

Public Health Importance of Breastfeeding: Recent Evidence

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Breastfeeding and infant mortality

Breastfeeding and infant mortality

- If all infants were
 - exclusively breastfed for 6 months
 - continued breastfeeding from 6 to 11 months
- Could prevent 13% of under-5 deaths
 - 1.3M deaths globally per year

Jones et al. Lancet 2003; 362:65-71

Infant feeding pattern and risk of death

	All-cause Adjusted HR (95% CI)	Diarrhoea-specific Adjusted HR (95% CI)
Exclusive BF	1.46 (0.75-2.68)	1.36 (0.37-5.03)
Predominant BF	1.0	1.0
Partially BF	2.46 (1.44-4.18)	3.37 (1.46-7.75)
Not BF	10.5 (5.0-22.0)	8.96 (2.56-31.4)

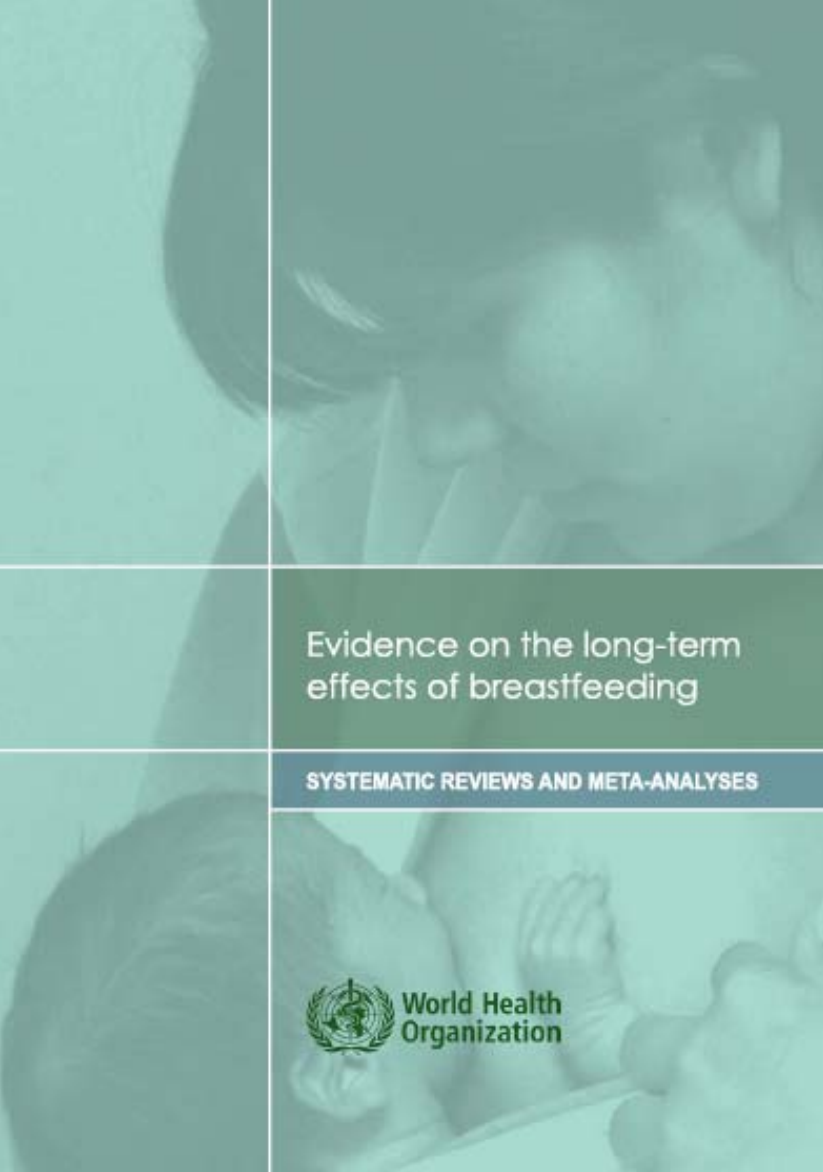
Bahl et al WHO Bulletin 2005:83:418-4216

Neonatal mortality risk by time of initiation of breastfeeding and established diet

BF Pattern	Early (day 1) % risk	Late (>day 1) % risk	adj OR (95% CI)
Exclusive	0.8	1.9	2.19 (1.38-3.49)
Predominant	0.9	2.8	2.55 (1.38-4.71)
Partial	3.0	9.0	2.63 (0.60-11.63)
Overall	0.9	2.4	2.40 (1.69-3.40)

Edmond et al. Pediatrics 2006;117:e380-e386

Breastfeeding and infant morbidity



Horta et al., 2007

[http://www.who.int/child_adol
escent_health/documents/924
1595230/en/index.html](http://www.who.int/child_adol
escent_health/documents/924
1595230/en/index.html)

Ip et al., 2007

Breastfeeding and maternal
and infant health outcomes in
developed countries

Evidence Report/Technology
Assessment No. 153

<http://www.ahrq.gov>

Breastfeeding and short-term infant outcomes

- Breastfeeding is associated with a reduced incidence of infections in infancy
- This has been demonstrated in both developed and developing countries

Association between breastfeeding and hospital admission in first 8 mo (UK)

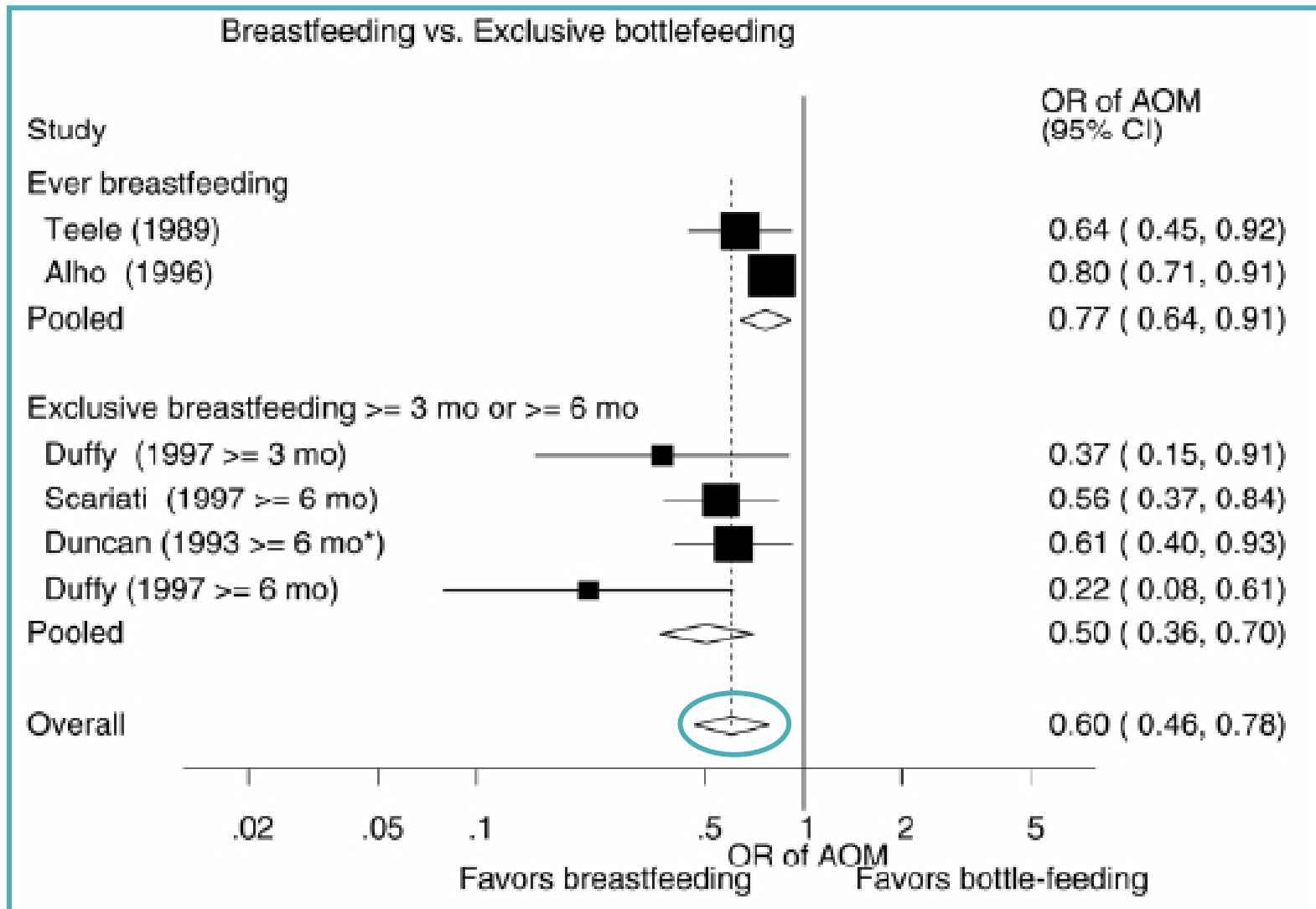
Infant feeding	Adj OR	95% CI	PAF (%)
Diarrhoea			
Not BF	1.00		
Partial BF	0.63	0.32-1.25	31
Exclusive BF	0.37	0.18-0.78	53
LRTI			
Not BF	1.00		
Partial BF	0.69	0.47-1.00	25
Exclusive BF	0.66	0.47-0.92	27

