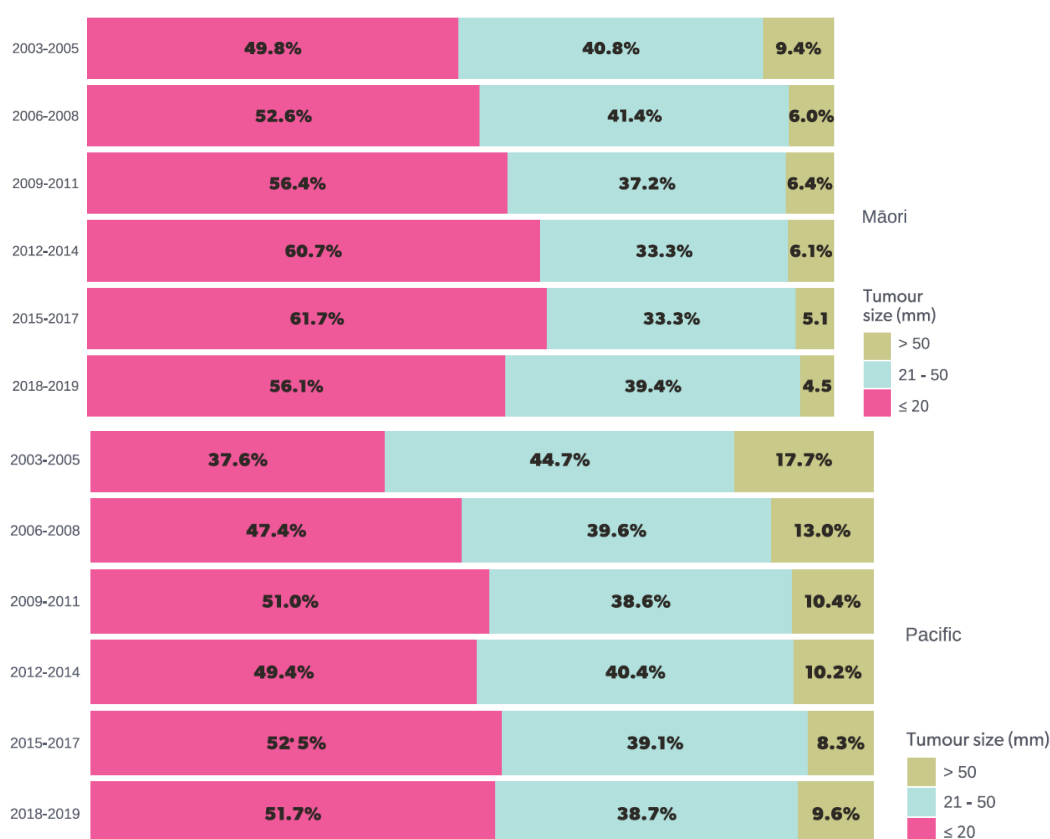


Figure 8. Changes in Māori and Pacific women's tumour size over time

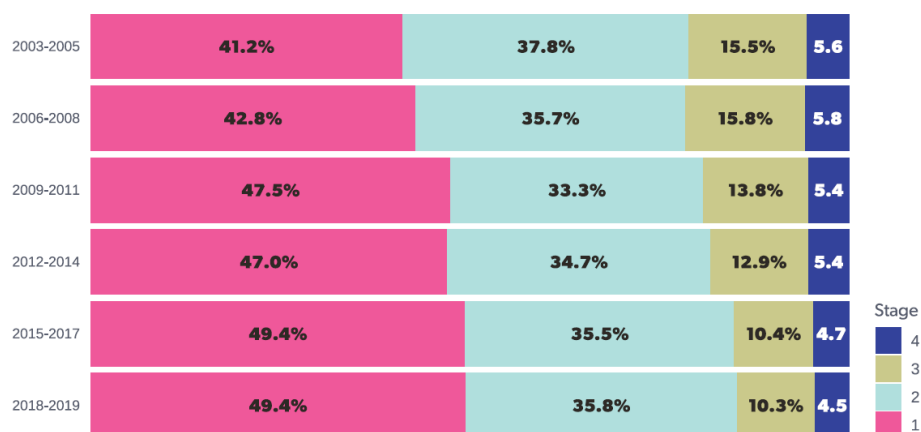


Figure 9. Changes in cancer stage over time

10. Impact of Covid-19 on BreastScreen Aotearoa coverage

BreastScreen Aotearoa coverage has declined during the 2020-2021 Covid-19 period, and is now lower than it has been in more than 10 years (Figure 10)⁴⁵. This applies across all ethnicities and ages.



