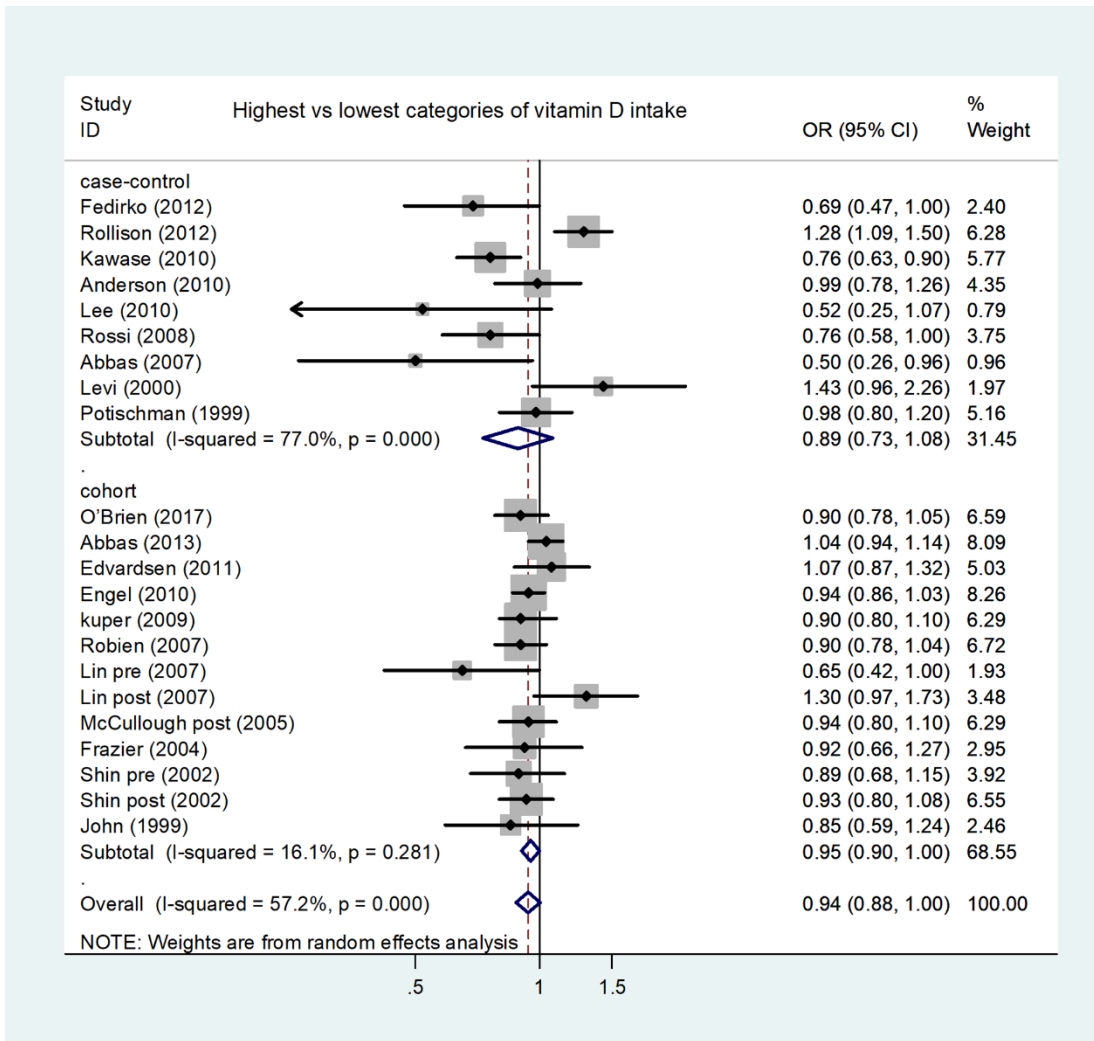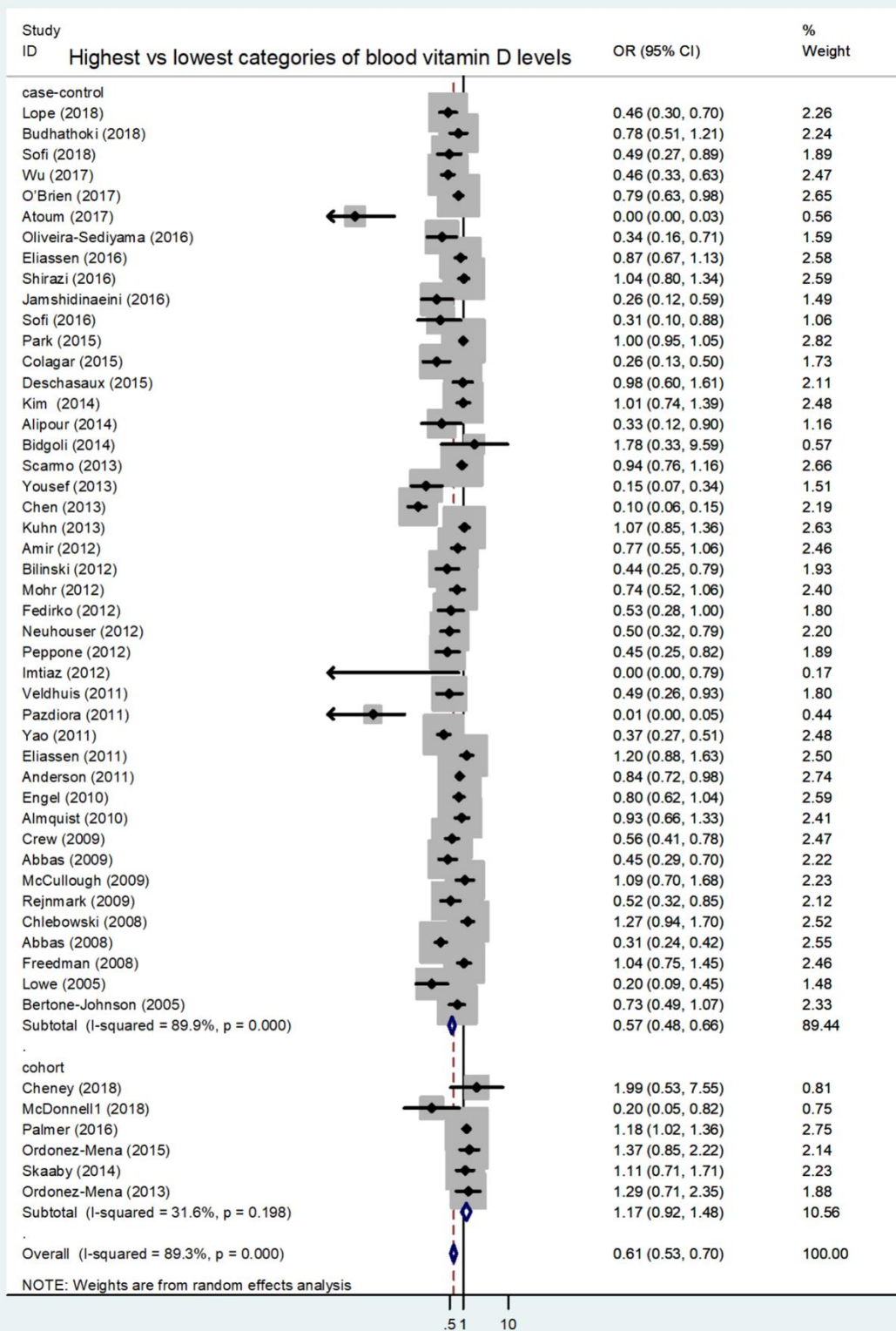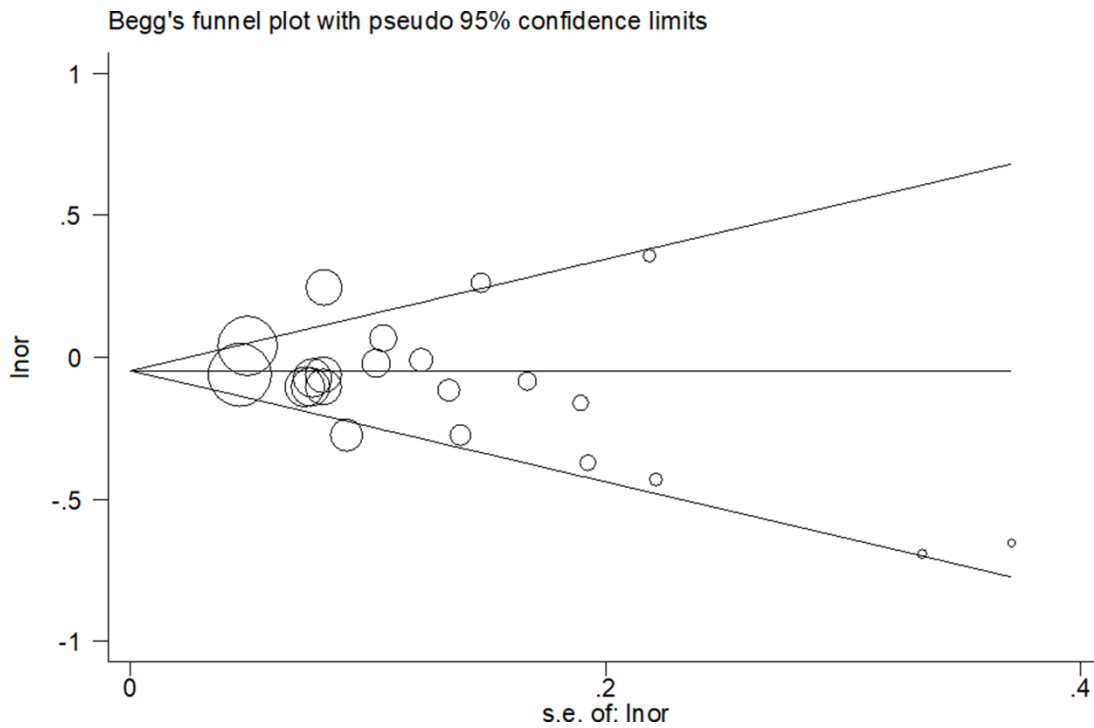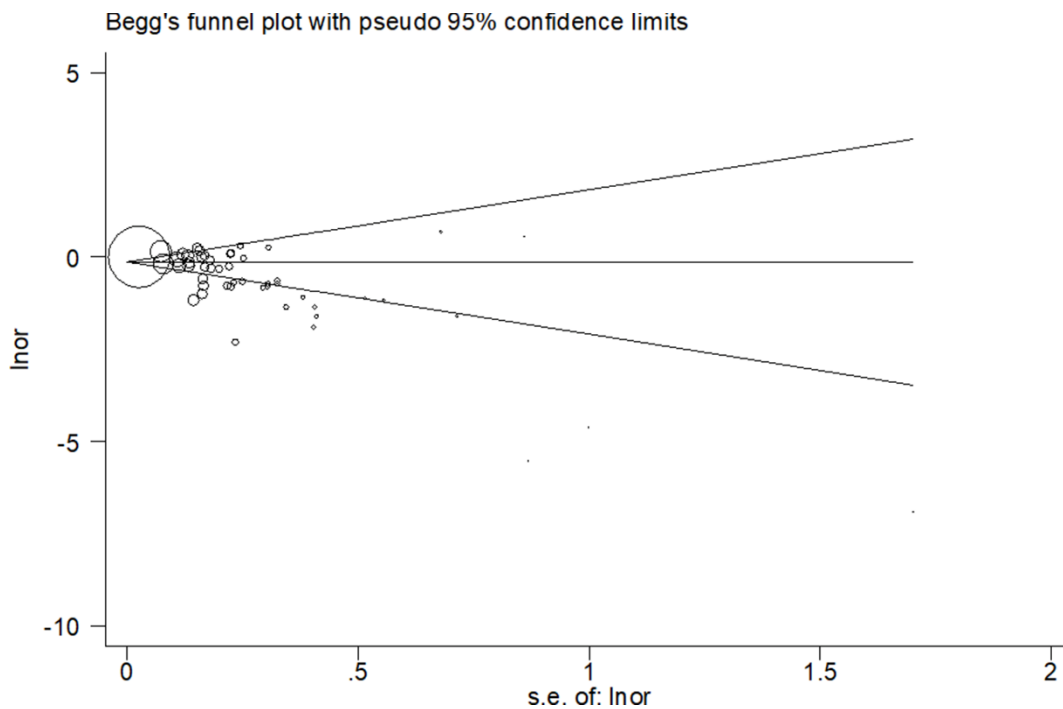# SUPPLEMENTARY FIGURES

Supplementary Figure 1. Forest plot of meta-analysis of breast cancer risk in relation to Highest vs lowest categories of vitamin D intake. Abbreviations: OR, odds ratio; CI, confidence interval.

| Study ID	Highest vs lowest categories of blood vitamin D levels	OR (95% CI)	% Weight
case-control			
Lope (2018)		0.46 (0.30, 0.70)	2.26
Budhathoki (2018)		0.78 (0.51, 1.21)	2.24
