

Child, maternal and socio-economic influences on infant feeding in Scotland 2001 – 2009 (GCPH Breastfeeding Project)

Bruce Whyte, Tomi Ajetunmobi

Glasgow Centre for Population Health

11th August 2011

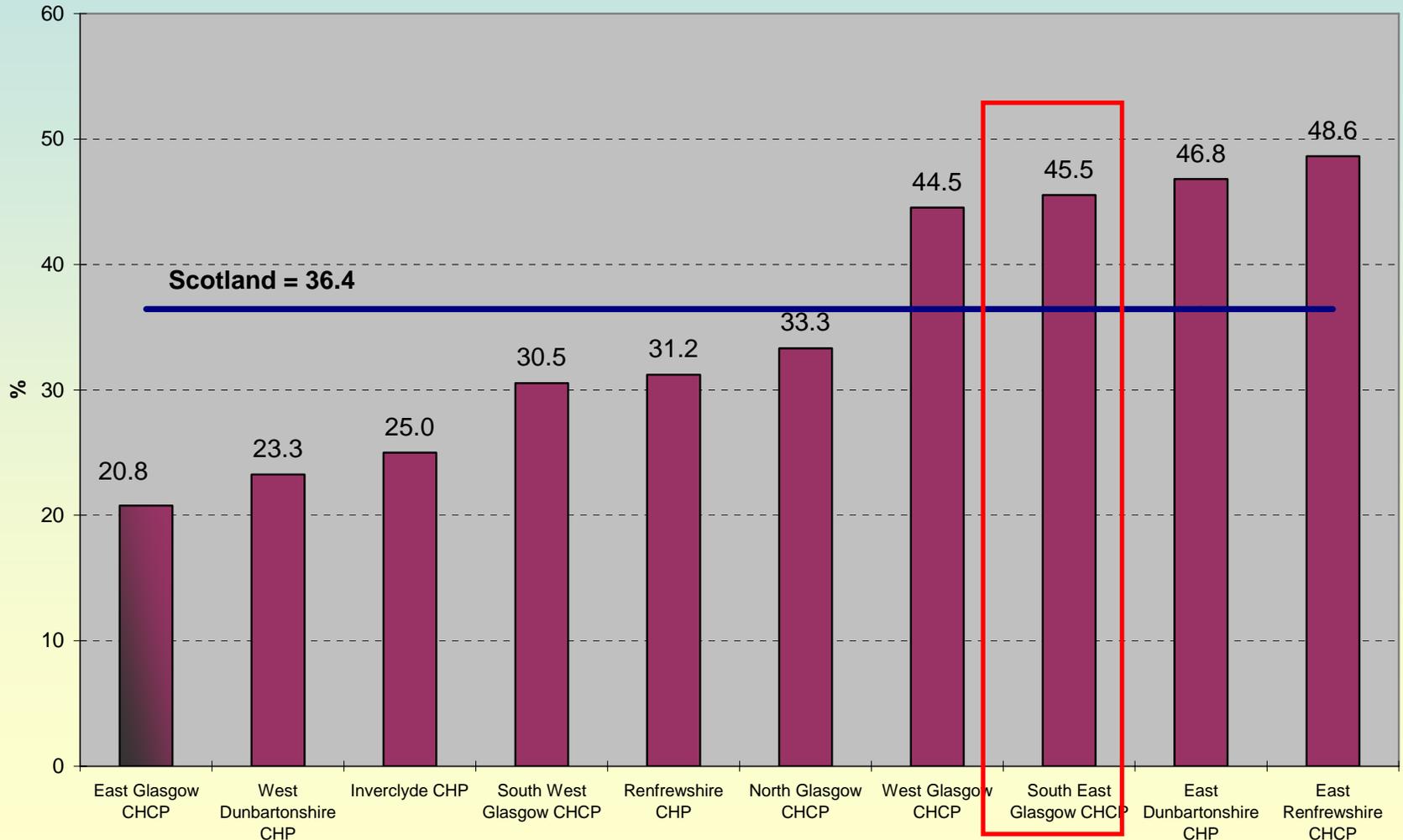
Overview

- Background
- Aims/Objectives
- Project stages
- Findings
- Next steps...

