Supporting Information

Supplementary results
This appendix was part of the submitted manuscript and has been peer reviewed. It is posted as supplied by the authors.

Appendix to: Noguchi N, Marinovich ML, Wylie EJ, et al. Screening outcomes by risk factor and age: evidence from BreastScreen WA for discussions of risk-stratified population screening. Med J Aust 2021; doi: 10.5694/mja2.51216.
Table 1. Numbers of screening episodes per woman

| Screen episodes | Women       |
|-----------------|-------------|
| Total number of women | 323 082    |
| 1                | 76 848 (23.8%) |
| 2                | 54 750 (17.0%) |
| 3                | 47 184 (14.6%) |
| 4                | 58 754 (18.2%) |
| 5                | 71 748 (22.2%) |
| 6 or more        | 13 798 (3.3%) |

Table 2. Characteristics of screen-detected cancers*

| Characteristic                        |   |
|---------------------------------------|---|
| Pathological tumour size category     | 7024 |
| pTis (ductal carcinoma in situ)       | 1551 (22.1%) |
| pT1a (≤ 5 mm)                         | 502 (7.1%) |
| pT1b (> 5 mm, ≤ 10 mm)                | 1299 (18.5%) |
| pT1c (> 10 mm, ≤ 20 mm)               | 2313 (32.9%) |
| pT2 (> 20 mm, ≤ 50 mm)                | 1184 (16.9%) |
| pT3 (> 50 mm)                         | 144 (2.1%) |
| Unknown                               | 31 (0.4%) |
| Axillary nodal status (invasive cancer)| 5472 |
| Negative for metastasis               | 3731 (68.2%) |
| Positive for metastasis               | 1208 (22.1%) |
| Unknown                               | 533 (9.7%) |

The proportion of screen-detected small invasive cancers (< 15 mm) was 49% (478/980) in first screens and 61% (2707/4462) in subsequent screens.

