Supplementary data

Comprehensive list of studies used to generate Figure 1:

- 1. Beckmann K, Duffy SW, Lynch J, Hiller J, Farshid G, Roder D. Estimates of over-diagnosis of breast cancer due to population-based mammography screening in South Australia after adjustment for lead time effects. J Med Screen. 2015;22(3):127–135.
- 2. Paci E, Miccinesi G, Puliti D, et al. Estimate of overdiagnosis of breast cancer due to mammography after adjustment for lead time. A service screening study in Italy. Breast Cancer Res. 2006;8(6):R68.
- 3. Paci E, Warwick J, Falini P, Duffy SW. Overdiagnosis in screening: Is the increase in breast cancer incidence rates a cause for concern? J Med Screen. 2004;11(1):23–27.
- 4. Morrell S, Barratt A, Irwig L, Howard K, Biesheuvel C, Armstrong B. Estimates of overdiagnosis of invasive breast cancer associated with screening mammography. Cancer Causes Control. 2010;21(2):275–282.
- 5. Hellquist BN, Duffy SW, Nystrom L, Jonsson H. Overdiagnosis in the population-based service screening programme with mammography for women aged 40 to 49 years in Sweden. J Med Screen. 2012;19(1):14–19.
- Jonsson H, Johansson R, Lenner P. Increased incidence of invasive breast cancer after the introduction of service screening with mammography in Sweden. Int J Cancer. 2005;117(5):842–847.
- 7. Kalager M, Adami H-O, Bretthauer M, Tamimi RM. Overdiagnosis of invasive breast cancer due to mammography screening: Results from the Norwegian Screening Program. Ann Intern Med. 2012;156(7):491–499.
- 8. Martinez-Alonso M, Vilaprinyo E, Marcos-Gragera R, Rue M. Breast cancer incidence and overdiagnosis in Catalonia (Spain). Breast Cancer Res. 2010;12(4): R58.
- Svendsen AL, Olsen AH, Von Euler-Chelpin M, Lynge E. Breast cancer incidence after the introduction of mammography screening: What should be expected? Cancer. 2006;106(9):1883–1890.
- Duffy SW, Agbaje O, Tabar L, et al. Overdiagnosis and overtreatment of breast cancer: Estimates of overdiagnosis from two trials of mammographic screening for breast cancer. Breast Cancer Res. 2005;7(6):258–265.
- Olsen AH, Agbaje OF, Myles JP, Lynge E, Duffy SW. Overdiagnosis, sojourn time, and sensitivity in the Copenhagen Mammography Screening Program. Breast J. 2006;12(4):338– 342.
- 12. Arrospide A, Rue M, van Ravesteyn NT, et al. Evaluation of health benefits and harms of the breast cancer screening programme in the Basque Country using discrete event simulation. BMC Cancer. 2015;15(1):671.
- 13. De Gelder R, Fracheboud J, Heijnsdijk EAM, et al. Digital mammography screening: Weighing reduced mortality against increased overdiagnosis. Prev Med. 2011;53(3):134–140.
- 14. De Gelder R, Heijnsdijk EAM, Van Ravesteyn NT, Fracheboud J, Draisma G, De Koning HJ. Interpreting overdiagnosis estimates in population-based mammography screening. Epidemiol Rev. 2011;33(1):111–121.

- 15. de Koning HJ, Draisma G, Fracheboud J, de Bruijn A. Overdiagnosis and overtreatment of breast cancer: Microsimulation modelling estimates based on observed screen and clinical data. Breast Cancer Res. 2006;8(1):202.
- Gunsoy NB, Garcia-Closas M, Moss SM. Modelling the overdiagnosis of breast cancer due to mammography screening in women aged 40 to 49 in the United Kingdom. Breast Cancer Res. 2012;14(6):R152.
- 17. Gunsoy NB, Garcia-Closas M, Moss SM. Estimating breast cancer mortality reduction and overdiagnosis due to screening for different strategies in the United Kingdom. Br J Cancer. 2014;110(10):2412–2419.
- 18. Seigneurin A, Francois O, Labarere J, Oudeville P, Monlong J, Colonna M. Overdiagnosis from non-progressive cancer detected by screening mammography: Stochastic simulation study with calibration to population based registry data. BMJ. 2011;343:d7017.
- van Ravesteyn NT, Stout NK, Schechter CB, et al. Benefits and harms of mammography screening after age 74 years: Model estimates of overdiagnosis. J Natl Cancer Inst. 2015;107(7): djv103.
- 20. Beckmann KR, Lynch JW, Hiller JE, et al. A novel case-control design to estimate the extent of over-diagnosis of breast cancer due to organised population-based mammography screening. Int J Cancer. 2015;136(6): 1411–1421.
- Coldman A, Phillips N. Incidence of breast cancer and estimates of overdiagnosis after the initiation of a population-based mammography screening program. CMAJ. 2013;185(10):E492–E498.
- 22. Duffy SWT, Olsen L, Vitak AH, et al. Absolute numbers of lives saved and overdiagnosis in breast cancer screening, from a randomized trial and from the Breast Screening Programme in England. J Med Screen. 2010;17(1):25–30.
- 23. Falk RS, Hofvind S, Skaane P, Haldorsen T. Overdiagnosis among women attending a population-based mammography screening program. Int J Cancer. 2013;133(3):705–712.
- 24. Heinavaara S, Sarkeala T, Anttila A. Overdiagnosis due to breast cancer screening: Updated estimates of the Helsinki service study in Finland. Br J Cancer. 2014;14(10):413.
- 25. Jørgensen KJ, Gøtzsche PC. Overdiagnosis in publicly organised mammography screening programmes: Systematic review of incidence trends. BMJ. 2009;339(7714):206–209.
- 26. Jorgensen KJ, Zahl PH, Gotzsche PC. Overdiagnosis in organised mammography screening in Denmark. A comparative study. BMC Womens Health. 2009; 9:36.
- 27. Lund E, Mode N, Waaseth M, Thalabard J-C. Overdiagnosis of breast cancer in the Norwegian Breast Cancer Screening Program estimated by the Norwegian Women and Cancer cohort study. BMC Cancer. 2013;13(1):614.
- 28. Marmot MG, Altman DG, Cameron DA, Dewar JA, Thompson SG, Wilcox M. The benefits and harms of breast cancer screening: An independent review. Br J Cancer. 2013;108(11):2205–2240.
- 29. Miller AB, Wall C, Baines CJ, Sun P, To T, Narod SA. Twenty five year followup for breast cancer incidence and mortality of the Canadian National Breast Screening Study: Randomised screening trial. BMJ. 2014;348:g366.
- 30. Moss S. Overdiagnosis and overtreatment of breast cancer: Overdiagnosis in randomised controlled trials of breast cancer screening. Breast Cancer Res. 2005;7(5):230–234.
- Njor SH, Olsen AH, Blichert-Toft M, Schwartz W, Vejborg I, Lynge E. Overdiagnosis in screening mammography in Denmark: Population based cohort study. BMJ. 2013;346:f1064.

