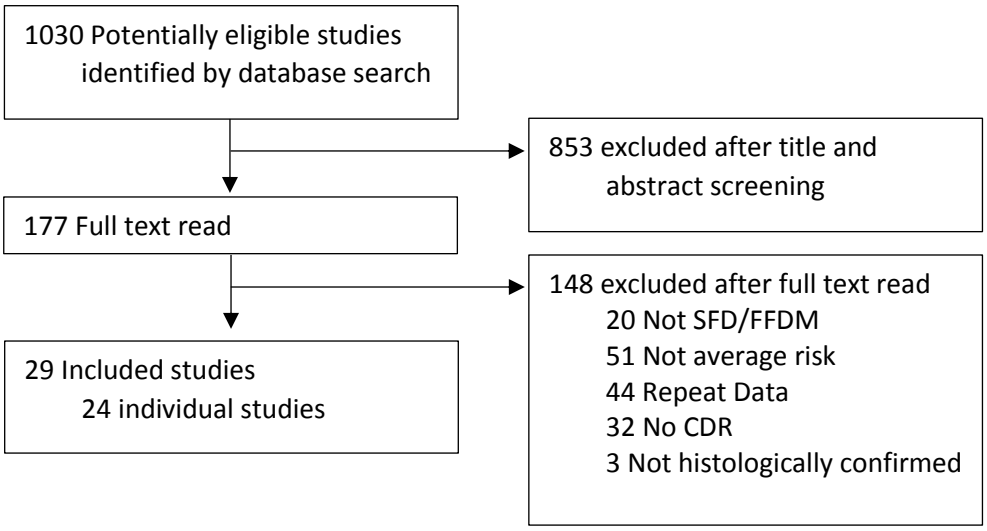
Supplementary Material

Figure 1: Selection of Included Studies and search strategy



Search strategy

1. digital*.mp.
2. film*.mp.
3. mammograph*.mp.
4. Mammography/
5. 3 or 4
6. 1 and 2 and 5

Table 1: Characteristics of studies

Author	Study type	Country	Population	Film	Digital	Screening interval	Screening age range
Campari (2016)[42]	Observational Retrospective	Italy	Reggio Emilia	2011	2012	2 years	45-74
Chiarelli (2013)[41] Prummel (2016)[10]	Observational Retrospective	Canada	Ontario	2008-2009	2008-2009	2 years	50-74
Dabbous (2017)[40]	Observational Retrospective	United States	Chicago	NI	NI	1 year	40-79
Del Turco (2007)[13]	Observational Retrospective	Italy	Florence	2004-2005	2004-2005	2 years	50-69
Glynn (2011)[39]	Observational Retrospective	United States	St Louis Institution	2004-2005	2006-2009	1 year	27-92
Hambly (2009)[38]	Observational Retrospective	Ireland	All	2005-2007	2005-2007	2 years	50-64
Heddson (2007)[37]	Observational Retrospective	Sweden	Helsingborg Hospital	2000-2002	2002-2005	2 years	46-74
Henderson (2015)[35,36]	Observational Retrospective	United States	6 US Programs	2003-2011	2003-2011	1 year	40-89
Hofvind (2014)[14]	Observational Retrospective	Norway	All (except Oslo study)	1996-2010	2000-2010	2 years	50-69
Kerlikoske (2011)[34]	Observational Retrospective	United States	4 US Programs	2000-2006	2000-2006	1 year	40-79
Lewin (2006)[32,33]	Paired Prospective	United States	CO, MA	1999	1999	1 year	40+
Lipasti (2010)[31]	Observational Retrospective	Finland	Southern Finland	1999-2000	2007-2008	2 years	50-59
Perry (2011)[30]	Observational Retrospective	UK	London company	2000-2006	2000-2007	2 years	40-70
Pisano (2005)[7,29]	Paired Prospective	United States	33 sites US and Canada	2001-2003	2001-2003	455 days	47-62
Sala (2015)[11]	Observational Retrospective	Spain	Barcelona	1995-2007	2004-2010	2 years	50-69
Sankatsing (2018)[28]	Observational Retrospective	Netherlands	All	2004-2010	2007-2011	2 years	50-74
Seradour (2014)[27]	Observational Retrospective	France	Bouches du Rhône	2008-2010	2008-2010	2 years	50-74
Skaane (2005)[26] (Oslo I)	Paired Prospective	Norway	Oslo	2000	2000	2 years	50-69
Skaane (2007)[9] (Oslo II)	Randomized Trial	Norway	Oslo	2000-2001	2000-2001	1 year	45-69
Theberge (2016)[25]	Observational Retrospective	Canada	Quebec	2007-2012	2010-2012	2 years	50-69
Timmermans (2017)[24]	Observational Retrospective	Belgium	Flanders	2009-2010	2009-2010	2 years	50-69
Van Luit (2013)[23]	Observational Retrospective	Netherlands	All	2004-2010	2007-2010	2 years	50-74
Van Ongeval (2010)[22]	Observational Retrospective	Belgium	3 regional units	2001-2007	2005-2008	2 years	50-69
Vernacchia (2009)[21]	Observational Retrospective	United States	California Clinic	2004-2005	2005-2008	1 year	NI
Vinnicombe (2009)[20]	Observational Retrospective	UK	East/Central London	2001-2007	2005-2007	3 years	50-70