Sofi (2018)		0.49 (0.27, 0.89)	1.89
Wu (2017)		0.46 (0.33, 0.63)	2.47
O'Brien (2017)		0.79 (0.63, 0.98)	2.65
Atoum (2017)		0.00 (0.00, 0.03)	0.56
Oliveira-Sediyama (2016)		0.34 (0.16, 0.71)	1.59
Eliassen (2016)		0.87 (0.67, 1.13)	2.58
Shirazi (2016)		1.04 (0.80, 1.34)	2.59
Jamshidinaeini (2016)		0.26 (0.12, 0.59)	1.49
Sofi (2016)		0.31 (0.10, 0.88)	1.06
Park (2015)		1.00 (0.95, 1.05)	2.82
Colagar (2015)		0.26 (0.13, 0.50)	1.73
Deschasaux (2015)		0.98 (0.60, 1.61)	2.11
Kim (2014)		1.01 (0.74, 1.39)	2.48
Alipour (2014)		0.33 (0.12, 0.90)	1.16
Bidgoli (2014)		1.78 (0.33, 9.59)	0.57
Scarmo (2013)		0.94 (0.76, 1.16)	2.66
Yousef (2013)		0.15 (0.07, 0.34)	1.51
Chen (2013)		0.10 (0.06, 0.15)	2.19
Kuhn (2013)		1.07 (0.85, 1.36)	2.63
Amir (2012)		0.77 (0.55, 1.06)	2.46
Bilinski (2012)		0.44 (0.25, 0.79)	1.93
Mohr (2012)		0.74 (0.52, 1.06)	2.40
Fedirko (2012)		0.53 (0.28, 1.00)	1.80
Neuhouser (2012)		0.50 (0.32, 0.79)	2.20
Peppone (2012)		0.45 (0.25, 0.82)	1.89
Imtiaz (2012)		0.00 (0.00, 0.79)	0.17
Veldhuis (2011)		0.49 (0.26, 0.93)	1.80
Pazdiora (2011)		0.01 (0.00, 0.05)	0.44
Yao (2011)		0.37 (0.27, 0.51)	2.48
Eliassen (2011)		1.20 (0.88, 1.63)	2.50
Anderson (2011)		0.84 (0.72, 0.98)	2.74
Engel (2010)		0.80 (0.62, 1.04)	2.59
Almquist (2010)		0.93 (0.66, 1.33)	2.41
Crew (2009)		0.56 (0.41, 0.78)	2.47
Abbas (2009)		0.45 (0.29, 0.70)	2.22
McCullough (2009)		1.09 (0.70, 1.68)	2.23
Rejnmark (2009)		0.52 (0.32, 0.85)	2.12
Chlebowski (2008)		1.27 (0.94, 1.70)	2.52
Abbas (2008)		0.31 (0.24, 0.42)	2.55
Freedman (2008)		1.04 (0.75, 1.45)	2.46
Lowe (2005)		0.20 (0.09, 0.45)	1.48
Bertone-Johnson (2005)		0.73 (0.49, 1.07)	2.33
Subtotal (I-squared = 89.9%, p = 0.000)		0.57 (0.48, 0.66)	89.44
.			