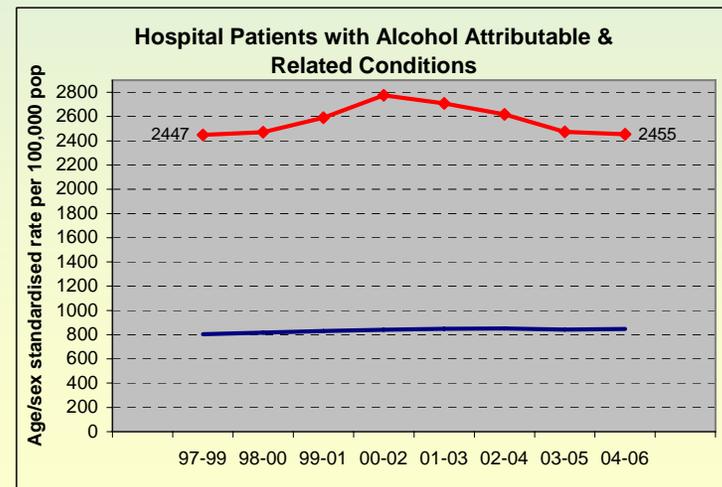
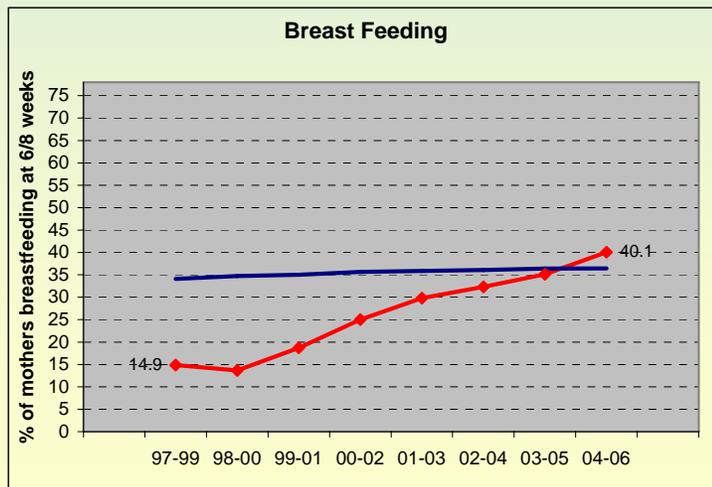
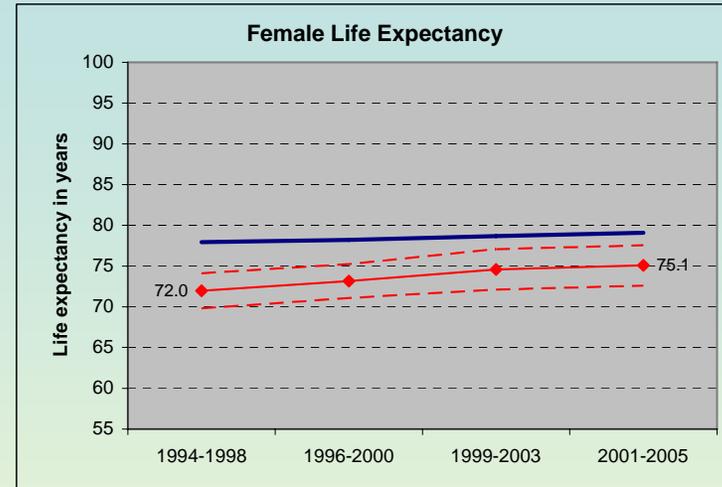
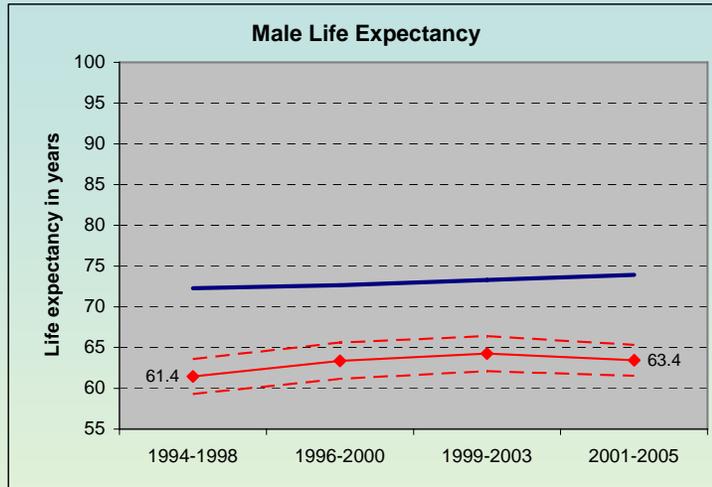
Breast feeding by CHP/CHCP

Breast feeding at 6/8 weeks, by CHP/CHCP, 2004-2006

Source: Women and Children Team, ISD Scotland



Greater Gorbals



GCPH Project Objectives

- 2 main aims:
 - Investigate local and national breastfeeding trends using a new linked **maternal and child health** dataset.
 - To investigate the unexpected increase in breastfeeding in selected deprived neighbourhoods within Greater Glasgow and Clyde.