*NI no information

Author	Confounding	Selection	Intervention Classification	Deviations Intervention	Missing Data	Measurement Outcome	Reported Results	Overall
Campari (2016)[42]	Serious	Low	Low	Low	Low	Low	Low	Serious
Chiarelli (2013)[41] Prummel (2016)[10]	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Dabbous (2017)[40]	Critical	Low	Low	Low	Moderate	Low	Low	Critical
Del Turco (2007)[13]	Serious	Low	Low	Low	Low	Low	Low	Serious
Glynn (2011)[39]	Critical	Low	Low	Low	Low	Low	Low	Critical
Hambly (2009)[38]	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Heddson (2007)[37]	Critical	Low	Low	Moderate	Low	Low	Low	Critical
Henderson (2015)[35,36]	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Hofvind (2014)[14]	Serious	Low	Low	Low	Low	Low	Low	Serious
Kerlikoske (2011)[34]	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Lewin (2006)[32,33]	Low	Low	Low	Low	Low	Low	Low	Low
Lipasti (2010)[31]	Critical	Low	Low	Low	Low	Low	Low	Critical
Perry (2011)[30]	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Pisano (2005)[7,29]	Low	Low	Low	Low	Low	Low	Low	Low
Sala (2015)[11]	Serious	Low	Low	Low	Low	Low	Low	Serious
Sankatsing (2018)[28]	Serious	Low	Low	Moderate	Low	Low	Low	Serious
Seradour (2014)[27]	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Skaane (2005)[26] (Oslo I)	Low	Low	Low	Low	Low	Low	Low	Low
Skaane (2007)[9] (Oslo II)	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Theberge (2016)[25]	Moderate	Low	Moderate	Low	Low	Low	Low	Moderate
Timmermans (2017)[24]	Serious	Low	Low	Low	Low	Low	Low	Serious
Van Luit (2013)[23]	Serious	Low	Low	Low	Low	Low	Low	Serious
Van Ongeval (2010)[22]	Serious	Low	Low	Low	Low	Low	Low	Serious
Vernacchia (2009)[21]	Serious	Low	Low	Low	Low	Low	Low	Serious
Vinnicombe (2009)[20]	Moderate	Low	Low	Low	Low	Low	Low	Moderate

Table 2: Risk of Bias Assessment

Table 2.1: Risk of bias for confounding assessment

1 Is there potential for confounding of the effect of intervention in this study?
2 Was there a different timeframe for when the participants' received the intervention?
3 Was the difference in timeframe for when the participants' received the intervention likely to be related to factors that are prognostic for the outcome?
4 Did the authors provide information to control for all the important confounding domains?
5 Were confounding domains that were controlled for measured validly and reliably by the variables available in this study?
6 Did the authors control for any post-intervention variables that could have been affected by the intervention?
7 Did the authors provide information to control for all the important confounding domains and timeframe confounding?
8 Were confounding domains that were controlled for measured validly and reliably by the variables available in this study?