cohort			
Cheney (2018)		1.99 (0.53, 7.55)	0.81
McDonnell1 (2018)		0.20 (0.05, 0.82)	0.75
Palmer (2016)		1.18 (1.02, 1.36)	2.75
Ordonez-Mena (2015)		1.37 (0.85, 2.22)	2.14
Skaaby (2014)		1.11 (0.71, 1.71)	2.23
Ordonez-Mena (2013)		1.29 (0.71, 2.35)	1.88
Subtotal (I-squared = 31.6%, p = 0.198)		1.17 (0.92, 1.48)	10.56
.			
Overall (I-squared = 89.3%, p = 0.000)		0.61 (0.53, 0.70)	100.00
NOTE: Weights are from random effects analysis			

Supplementary Figure 2. Forest plot of meta-analysis of breast cancer risk in relation to Highest vs lowest categories of blood vitamin D. Abbreviations: OR, odds ratio; CI, confidence interval.
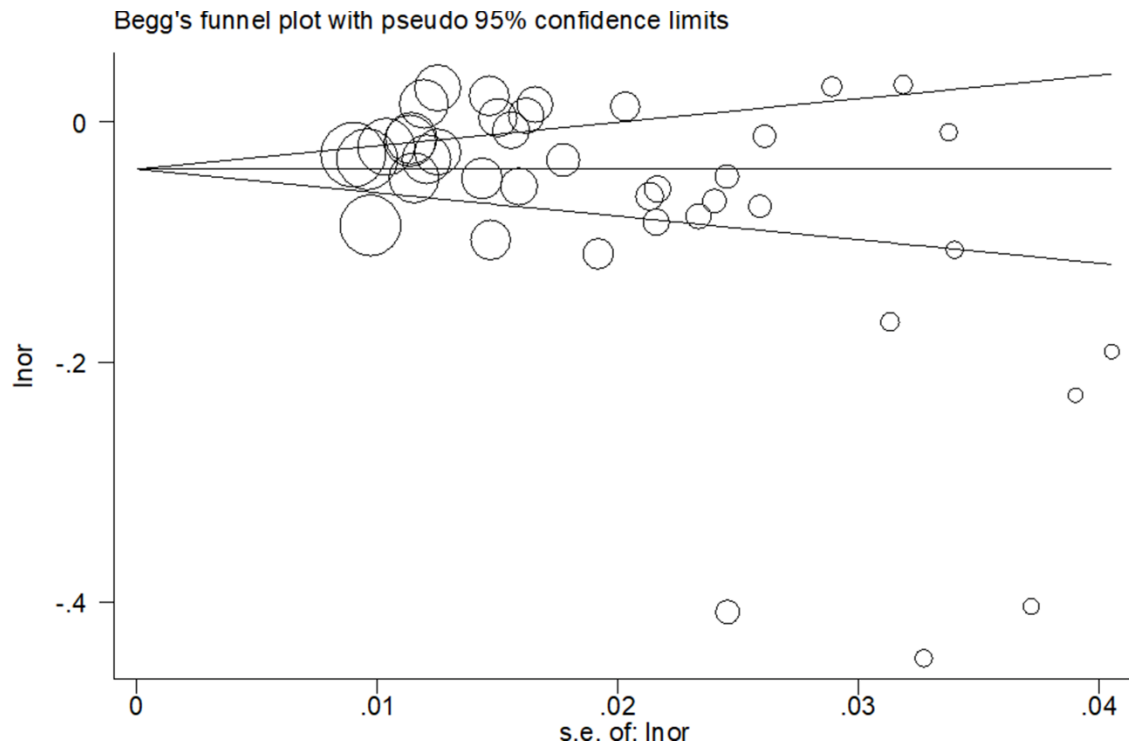
Supplementary Figure 3. Funnel plot of meta-analysis of breast cancer risk in relation to Highest vs lowest categories of vitamin D intake.