* BreastScreen WA does not collect data on cancer characteristics (size, nodal status) for interval cancers because they are often diagnosed outside the program.
| Risk factor/Age group (years) | Yes                  | No                   | Difference in CDR (yes v no) (95% CI) |
|------------------------------|----------------------|----------------------|---------------------------------------|
|                              | Screens | Cancers | CDR (95% CI) | Screens | Cancers | CDR (95% CI) |                        |
| Personal history of breast cancer | 40–49   | 922     | 65 (29–145) | 78958   | 282     | 36 (32–40) | 29 (–23 to 81) |
|                              | 50–59   | 8688    | 67        | 77 (61–98) | 343085  | 1590    | 46 (44–49) | 31 (12–49) |
|                              | 60–69   | 16710   | 204      | 122 (107–140) | 328517  | 2414    | 73 (71–76) | 49 (32–66) |
|                              | 70 or more | 10609   | 131      | 123 (104–146) | 90147   | 1050    | 116 (110–124) | 7 (–15 to 29) |
| Personal history of ovarian cancer | 40–49   | 238     | 0       | 0 | 79642   | 288     | 36 (32–41) | –36 (–1307 to 1234) |
|                              | 50–59   | 1490    | 6       | 40 (18–89) | 350284  | 1651    | 47 (45–49) | –7 (–39 to 25) |
|                              | 60–69   | 2429    | 10      | 41 (22–76) | 342796  | 2608    | 76 (73–79) | –35 (–61 to –9) |
|                              | 70 or more | 840     | 4       | 48 (18–127) | 99913   | 1177    | 118 (111–125) | –70 (–117 to –23) |
| Family history of breast cancer | 40–49   | 20840   | 87      | 42 (34–51) | 59040   | 201     | 34 (30–39) | 8 (–2 to 18) |
|                              | 50–59   | 70402   | 397     | 56 (51–62) | 281373  | 1260    | 45 (42–47) | 12 (6–18) |
|                              | 60–69   | 72424   | 641     | 89 (82–96) | 272803  | 1977    | 72 (69–76) | 16 (9–24) |
|                              | 70 or more | 25294   | 373     | 147 (133–163) | 75462   | 808     | 107 (100–115) | 40 (24–57) |
| Dense breasts* | 40–49   | 18561   | 86      | 46 (38–57) | 27829   | 78      | 28 (22–35) | 18 (6–30) |
|                              | 50–59   | 56491   | 297     | 53 (47–59) | 152678  | 580     | 38 (35–41) | 15 (8–21) |
|                              | 60–69   | 36458   | 306     | 84 (75–94) | 182695  | 1160    | 63 (60–67) | 20 (10–30) |
|                              | 70 or more | 6507    | 81      | 124 (100–155) | 43748   | 376     | 86 (78–95) | 39 (10–67) |
| Biopsy for benign disease    | 40–49   | 11572   | 47      | 41 (31–54) | 68308   | 241     | 35 (31–40) | 5 (–7 to 18) |
|                              | 50–59   | 62218   | 377     | 61 (55–67) | 289557  | 1280    | 44 (42–47) | 16 (10–23) |
|                              | 60–69   | 69330   | 659     | 95 (88–103) | 275897  | 1959    | 71 (68–74) | 24 (16–32) |
|                              | 70 or more | 21152   | 312     | 148 (132–165) | 79604   | 869     | 109 (102–117) | 38 (21–56) |
| Hormone replacement therapy in past 6 months | 40–49   | 4882    | 11      | 23 (12–41) | 74993   | 277     | 37 (33–42) | –14 (–28 to 0) |
|                              | 50–59   | 52021   | 307     | 59 (53–66) | 299707  | 1350    | 45 (43–48) | 14 (7–21) |
|                              | 60–69   | 42710   | 416     | 97 (89–107) | 302484  | 2201    | 73 (70–76) | 25 (15–34) |
|                              | 70 or more | 9056    | 131     | 145 (122–171) | 91695   | 1049    | 114 (108–122) | 30 (5–56) |
| Self-reported symptoms       | 40–49   | 1230    | 18      | 146 (93–231) | 78650   | 270     | 34 (30–39) | 112 (45–179) |
|                              | 50–59   | 2833    | 90      | 318 (259–389) | 348942  | 1567    | 45 (43–47) | 273 (208–337) |
|                              | 60–69   | 2121    | 112     | 528 (441–632) | 343106  | 2506    | 73 (70–76) | 455 (360–550) |
|                              | 70 or more | 853     | 93      | 1090 (900–1321) | 99903   | 1088    | 109 (103–116) | 981 (772–1191) |

CI = confidence interval.

* Breast density was based on density classification during preceding screen (within 27 months).

**Bold**: Difference is significantly different to that for 40–49-year-old women in this category.
### Table 4. Interval cancer rate (ICR), by age group for risk factors