Author	1	2	3	4	5	6	7	8	Confounding	Concurrence	Confounders Measured	Unadjusted vs Adjusted (95 % CI)
Campari	Y	Y	PN	N	PY	N	PN	PY	Serious	0%	age, round	CD RR= 0.88 vs. 0.95 (0.79-1.13) Recall RR= 1.34 vs. 1.46 (1.37-1.56)
Chiarelli/ Prummel	Y	N	NA	PY	PY	N	PY	NA	Moderate	100%	age, round, HRT, density, family history, menarche, reproductive status, menopausal status, unit	CD RR= 1.02 vs. 0.97 (0.88-1.06) Recall RR= 1.04 vs. 1.06 (1.00-1.13) IC RR= 1.05 vs. 1.05 (0.90-1.12)
Dabbous	Y	Y	Y	N	PY	N	N	NA	Critical	NI	age, menopause status, density, ethnicity	CD RD= -0.31 vs. -0.5 Digital: more white women than black women
Del Turco	Y	N	NA	N	PY	N	PN	NA	Serious	100%	age, round, density	NI
Glynn	Y	Y	PY	N	NA	N	N	NI	Critical	0%	NI	NA
Hambly	Y	N	NA	N	PY	N	PY	NA	Moderate	100% Quasi-random	age, round	NI
Heddson	Y	Y	PY	N	NA	N	N	NI	Critical	0%	age	NI
Henderson	Y	Y	PN	PY	PY	N	PY	NA	Moderate	22% Film decreasing and digital increasing over time	age, ethnicity, HRT, screening interval, year, unit	CD RR= 1.01 vs. 1.06 (0.97-1.16) IC RR= 0.94 vs. 0.93 (0.78-1.10) Digital: more Asian women, shorter screening interval Film: more Hispanic women, more HRT

Hofvind	Y	Y	PY	N	PY	N	N	PY	Serious	66%	age, round, year	CD RR= 0.94 vs. 1.05 (0.98-1.14) IC RR= 1.10 vs. 1.27 (1.07-1.50)
Kerlikoske	Y	Y	PY	PY	PY	N	PY	NA	Moderate	100%	age, density, menopause status, family history, ethnicity, round	CD RR= 0.97 vs. 1.0 (0.9-1.1)
Lewin	N								Low	100%	Age, Density, Round, family history, HRT, nulliparous, childbearing age	NI
Lipasti	Y	Y	Y	N	NA	N	N	NI	Critical	0% 7 years between cohorts	NI	NA
Perry	Y	PN	PN	PN	PY	N	PN	PY	Moderate	87.50% Quasi random	age	NI
Pisano	N								Low	100% Paired	NI	NA
Sala	Y	Y	PY	N	PY	N	N	PY	Serious	25%	age, round	NI
Sankatsing	Y	Y	PN	N	PY	N	PN	PY	Serious	50%	age, round	CD RD= 0.9 vs. 0.8 (0.7-1.0) Recall RD= 5.0 vs 5.0 (4.7-5.3) IC RD= 0.0 vs. 0.0 (-0.2-0.1)
Seradour	Y	N	NA	PY	PY	N	PY	NA	Moderate	100%	age, density, screening round, HRT	NI
Skaane (Oslo I)	N								Low	100% Paired	NI	NA
Skaane (Oslo II)	PY	N	NA	PN	PY	N	NI	NA	Moderate	100% Randomised	NI	NA
Theberge	Y	Y	PN	PY	PY	N	Y	PY	Moderate	50%	age, density, BMI, family history, menopause status, parity, HRT,	CD RR= 1.16 vs. 1.06 (0.89-1.25)
Timmermans	Y	N	NA	N	PY	N	PN	NA	Serious	100%	age, density	NI
van Luijt	Y	Y	PY	N			N	NA	Serious	14%		
Van Ongeval	Y	Y	PY	N	PY	N	N	PY	Serious	33%	NI	NA
Vernacchia	Y	Y	PY	N	NA	N	PN	NI	Serious	0%	NI	NA

Vinnicombe	Y	N	NA	PY	PY	N	PY	NA	Moderate	100%	age, round, ethnicity, area of residence, referral type, density	CD RR= 1.06 vs. 0.95 (0.65-1.25) Digital: more young, Caucasian and self-referral

Abbreviations: confidence interval (CI), no information (NI), not applicable (NA), yes (Y), no (N), probably yes (PY), probably no (PN), Hormone replacement therapy (HRT), Cancer Detection (CD), Interval Cancer (IC), Relative Risk (RR), Risk Difference (RD)