Figure 10. BreastScreen Aotearoa coverage by ethnicity

and age, January 2011 to January 2022

11. Screening age extension to 74 – evidence and impact

Approximately 7% of New Zealand breast cancer diagnoses are in the 70-74 age group. International evidence suggests that screening is justified in this age group. New Zealand specific screening studies in this age group are rare, as screening is not publicly funded. The best local data comes from a review by radiologist Dr Henry Kwok of Auckland data related to older women’s breast cancer diagnoses and outcomes 2000-2013⁴⁶. Dr Kwok found that 30% of 70-75-year-old women were diagnosed via screening mammogram (either private mammograms or public mammograms offered to women with a high risk profile).

Of this group, 65% of screened women were diagnosed with smaller (T1) tumours, compared with 40% of unscreened women. In 50% of unscreened women, the cancer had spread to their lymph nodes, compared with only 15% of screened women). The mortality rate was much higher in unscreened women (Figure 11).

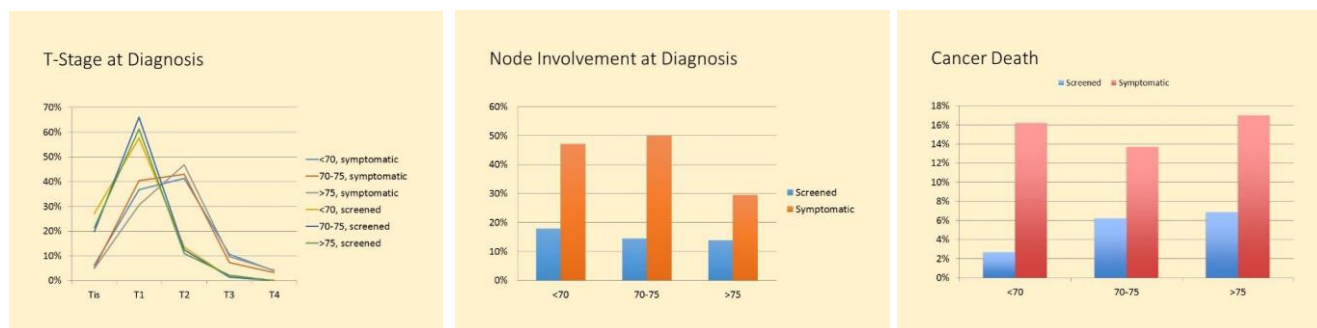


Figure 11. Breast cancer characteristics in screened and unscreened Auckland women, 2000-2013

⁴⁵ BreastScreen Aotearoa DHB Coverage Report <https://minhealthnz.shinyapps.io/nsu-bsa-coverage-dhb/>

⁴⁶ Kwok, H., *Breast Cancer Screening Beyond 70 Years Old*. 2015, BreastScreen Aotearoa Counties Manukau

Breast Cancer Foundation NZ presented this local evidence, along with international evidence, to the Select Committee in 2016. The Committee recommended the Government consider the age extension, and in 2017 the age extension was part of the Coalition Agreement.

Since then, the weight of international evidence has grown, and has been accepted by BreastScreen Aotearoa and the Ministry of Health. In 2019, the Ministry of Health published an impact report which concluded that:

- mortality from breast cancer might be reduced by at least one-third for screened women aged 70-74 compared to unscreened women
- more cancer would be found at an earlier stage, when the required treatment might be less intensive.⁴⁷

The report also noted the resource constraints (particularly staffing) that would need to be addressed for the age extension to proceed. When fully implemented, the age extension would require approximately 40,000 additional mammograms per year at current population levels. However, the report proposed an incremental rollout scenario over five years that would start with 8,000 additional mammograms in year one, rising to 16,000 in year two, 25,000 in year three and so on (Figure 12). Breast Cancer Foundation NZ accepts that an incremental rollout is a sensible way to proceed in a constrained environment.

Scenario 4: Progressive roll-out

Screening appointments per year (women aged 45–74 years) at equitable coverage

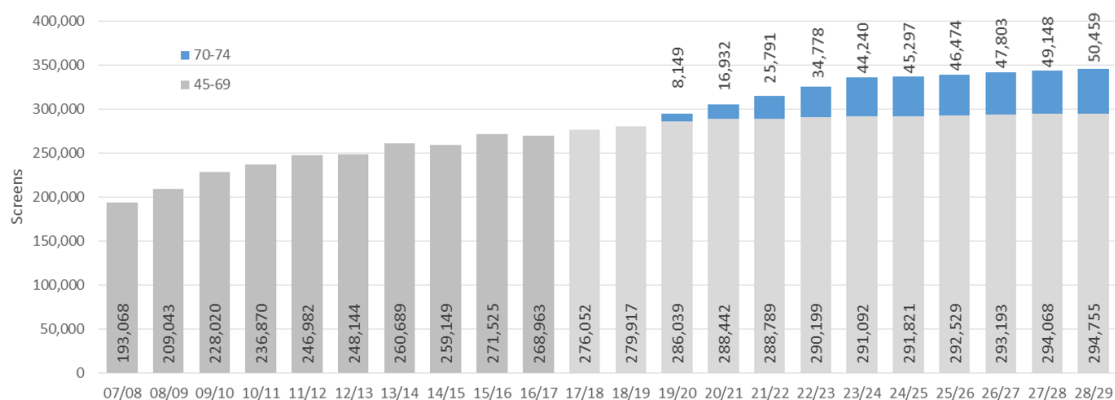


Figure 12. BreastScreen Aotearoa’s progressive roll-out scenario for screening women 70-74

The 8,000 additional year one mammograms would amount to 160 mammograms per week spread across multiple locations operated by BSA’s eight regional providers.