PROBIT– Belarus (RCT)

	I (%)	C (%)	Adj OR (95% CI)
GIT infection	9.1	13.2	0.60 (0.40-0.91)
Respiratory tract infection	39.2	39.4	0.87 (0.59-1.28)
Atopic eczema	3.3	6.3	0.54 (0.31-0.95)

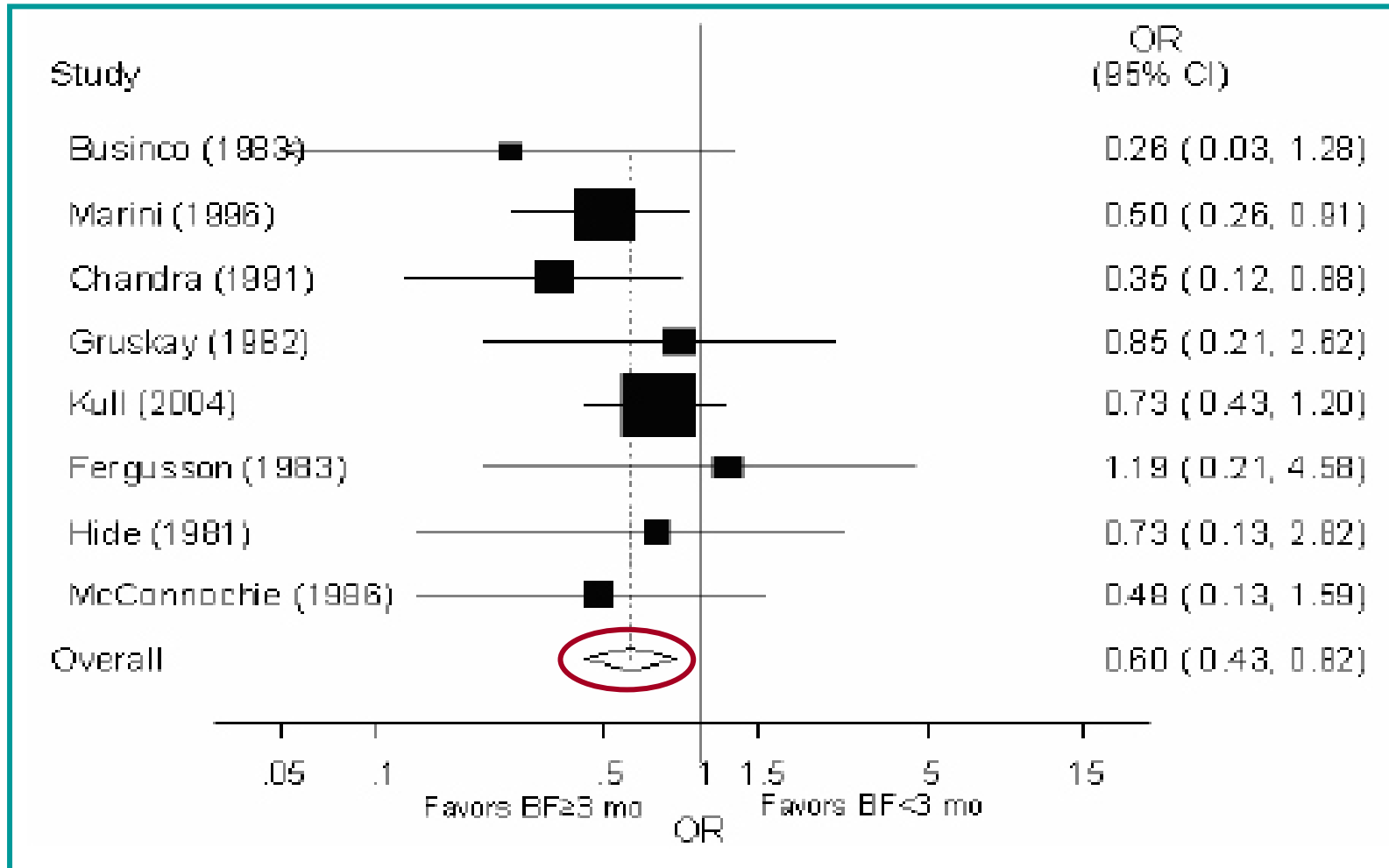
Kramer et al. JAMA.2001;285:413-420

Relationship between Acute Otitis Media and Breastfeeding