Table 3: Inclusion and Exclusion Criteria

STEP	INCLUSIONS	EXCLUSIONS
Screening titles and abstracts	• Studies that look at both film and digital mammography • Asymptomatic adult (18+) women • Studies in any setting	• Studies that do not look at both film and digital mammography • Studies on women at high risk of breast cancer • Review papers, editorials, commentary/discussion papers.
Full Text Read/Data Extraction	• Compares Screen Film Mammography to Full Field Digital Mammography • Conducted on women who are of 'normal' risk of breast cancer • Breast Cancer diagnosis histologically confirmed (or reasonable to assume so) • Is original study/not reporting on same data that is already included • Measure either screen-detection rates and/or interval cancer rates	• Not Screen Film Mammography to Full Field Digital Mammography • Not average risk women • Repeat Data • Does not provide detection rate or numbers to calculate • Can't assume cancer diagnoses were histopathologically verified
Overlapping cohorts and repeat data	• Chose best study for each outcome from study population • Most screenings • Longest time period • Most recent	• Threshold of 20% overlap

Figure 2: Forest Plot of screen-detection rates by round

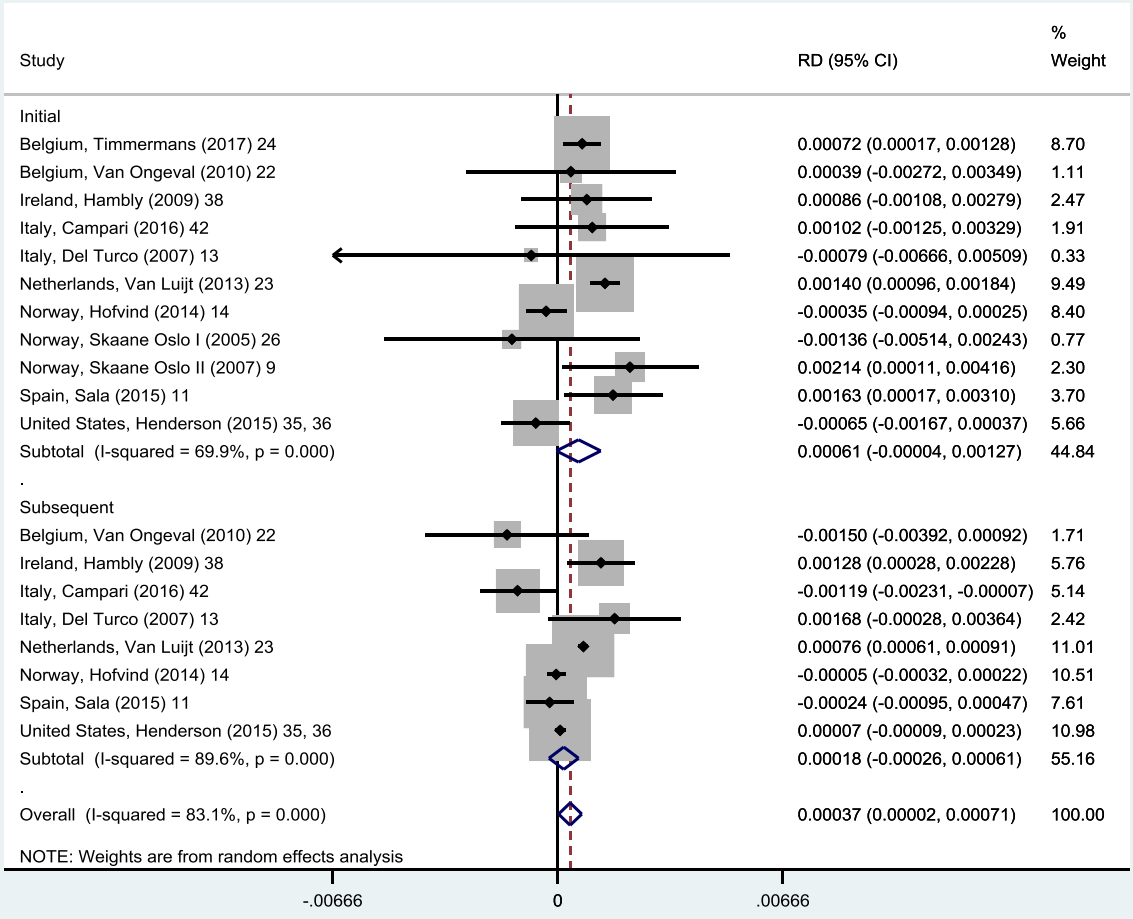


Figure 3: Forest Plot of screen-detection rates by age

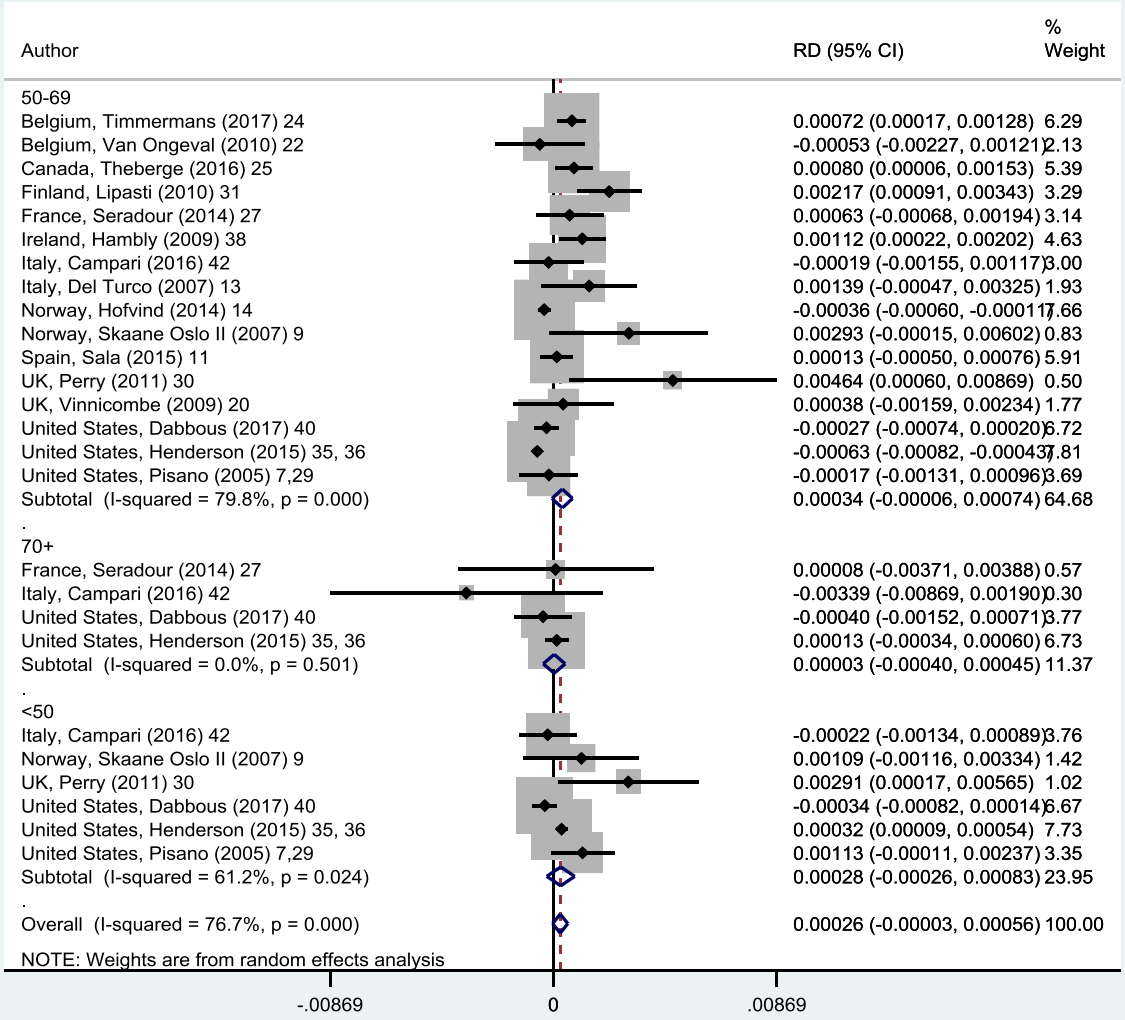


Figure 4: Forest Plot of screen-detection rates by density