New Zealand’s failure to implement the screening age extension, now leaves us out of sync with international practice, as the examples in Table 3 show.

⁴⁷ Ministry of Health NZ, 2019. Impact Analysis: Extending BreastScreen Aotearoa to include women aged 70-74 years.

Countries with population screening over age 69	Upper Age Limit
Australia	Invited to 74; can continue to screen from 75
Canada	74
France	74
Israel	74
Netherlands	75
Sweden	74
UK	Invited to 70; women can self-refer from 71; national trial underway inviting women to 73

Table 3. Screening age limits in selected countries

12. Personal stories

A. Dr Heidi MacRae



Dr Heidi MacRae, a 50-year-old GP on Auckland’s North Shore and mother of three, was diagnosed with triple-negative breast cancer in September 2021. The diagnosis was a result of sheer luck, as the mammogram that would have detected her tumour weeks earlier was cancelled due to lockdown. She’s now part way through a six-month course of chemotherapy and faces a year of immunotherapy, a double mastectomy, and radiation treatment.

My world changed on 17 September 2021. My diagnosis came completely out of the blue. One day I was fighting fit and well and the next I had an aggressive, fast-growing breast cancer. I went from healer to patient, mother and housewife to invalid, carer to cared for.

As well as being a working GP, I have spent the last year and a half completely invested in managing Covid in our community. Ironically, it was Covid and the start of lockdown that led to my breast cancer diagnosis.

Routine staff temperature checks identified that I had a fever which I was completely unaware of. I did all the normal investigations for high temperature – I had a Covid test, blood tests, I thought it could’ve been an autoimmune condition and saw a rheumatologist, had chest x-rays and pelvic scans. Once I’d ruled out all of the normal things that could cause a fever, I started looking into all the weird and wonderful diagnoses. That led me to believe the fever could be an extremely unusual symptom of cancer.

I managed to get a mammogram, which unfortunately found a 2.6cm tumour. I then had a biopsy and five days later, a surgeon told me I had triple-negative breast cancer that needed aggressive treatment. It was the most distressing day of my life.

I was meant to have a routine mammogram in August, around a week after we went into lockdown. When it got cancelled, I didn’t think much about it, it was just one of those things outside of my control. There was a small niggle at the back of my mind that I wished I had done it earlier. But it didn’t overly worry me – it never dawned on me that I would get breast cancer because all my

previous mammograms had been normal and there was no obvious family history.

I'm now part-way through a six-month course of weekly chemotherapy. The side effects are cumulative and I have some really good days, but some days where I'm so tired and achy with no energy at all. I have lost my hair. My brain has turned to custard, and I have the usual nausea and bowel symptoms. But this is all manageable because the treatment is going to make me better.

When I think back to my patients with breast cancer, almost all of them have been picked up early because of their routine mammograms. Breast screening is so essential for detecting cancer early and stopping women from going through the same rigmarole that I'm facing.

If I had waited until December when my screening mammogram had been rescheduled to, my tumour might've already spread to my lymph nodes or metastasized. Because I wasn't ill with the temperature, I could've quite happily ignored it. And I couldn't feel the breast lump at all, I had none of the typical signs of breast cancer.

I absolutely believe that if I didn't have the level of health knowledge that I do, and if I had not pushed to reschedule my mammogram, things would have turned out differently for me. I am so lucky to have found it before it did any more damage, I really count my blessings.

My recent experience has highlighted to me that there is much injustice around cancer screening and treatment. Unfortunately Māori and Pasifika women have poor breast cancer outcomes compared to Pākeha. In the same way that we've had to revise how the Covid vaccine is given to these groups, we need to also rethink how we can make breast screening more accessible, culturally appropriate, and delivered in a way that makes all women participate.

Our health system is designed for health-conscious Pākeha women and we need to do more to encourage women who don't trust the system, or who are too embarrassed or frightened, to go for mammograms.

My mammogram has hopefully saved my life. I want to encourage all women to get checked regularly in the hopes that many more lives can be saved.