Research Questions

- What contextual changes may have influenced breastfeeding rates?
- What are the best data sources to understand breastfeeding trends?
- What is the impact of a range of cultural and socio-economic factors on the likelihood to breastfeed and the duration of breastfeeding?

Linked data schemes

- National Records of Scotland Births (formerly General Register Office for Scotland - GROS)
- ISD Scottish Maternity Records (SMR02)
- Child Health Surveillance Programme – Pre-school Scheme (CHSP-PS)
- ISD Scottish Morbidity Records for Neonatal and Infant Health (SMR11) and Scottish Birth Records (SBR)
- Scottish Still Birth and Infant Death Records (SSBID)

Overview of data schemes

Predictor Variables

Outcome Variables

Geography (*NHS Board, CHP, Neighbourhood area, hospital*) ■

Maternal characteristics (*e.g. maternal age, marital status, ethnicity, socioeconomic characteristics, deprivation, smoking status*) ■ ○ ◆

Pregnancy/Delivery characteristics (*e.g. gestation, previous pregnancies, parity, length of stay, mode of delivery, outcome, multiple birth, caesarean section,*) ○

Infant characteristics (*e.g. APGAR score, birth weight, congenital anomaly, neonatal/infant admission, length of stay*) + ▲ ○

GROS ■

SMR02 ○

CHSP-PS ◆

SBR/SMR11 ▲

SSBID +

Infant feeding – initiation
(*first feed or feed at birth, feed on hospital discharge*) ◆ ○

Infant feeding - duration
(*feed on hospital discharge, feed at community discharge, feed at first visit, 6 to 8 week review, 8-9 month review*) + ▲ ◆ ○