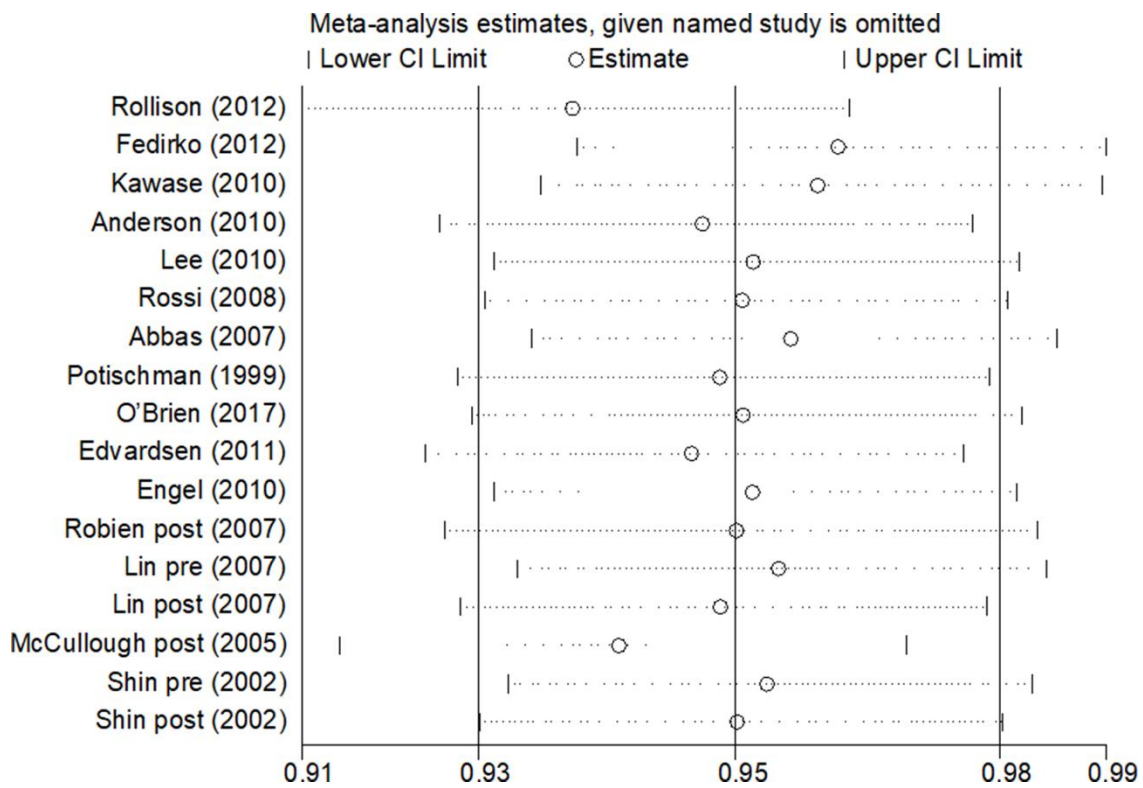

Supplementary Figure 4. Funnel plot of meta-analysis of breast cancer risk in relation to Highest vs lowest categories of blood vitamin D.