B. Kim Anderson



Kim Anderson, 46, was booked for her first routine mammogram in Christchurch in August 2021. Due to lockdowns, the appointment got cancelled. In late September, she unfortunately had an adverse reaction to her Covid vaccination, but if it wasn't for that adverse reaction, the lump in her breast might not have been picked up for much longer.

I had a bad reaction to the vaccine and had shortness of breath, so I was booked in for a CT scan to check my lungs, and the lump was picked up on that. It wasn't even anything to do with a mammogram.

The rheumatologist discussed it with radiology as breasts aren't her speciality, and that's when they said I had to go back for a mammogram, ultrasound and biopsy. It was just by lucky chance that it was picked up in that CT scan, because I still hadn't been rebooked for my mammogram. Who knows how long it would have been before I got my mammogram appointment.

At first, the biopsy in October came back clear. I then saw a breast surgeon and because it was quite a big lump – five or six centimetres – they said it could be cancerous and wanted to take the whole thing out to investigate more. I had surgery to remove it in December and thankfully it didn't end up being cancer.

Mammograms are imperative for women and the backlog is horrific, because some cancers are aggressive and move quickly. My nana had breast cancer, my mum died of lymphoma last year which went to her breasts as well, three of my aunties on my dad's side have had breast cancer, and my dad died of cancer too.

Since my scare, I've put posts on Facebook telling my friends to get their boobs checked, and every one of them has. One friend had cancer cells picked up under her arm, so I also think about what would have happened if she hadn't been checked.

The thought that more women are sitting out there with ticking time bombs, which would be far worse than Covid for many women, that's really scary. Mammograms should definitely be a priority throughout all Covid alert levels like any cancer treatment.

C. Sandy Roydhouse



Sandy Roydhouse, a 59-year-old children's book publisher and grandmother from Auckland, had a mammogram cancelled in lockdown during 2020. She managed to get rebooked in April 2021 and was shocked to learn it had detected a 2cm tumour in her breast.

I was meant to have a routine mammogram at the beginning of the first lockdown. When it was cancelled, I didn't try to reschedule it – there was so much uncertainty around Covid and then we went into lockdown again. I did feel guilty about missing it but it fell off my radar and I didn't give it any further thought.

Then I booked one in for April 2021 and assumed it would be like every other. I'd never had an issue before so I thought it was all going to be fine, and then it suddenly wasn't.

I was told I had a grade 3, 2cm tumour which I would never have felt myself through self-examination because it was too deep in my breast. Very quickly after that I had a lumpectomy and then radiation therapy. I was so relieved it hadn't spread to my lymph nodes and I didn't need chemotherapy.

I could have easily been one of the Missing Women. My surgeon did say my tumour may not have been there a year ago. But if I was still waiting for my mammogram, it could have turned out very differently for me. My cancer is gone now and I'm grateful for the fast treatment, and for my life.

D. Sarah Kane

Sarah Kane, a mother of two from Flat Bush, Auckland, was 47 when she was diagnosed with breast cancer in October 2020. It came after a routine mammogram which had been delayed four months due to Covid-19.

My mammogram was meant to be in May but because of the pause on screening during Level 4 and the backlog that came from that, I was



rescheduled to the end of August. But the day before my appointment I got a call to say that due to staff illness, I had to be rescheduled again and the next appointment wasn't until the end of September. I jokingly said, "Well, I hope I don't have cancer!"

I finally got my mammogram on 24 September and around 5 October I got a call to say they'd seen something on the scan they were concerned about. I went back in the next day for more tests and on 13 October I was given the results.

Initially they thought I had a grade 1, 12mm tumour but after surgery they found it was grade 2, 15mm. Luckily, the cancer hadn't spread to my lymph nodes so I didn't need chemotherapy.

I opted to have a lumpectomy and radiation over a mastectomy. Immediately after surgery I developed lymphoedema. This has caused a lot of problems with my shoulder, which I'll have to manage for life. I've also started on hormone treatment and I'm really struggling with the side effects of that – things like debilitating fatigue, menopausal symptoms and liver problems.

The diagnosis came as a total shock and the timing was terrible. I was a regional manager for Qantas and had been stood down without pay, but I'd just secured a six-month contract for another job to tide me over until we were flying again. One week into the role I learnt I had breast cancer, so I had to give up the job. It was a hugely stressful time because my husband also works in the aviation industry and had his hours stripped right back, so our income was down around 70%.

I'll never know for sure if things would be different for me if that mammogram had not have been delayed, but I'll always wonder. Maybe this all would have been a lot less drama than it needed to be. What is certain, is that the mammogram was life-saving because where the tumour was located, on my chest wall behind my nipple, meant I would never have felt it myself.

I thought seriously about not telling anyone about my diagnosis, but I feel so strongly about the importance of mammograms that I've been really vocal with my friends and family, encouraging them not to put mammograms off.

- ENDS -