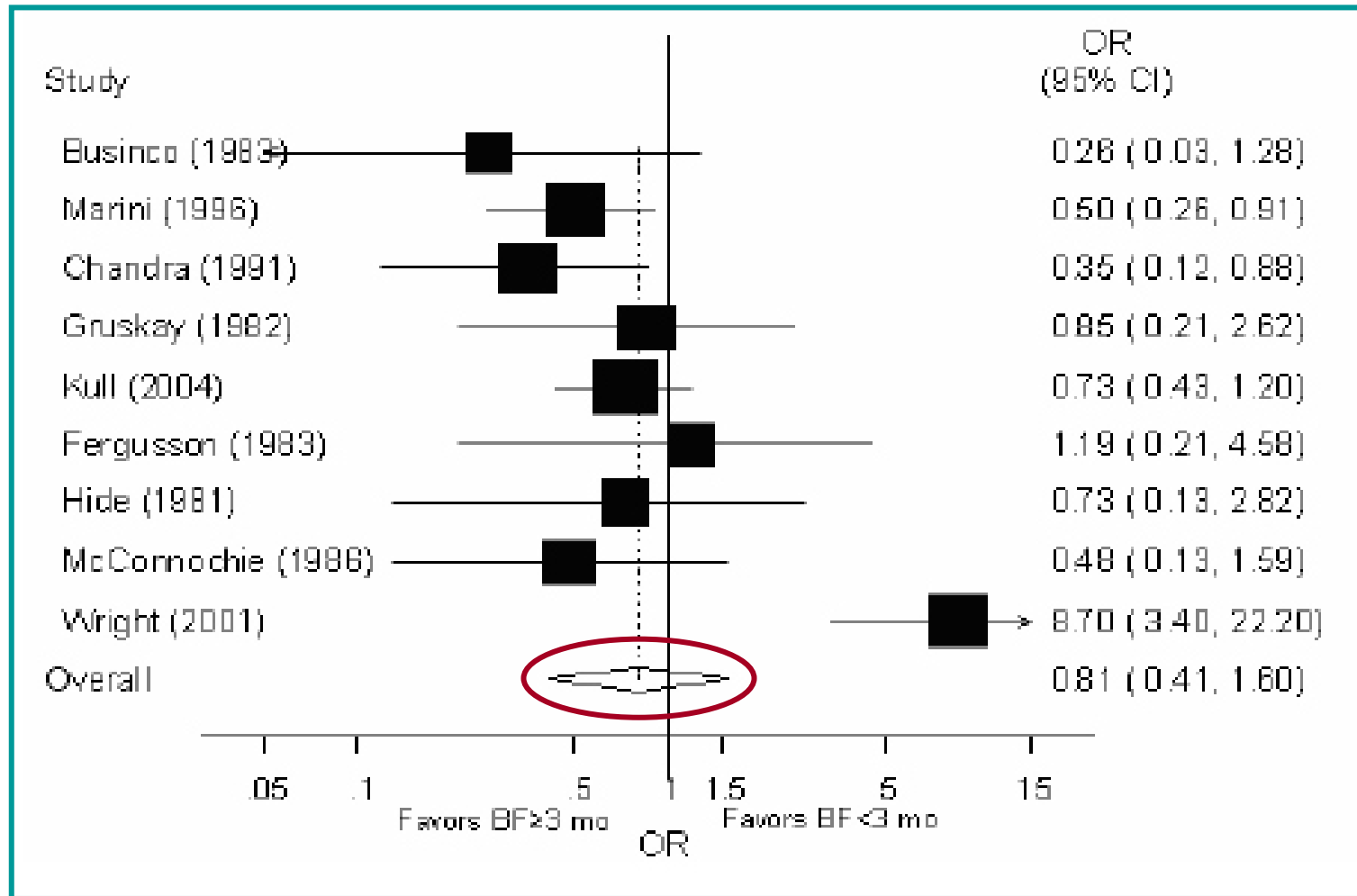


Breastfeeding and long-term health outcomes

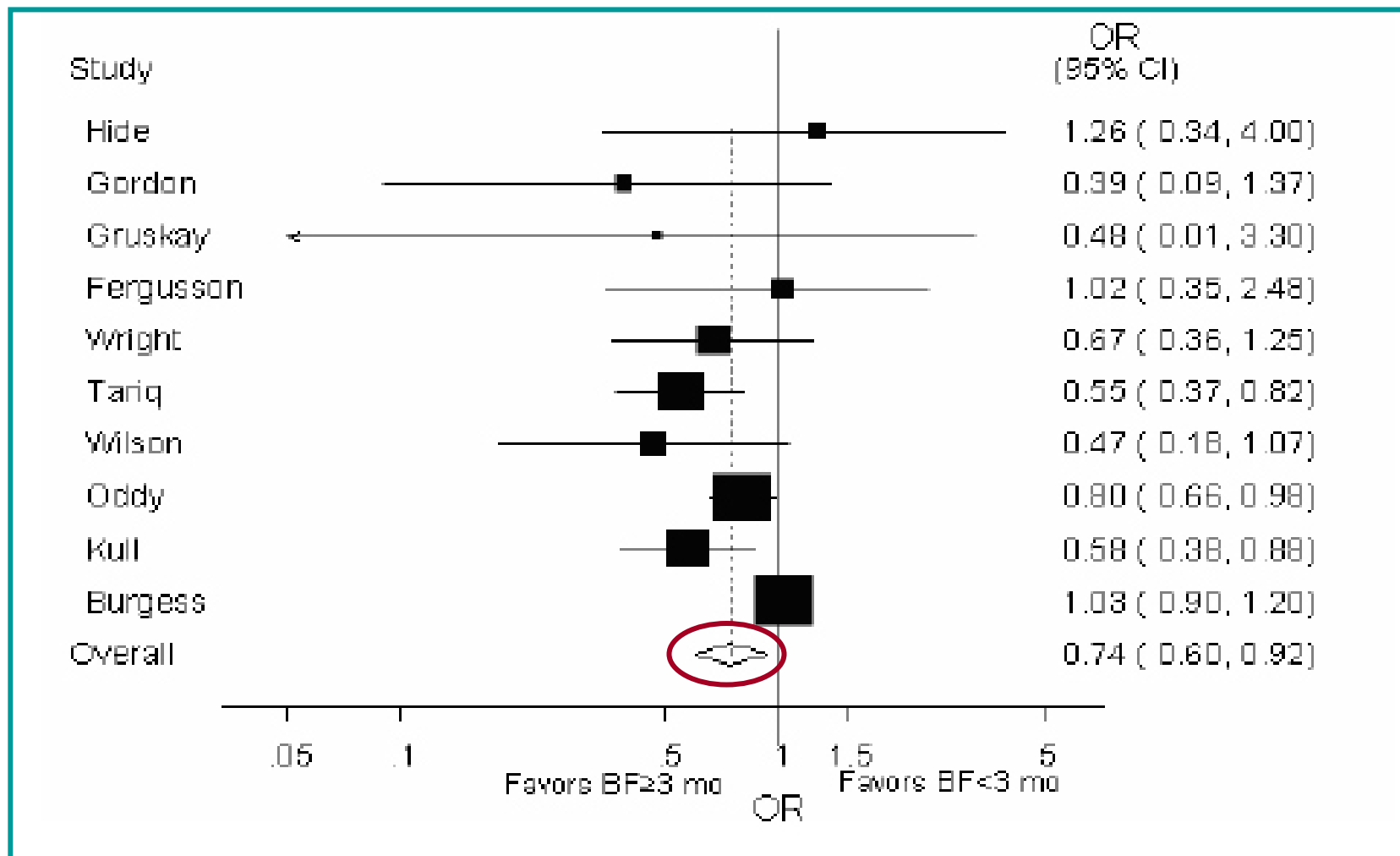
Association between asthma risk and breastfeeding for children with positive family history of asthma or atopy (excluding Wright 2001)