| Risk factor/Age group (years) | Yes | No | Difference in ICR (yes v no) (95% CI) |
|------------------------------|-----|----|--------------------------------------|
|                              | Screens | Cancers | ICR (95% CI) | Screens | Cancers | ICR (95% CI) |                     |
| **Personal history of ovarian cancer** |       |       |                     |       |       |                     |                     |
| 40–49                        | 340   | 1    | 20.5 (2.9–145.4)    | 142359 | 283   | 10.4 (9.3–11.7)    | 10.1 (−30.1 to 50.3) |
| 50–59                        | 1646  | 1    | 4.6 (0.7–32.7)      | 422566 | 732   | 9.1 (8.5–9.8)      | −4.5 (−13.6 to 4.6)  |
| 60–69                        | 2473  | 1    | 3.2 (0.5–22.8)      | 353598 | 626   | 9.5 (8.8–10.3)     | −6.3 (−12.6 to 0.1)  |
| 70 or more                   | 860   | 0    | 0                    | 102288 | 222   | 11.8 (9.3–11.7)    | −11.8 (−52.0 to 28.4) |
| **Family history of breast cancer** |       |       |                     |       |       |                     |                     |
| 40–49                        | 31833 | 75   | 14.1 (11.2–17.7)    | 110867 | 209   | 9.6 (8.4–11.0)     | 4.5 (1.1–8.0)        |
| 50–59                        | 79707 | 137  | 10.4 (8.8–12.3)     | 344506 | 596   | 8.9 (8.2–9.6)      | 1.6 (−0.3 to 3.5)    |
| 60–69                        | 74366 | 123  | 10.3 (8.6–12.3)     | 281707 | 504   | 9.3 (8.5–10.1)     | 1.0 (−1.0 to 3.0)    |
| 70 or more                   | 25836 | 43   | 10.1 (7.5–13.6)     | 77315  | 179   | 12.2 (10.5–14.1)   | −2.1 (−5.6 to 1.4)   |
| **Dense breasts**            |       |       |                     |       |       |                     |                     |
| 40–49                        | 54929 | 166  | 15.9 (13.6–18.5)    | 75952  | 90    | 6.2 (5.1–7.6)      | 9.7 (6.9–12.4)       |
| 50–59                        | 107399| 324  | 15.8 (14.2–17.6)    | 285461 | 355   | 6.5 (5.9–7.2)      | 9.3 (7.4–11.1)       |
| 60–69                        | 59217 | 217  | 19.4 (17.0–22.1)    | 266970 | 376   | 7.4 (6.7–8.2)      | 12.0 (9.3–14.7)      |
| 70 or more                   | 13931 | 69   | 26.2 (20.7–33.2)    | 74830  | 137   | 9.6 (5.1–7.6)      | 16.6 (10.2–23.0)     |
| **Biopsy for benign disease** |       |       |                     |       |       |                     |                     |
| 40–49                        | 17924 | 54   | 16.1 (12.4–21.1)    | 124776 | 230   | 9.7 (8.5–11.0)     | 6.5 (2.0–10.9)       |
| 50–59                        | 71516 | 176  | 13.2 (11.4–15.3)    | 352697 | 557   | 8.3 (7.6–9.0)      | 5.0 (2.9–7.0)        |
| 60–69                        | 71404 | 186  | 14.2 (12.3–16.4)    | 284669 | 441   | 8.3 (7.6–9.1)      | 6.0 (3.8–8.1)        |
| 70 or more                   | 21718 | 75   | 19.0 (15.2–23.9)    | 81433  | 147   | 9.8 (8.3–11.5)     | 9.2 (4.6–13.8)       |
| **Hormone replacement therapy in past 6 months** |       |       |                     |       |       |                     |                     |
| 40–49                        | 8045  | 12   | 7.8 (4.4–13.8)      | 134646 | 272   | 10.6 (9.4–12.0)    | −2.8 (−7.4 to 1.8)   |
| 50–59                        | 59875 | 142  | 12.4 (10.5–14.6)    | 364287 | 591   | 8.6 (7.9–9.3)      | 3.8 (1.7–6.0)        |
| 60–69                        | 43994 | 143  | 17.2 (14.6–20.2)    | 312046 | 484   | 8.4 (7.6–9.1)      | 8.8 (5.9–11.7)       |
| 70 or more                   | 9275  | 38   | 21.8 (15.9–30.0)    | 93871  | 184   | 10.7 (9.3–12.4)    | 11.1 (4.0–18.2)      |
| **Self-reported symptoms**   |       |       |                     |       |       |                     |                     |
| 40–49                        | 3226  | 16   | 25.8 (15.8–42.1)    | 139474 | 268   | 10.1 (9.0–11.4)    | 15.7 (3.0–28.4)      |
| 50–59                        | 4041  | 26   | 34.2 (23.3–50.2)    | 420172 | 707   | 8.9 (8.2–9.6)      | 25.3 (12.2–38.5)     |
| 60–69                        | 2273  | 20   | 48.0 (31.0–74.3)    | 353800 | 607   | 9.2 (8.5–10.0)     | 38.8 (17.8–59.8)     |
| 70 or more                   | 915   | 10   | 60.1 (32.4–111.4)   | 102236 | 212   | 11.3 (9.9–12.9)    | 48.8 (11.6–85.9)     |

CI = confidence interval.

**Bold:** Difference is significantly different to that for 40–49-year-old women in this category.