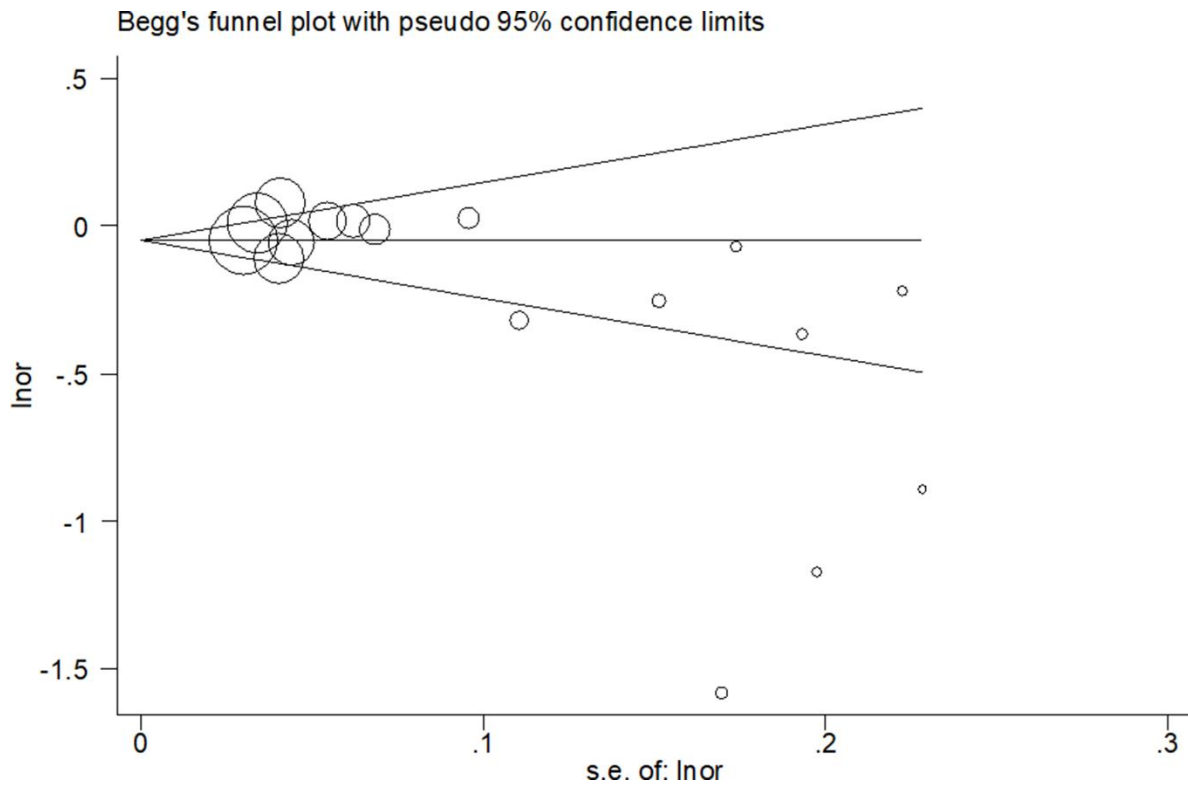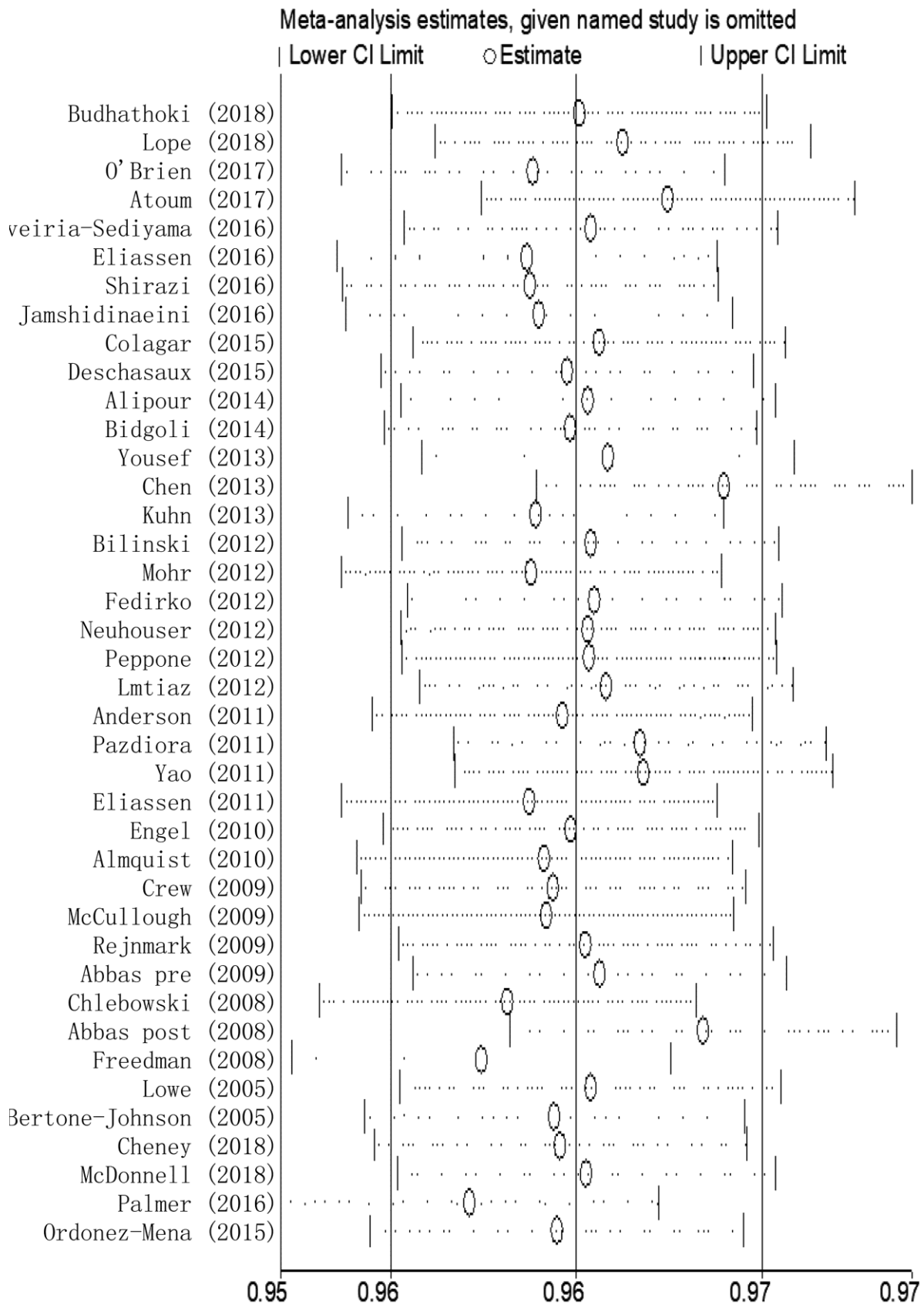
Supplementary Figure 5. Funnel plot of meta-analysis of breast cancer risk in relation to vitamin D intake increment (per 400IU/day).

Supplementary Figure 6. Funnel plot of meta-analysis of breast cancer risk in relation to blood vitamin D increment (per 5nmol/l).

Supplementary Figure 7. Sensitivity analysis of meta-analysis of breast cancer risk in relation to vitamin D intake increment (per 400IU/day).

Supplementary Figure 8. Sensitivity analysis of meta-analysis of breast cancer risk in relation to blood vitamin D increment (per 5nmol/l).