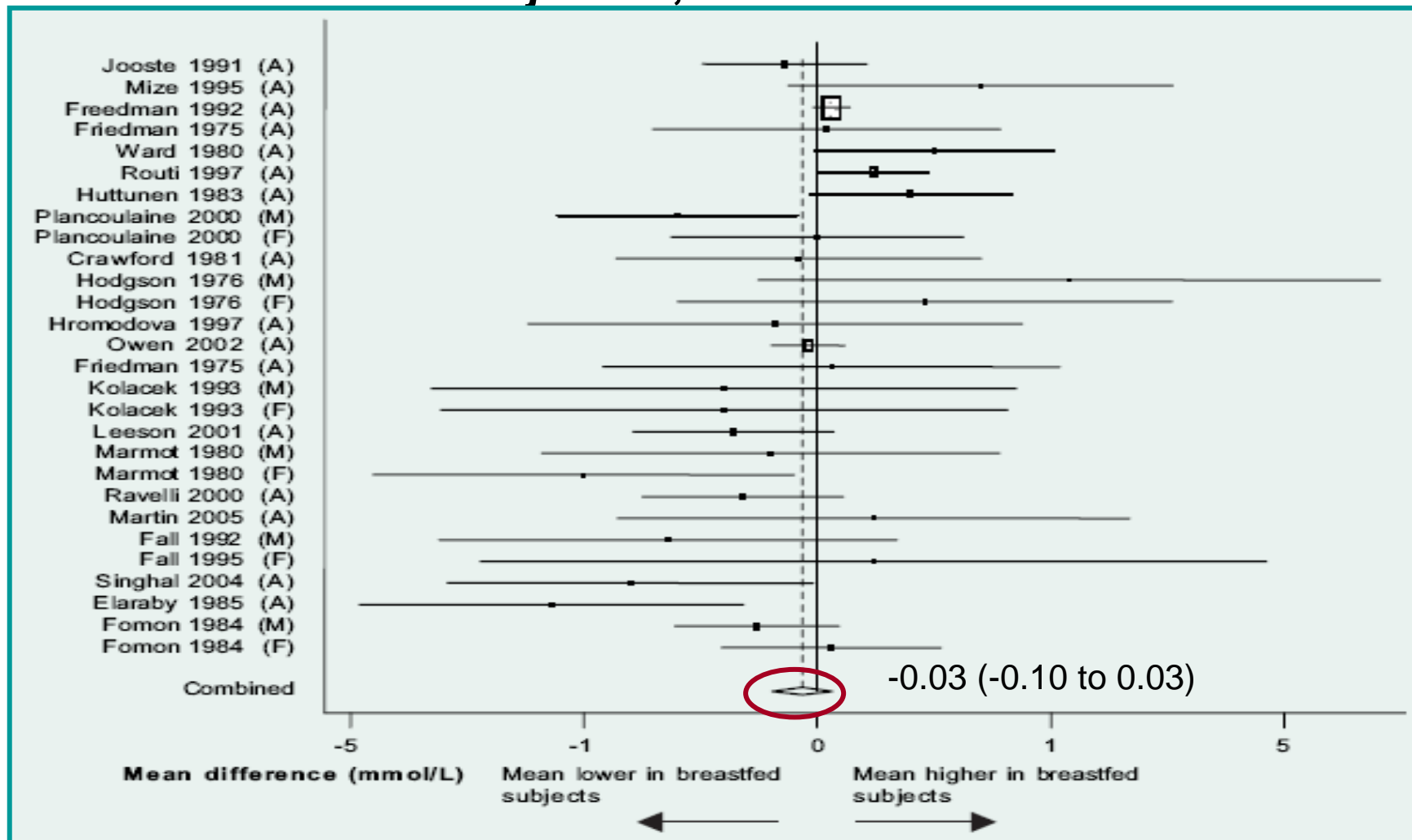
Association between asthma risk and breastfeeding for children with positive family history of asthma or atopy (including Wright 2001)



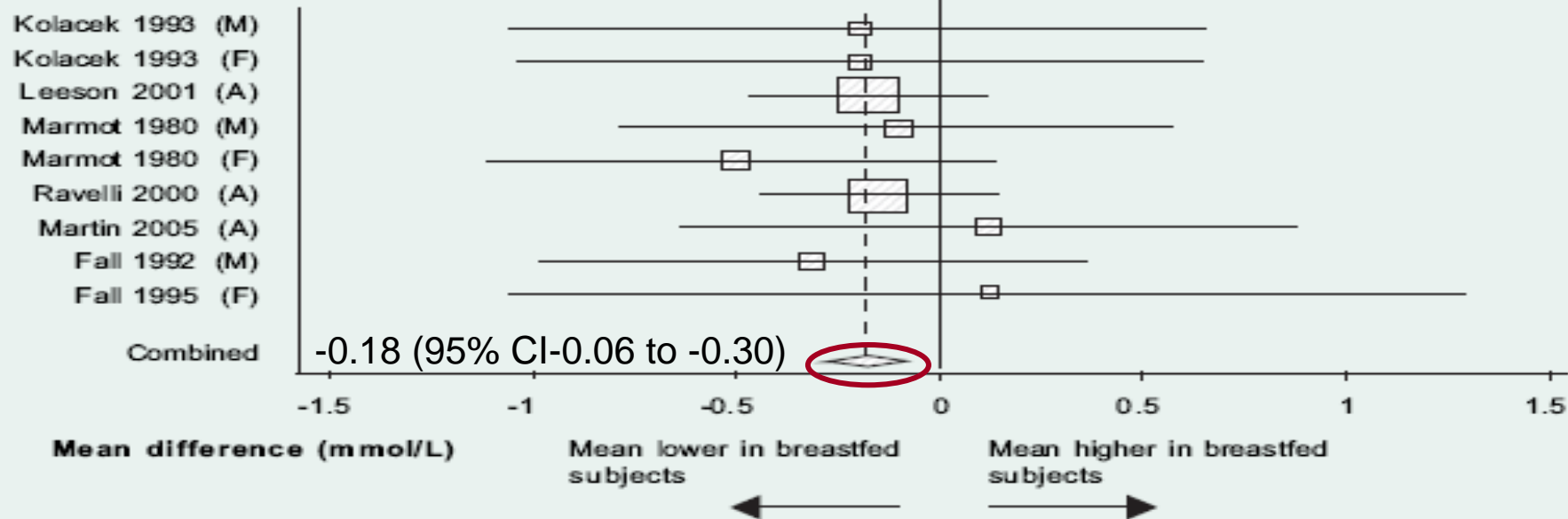
Association between asthma risk and breastfeeding for children without family history of asthma or atopy



Mean difference in total cholesterol (mmol/l) between breastfed and non-breastfed subjects, all studies