- 32. Peeters PHM, Verbeek ALM, Straatman H, et al. Evaluation of overdiagnosis of breast cancer in screening with mammography: Results of the Nijmegen Programme. Int J Epidemiol. 1989;18(2):295–299.
- 33. Puliti D, Miccinesi G, Zappa M, Manneschi G, Crocetti E, Paci E. Balancing harms and benefits of service mammography screening programs: A cohort study. Breast Cancer Res. 2012;14(1):R9.
- 34. Puliti D, Zappa M, Miccinesi G, Falini P, Crocetti E, Paci E. An estimate of overdiagnosis 15 years after the start of mammographic screening in Florence. Eur J Cancer. 2009;45(18):3166–3171.
- 35. Ripping TM, Verbeek AL, Fracheboud J, de Koning HJ, van Ravesteyn NT, Broeders MJ. Overdiagnosis by mammographic screening for breast cancer studied in birth cohorts in The Netherlands. Int J Cancer. 2015;137(4):921–929.
- 36. Waller M, Moss S, Watson J, Møller H. The effect of mammographic screening and hormone replacement therapy use on breast cancer incidence in England and Wales. Cancer Epidemiol Biomarkers Prev. 2007;16(11):2257–2261.
- Zackrisson S, Andersson I, Janzon L, Manjer J, Garne JP. Rate of overdiagnosis of breast cancer 15 years after end of Malmo⁻⁻ mammographic screening trial: Follow-up study. BMJ. 2006;332(7543):689–692.
- Zahl PH, Strand BH, Maehlen J. Incidence of breast cancer in Norway and Sweden during introduction of nationwide screening: Prospective cohort study. BMJ. 2004;328(7445):921– 924.
- Yen AM, Duffy SW, Chen TH, et al. Long-term incidence of breast cancer by trial arm in one county of the Swedish Two-County Trial of mammographic screening. Cancer. 2012;118(23):5728–5732.
- 40. Bleyer A, Welch HG. Effect of three decades of screening mammography on breast-cancer incidence. N Engl J Med. 2012;367(21):1998–2005.
- 41. Michalopoulos D, Duffy SW. Estimation of overdiagnosis using short-term trends and lead time estimates uncontaminated by overdiagnosed cases: Results from the Norwegian Breast Screening Programme. J Med Screen 2016, Vol. 23(4) 192–202
- 42. Jørgensen KJ, Gøtzsche PC, Kalager M and Zahl PH. Breast Cancer Screening in Denmark A Cohort Study of Tumor Size and Overdiagnosis Ann Intern Med. 2017;166:313-323. doi:10.7326/M16-0270
- 43. Lund E, Nakamura A, Thalabard JC. No overdiagnosis in the Norwegian Breast Cancer Screening Program estimated by combining record linkage and questionnaire information in the Norwegian Women and Cancer study. European Journal of Cancer 2018; 89: 102e112
- 44. Njor SH, Paci E and Rebolj M As you like it: How the same data can support manifold views of overdiagnosis in breast cancer screening. Int. J. Cancer 2018 ; 143 : 1287–1294
- 45. Glasziou PP, Jones MA, Pathirana T, et al. Estimating the magnitude of cancer overdiagnosis in Australia. Med J Aust 2020; doi: 10.5694/mja2.50455.
- 46. Lynge E, Beau AB, von Euler-Chelpin M, Napolitano G, Njor S, Olsen AH, Schwartz W, Vejborg I. Breast cancer mortality and overdiagnosis after implementation of population-based screening in Denmark. Breast Cancer Research and Treatment (2020) 184:891–899. <u>https://doi.org/10.1007/s10549-020-05896-9</u>.
- 47. Yang L, Wang S, Huang Y. An exploration for quantification of overdiagnosis and its effect for breast cancer screening. Chin J Cancer Res 2020;32(1):26-35
- 48. Katalinic, A., Eisemann, N., Kraywinkel, K., Noftz, M.R. and Hübner, J. (2020), Breast cancer incidence and mortality before and after implementation of the German mammography screening program. Int. J. Cancer, 147: 709-718. https://doi.org/10.1002/ijc.32767

49. Fann JC, Chang KJ, Hsu CY, Yen AM, Yu CP, Chen SL, Kuo WH, Tabár L, Chen HH. Impact of Overdiagnosis on Long-Term Breast Cancer Survival. Cancers (Basel). 2019 Mar 7;11(3):325. doi: 10.3390/cancers11030325. PMID: 30866499; PMCID: PMC6468420.