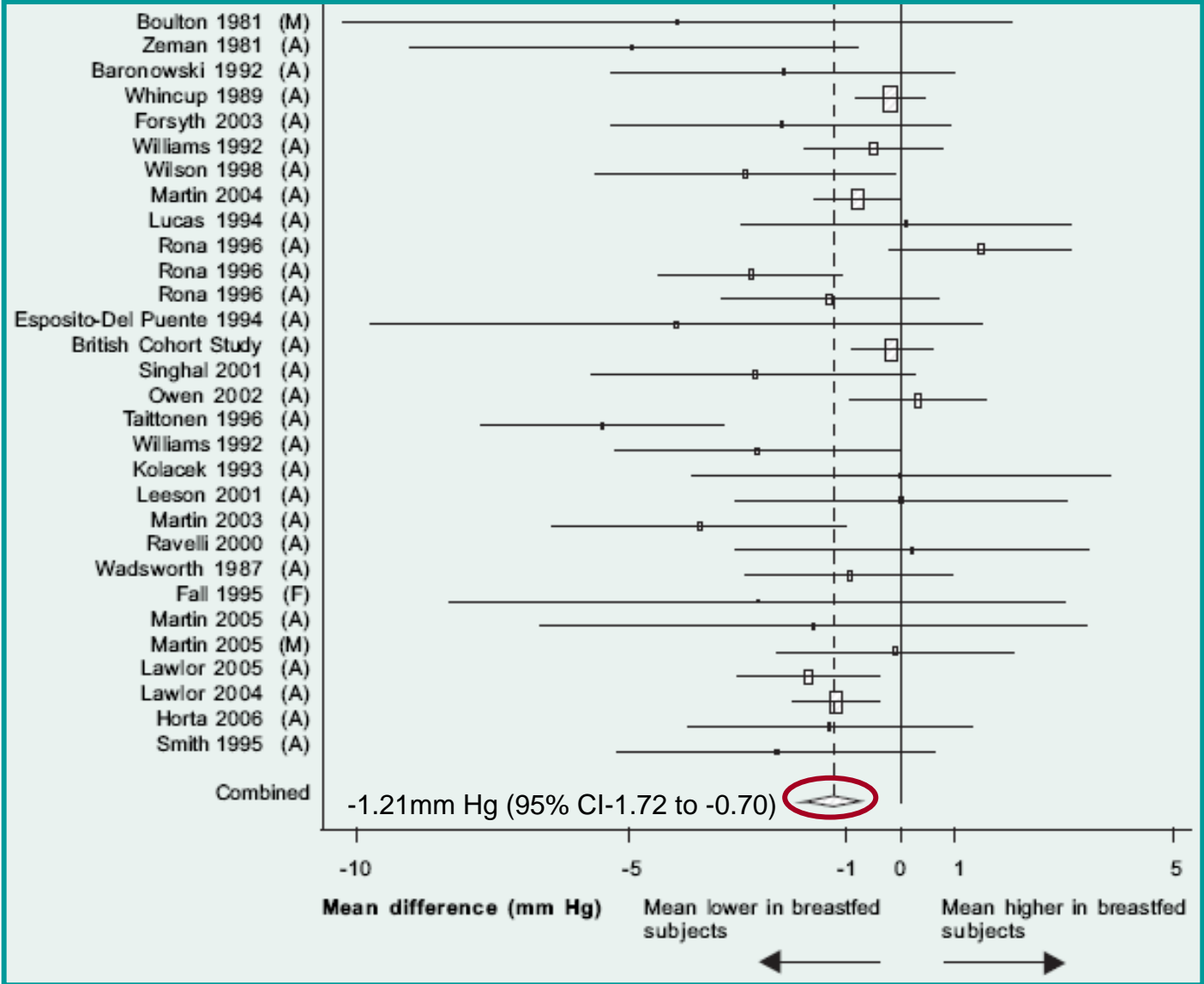
Mean difference in total cholesterol (mmol/l) between breastfed and non-breastfed subjects during adult life



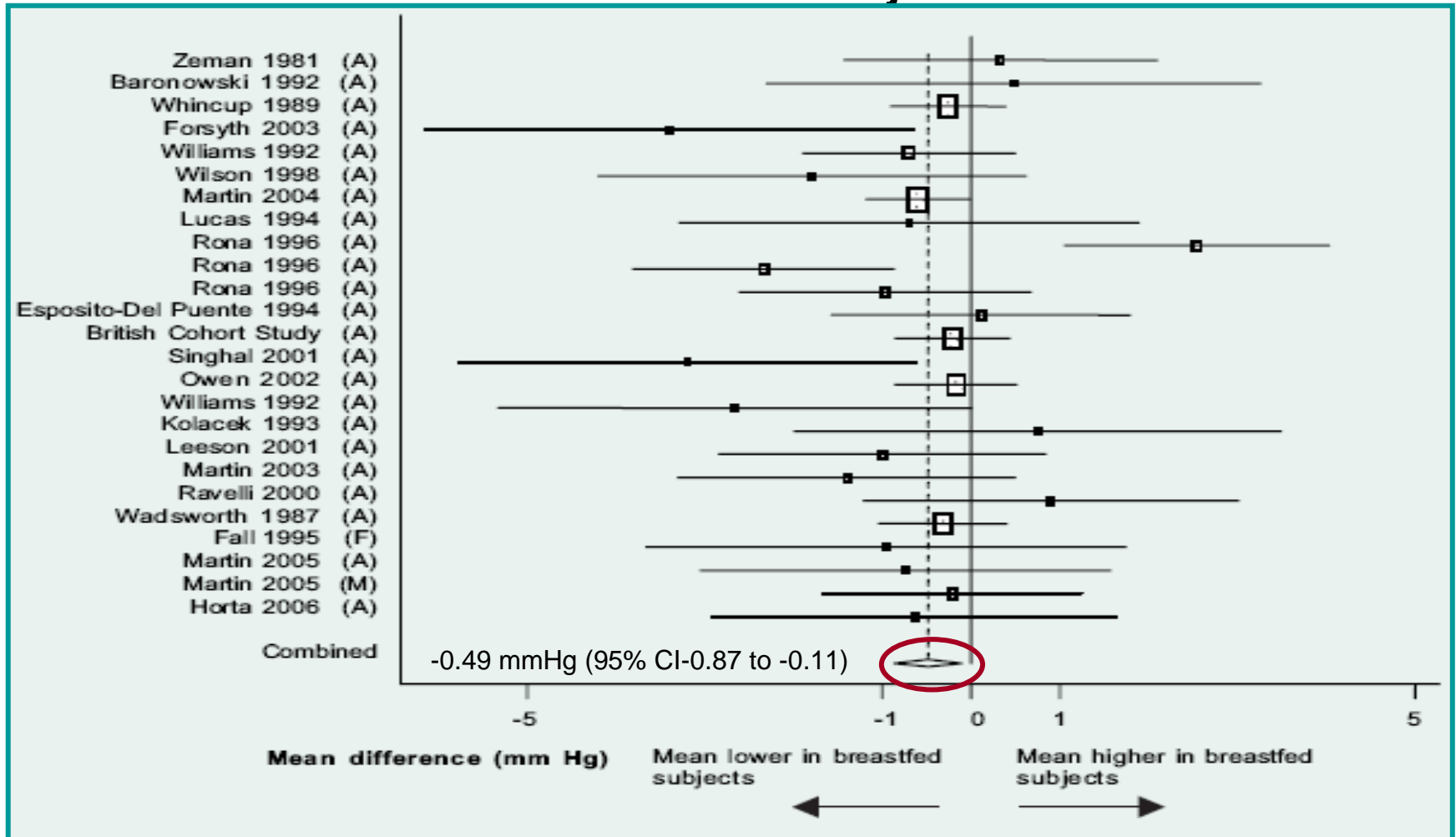
Horta et al., 2007

Mean difference in systolic blood pressure (mm Hg) between breastfed and non-breastfed subjects

Horta et al, 2007



Mean difference in diastolic blood pressure (mm Hg) between breastfed and non-breastfed subjects



Public health significance of the association between breastfeeding and blood pressure

A < 2 mmHg in population mean blood pressure could:

↓ 17% hypertension

↓ 6% number of CHD events

↓ 15% strokes and transient ischemic attacks

Martin et al. 2005

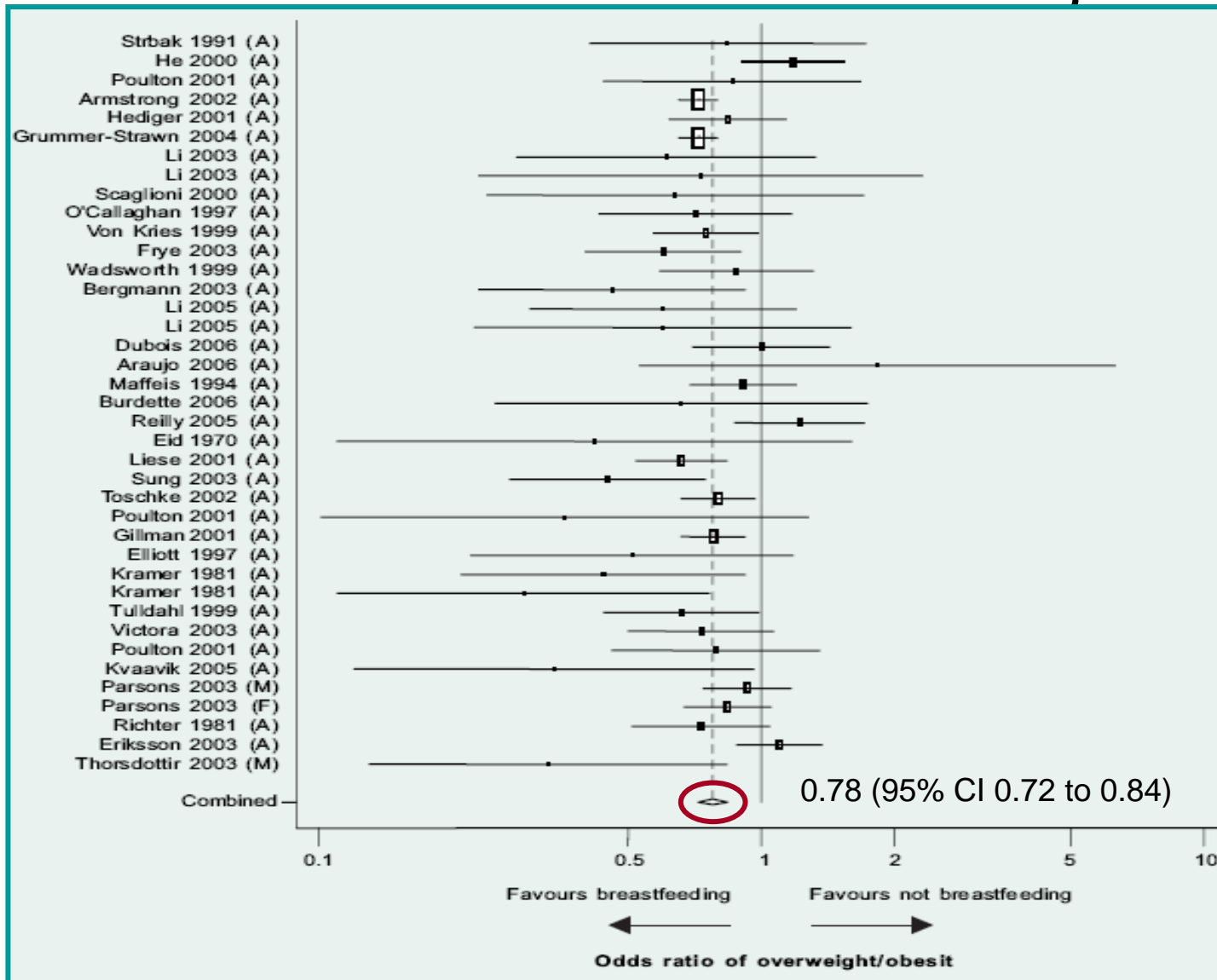
Prevent annually in those < 75 yr (Australia)

~1130 CHD events

~3000 strokes

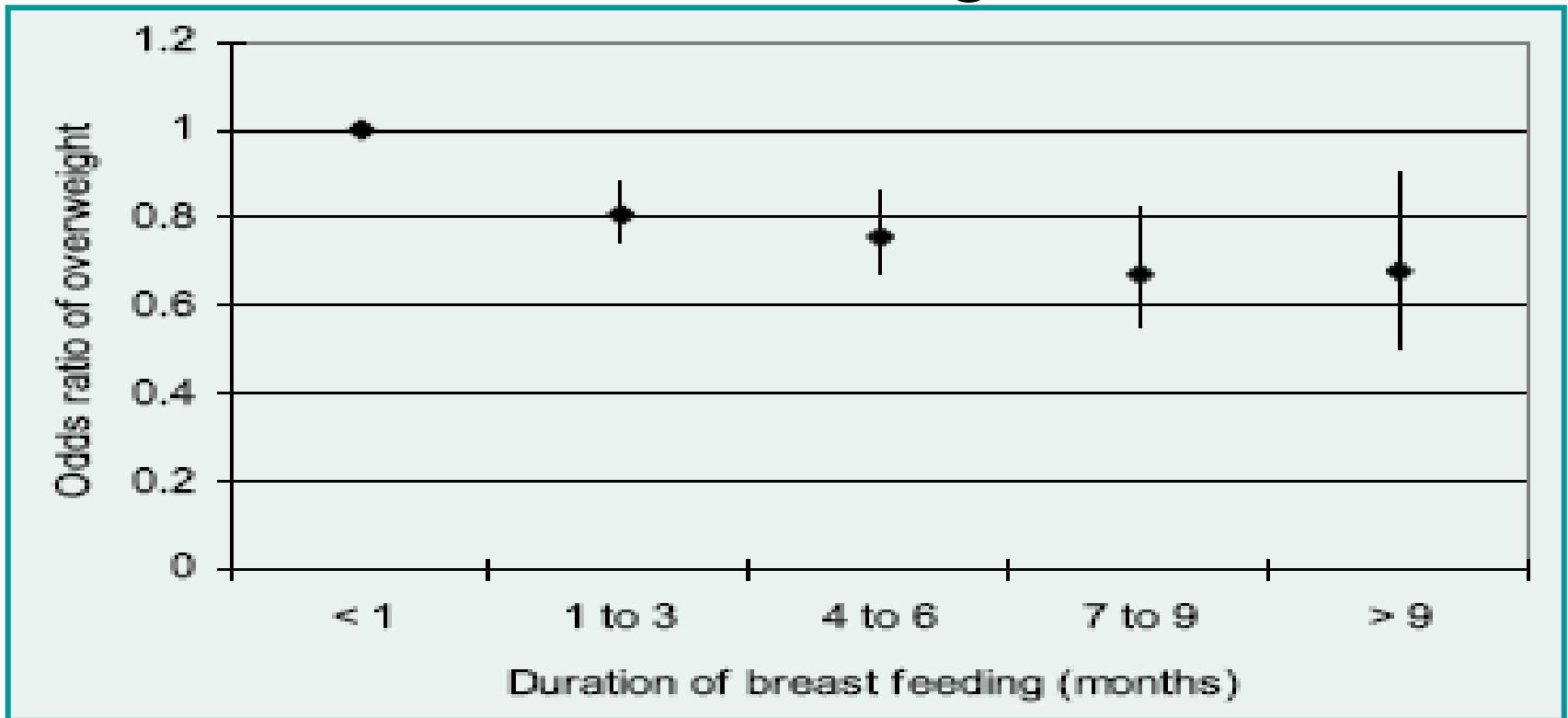
Australia's Health 2002

Odds ratio of being overweight/obese, comparing breastfed with non-breastfed subjects



Horta et al, 2007

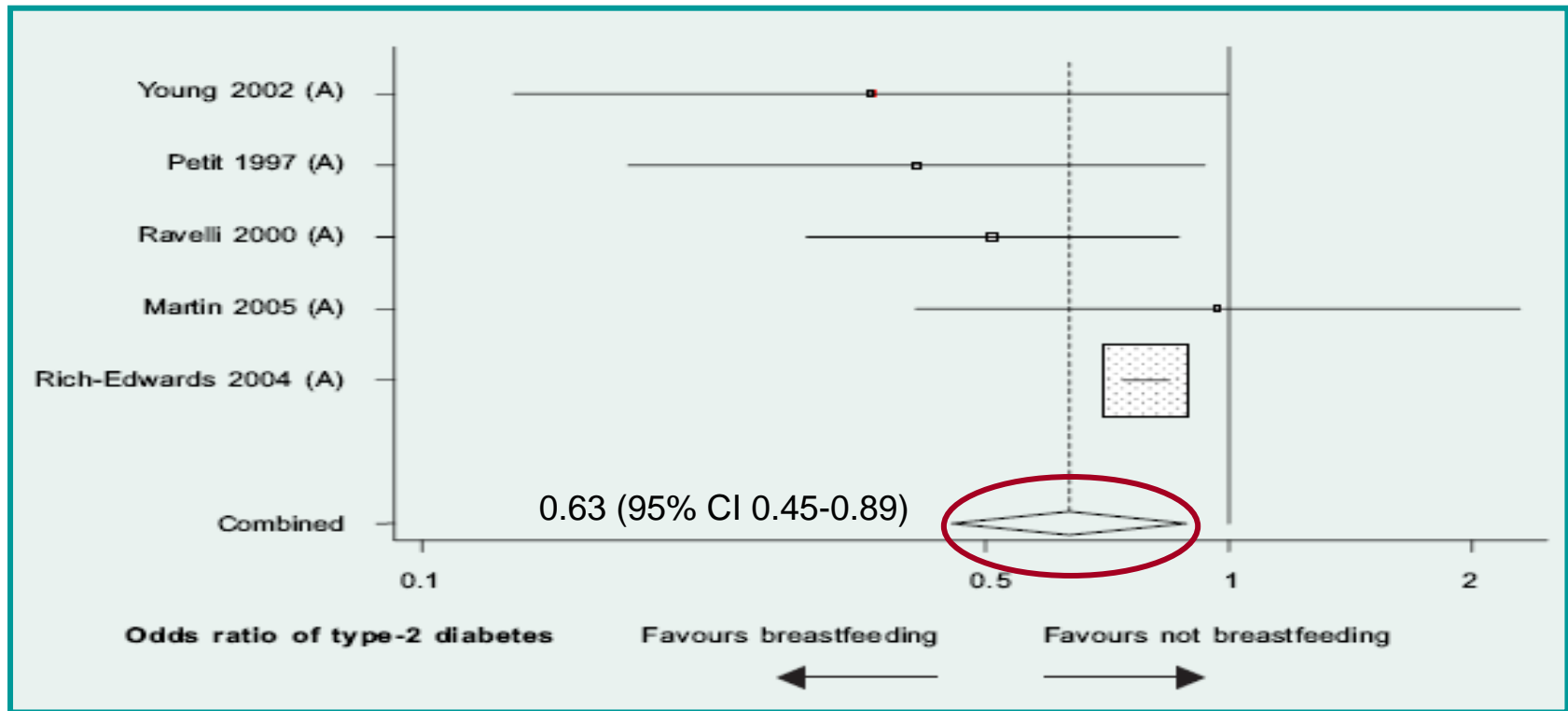
Breastfeeding duration and odds ratio of overweight



Horta et al., 2007

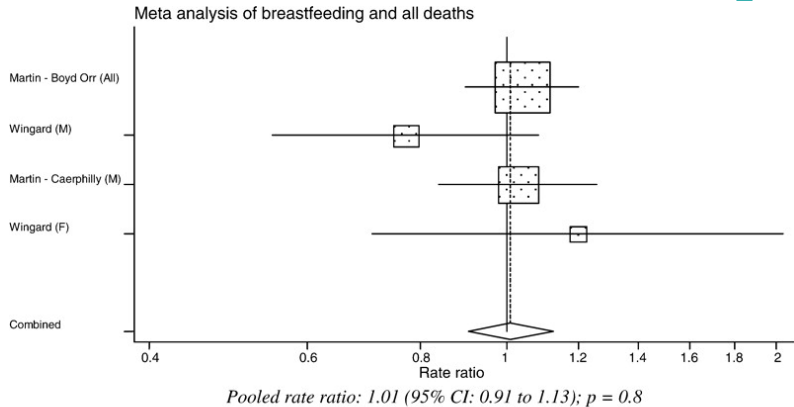
4% decrease in odds of being overweight for each month of breastfeeding

Odds ratio of having type-2 diabetes, comparing breastfed with non-breastfed subjects



Horta et al., 2007

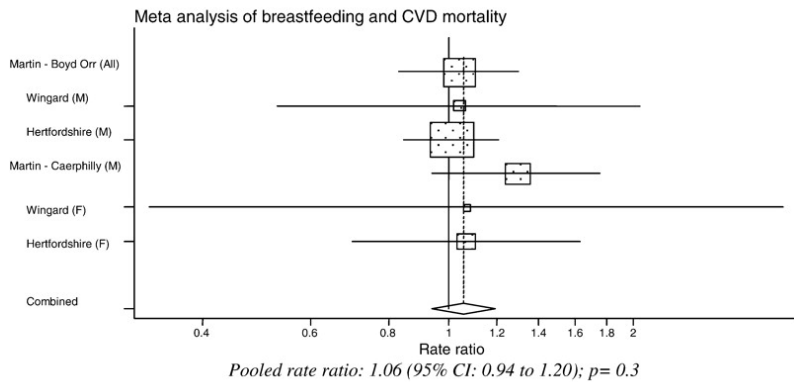
All-cause, cardiovascular, and ischaemic heart disease mortality in breastfed compared with bottle-fed infants



All deaths

Pooled rate ratio 1.01

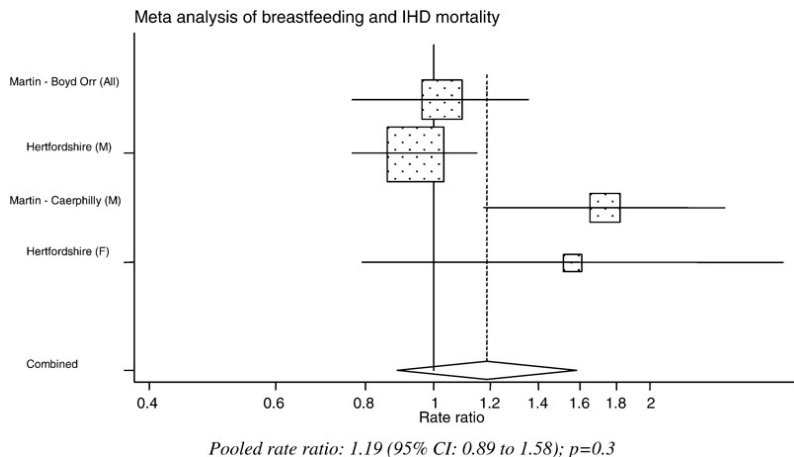
(95% CI 0.91-1.13) $p=0.8$



CVD mortality

Pooled rate ratio 1.06

(95% CI 0.94-1.20) $p=0.3$



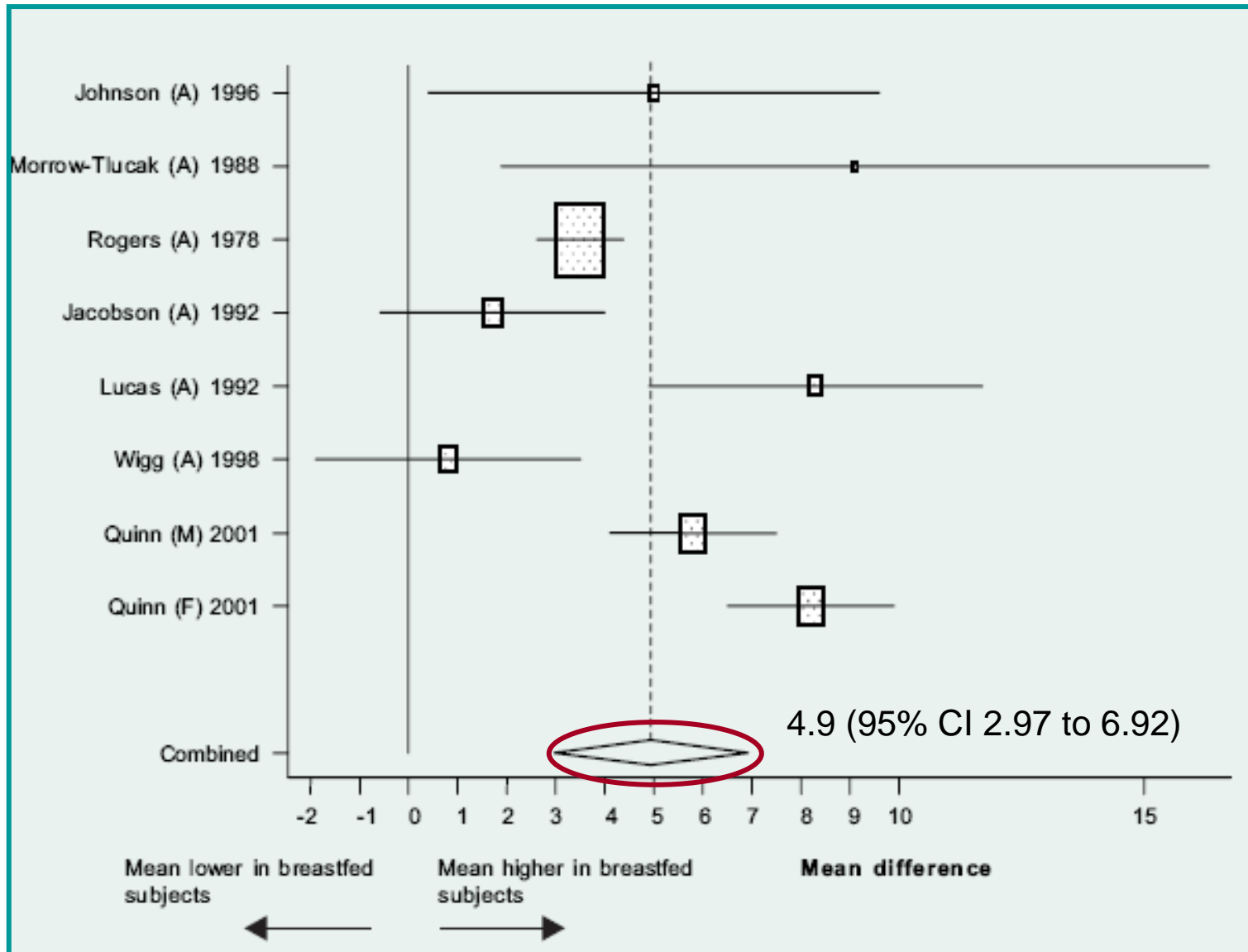
IHD mortality

Pooled rate ratio 1.19

(95% CI 0.89-1.58) $p=0.3$

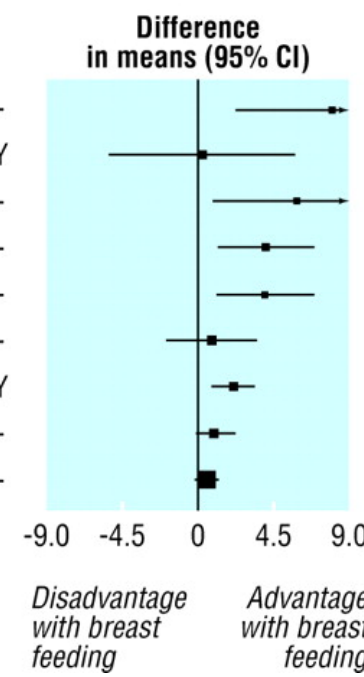
Martin et al. Eur Heart J 2004 25:778-786

Mean difference in cognitive development scores between breastfed and non-breastfed subjects



Relationship between breastfeeding and cognitive development

Study name	Statistics for each study		N	Age (years)	IQ test	SES	Mother				HOME	Birth order	Birth weight	Gestation	Difference in means (95% CI)
							Edn	Age	Smoker						
	Difference in means (SE)	P value													
Hay	7.92 (2.94)	0.007	130	11	WISC	-	-	-	-	Y	-	-	-		
Ghys	0.21 (2.82)	0.940	108	4	GOS	-	Y	-	Y	-	-	Y	Y		
Morrow-Tlucak	5.83 (2.57)	0.023	219	2	MDI	-	-	Y	Y	Y	-	-	-		
Gomez-Sanchiz	3.98 (1.53)	0.009	164	2	MDI	Y	Y	Y	Y	-	Y	-	-		
Jacobson	4.00 (1.49)	0.007	279	11	WISC	Y	Y	-	-	Y	-	-	-		
Wigg	0.80 (1.37)	0.560	343	12	WISC	Y	-	Y	Y	Y	Y	Y	-		
Fergusson	2.09 (0.65)	0.001	954	7	WISC	Y	Y	-	-	-	-	Y	Y		
Richards	0.98 (0.61)	0.109	511	8	SC	Y	Y	Y	-	-	-	-	-		
NLSY	0.52 (0.36)	0.149	5475	10	PIAT	Y	Y	Y	Y	Y	Y	Y	-		



Der, G. et al. **BMJ** 2006;333:945

NLSY (US) National Longitudinal Survey of Youth 1979

HOME infant's environment: measures of cognitive stimulation and emotional support



Advantage of breastfeeding = 0.16

Limitations of studies on health outcomes in adults

- Many studies are historical cohort studies
 - Analysis is usually *post hoc*
 - High loss to follow-up
- Exposure (i.e. breastfeeding) poorly measured
 - Exclusivity of breastfeeding not addressed in all studies
 - Misclassification of exposure
 - Data often collected retrospectively
 - Usually rely on middle-aged subjects knowing how they were fed as infants
 - » Exclusivity
 - » Duration
 - Require mothers of middle-aged subjects (i.e. elderly women) to be able to recall events from 30-40 years ago
 - » Inaccurate recall
 - » Social desirability bias

Limitations of studies on health outcomes in adults

- Self-selection
- Year of birth
- Study setting
 - High income countries
 - Caucasian populations

Limitations of studies on health outcomes in adults

- ‘Lack’ of breastfeeding is an unusual study variable
 - Unlike smoking
- Non-breastfeeders are exposed to a number of other foodstuffs
 - Animal milk
 - Industrialised or home-made formulas
 - Traditional weaning foods
- Outcomes are often poorly measured
 - Weight and height based on self-reports

Dangers of focussing on long-term benefits of breastfeeding

- Any effects are likely to be small in adulthood
- May detract from the very real and major benefits in infancy!
 - Media quick to report the individual studies that do not find an association between breastfeeding and adult health

Summary

- Breastfeeding is the most natural and best form of preventive medicine
- It confers protection against infection and saves lives in infancy
- It probably confers long-term health benefits, which while modest at the individual level are significant at the population level