Overall infant feeding trends

Scotland *

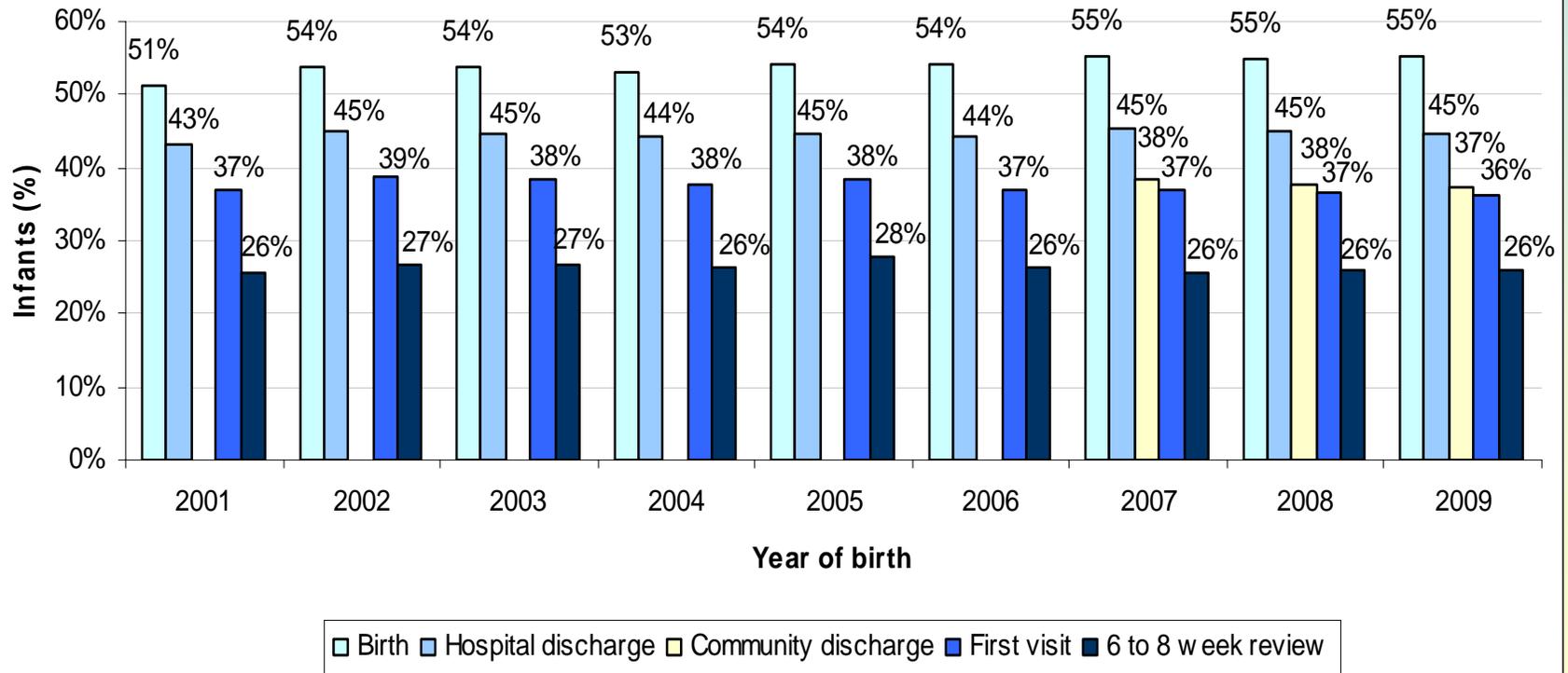
Infant feeding data collection

- Birth
- Hospital discharge
- First visit
- *Community discharge*
- 6 to 8 week review

Scotland: Breastfeeding (exclusive) trends

Breastfeeding (exclusive) trends 2001 - 2009

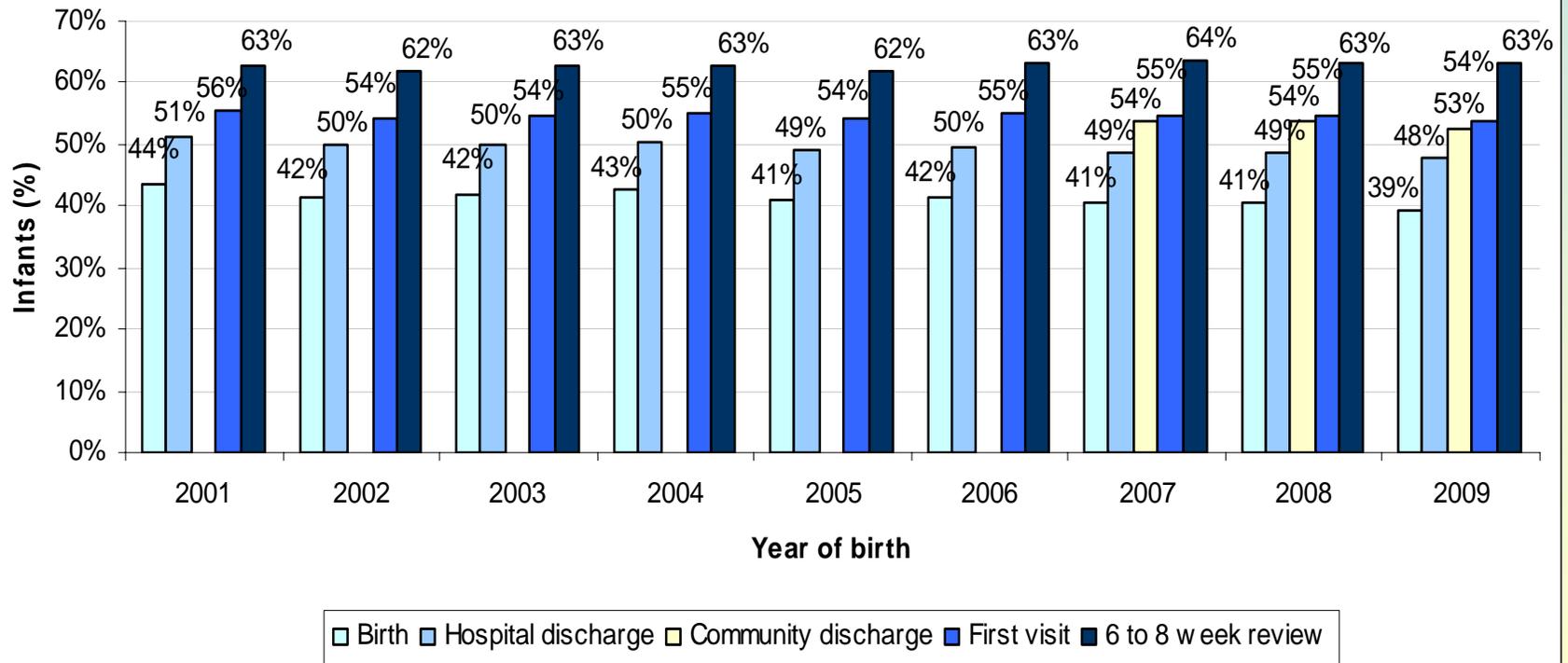
Source: GROS, CHSP-PS/ ISD Scotland linked extract



Scotland: Bottle feeding trends

Bottlefeeding trends 2001 - 2009

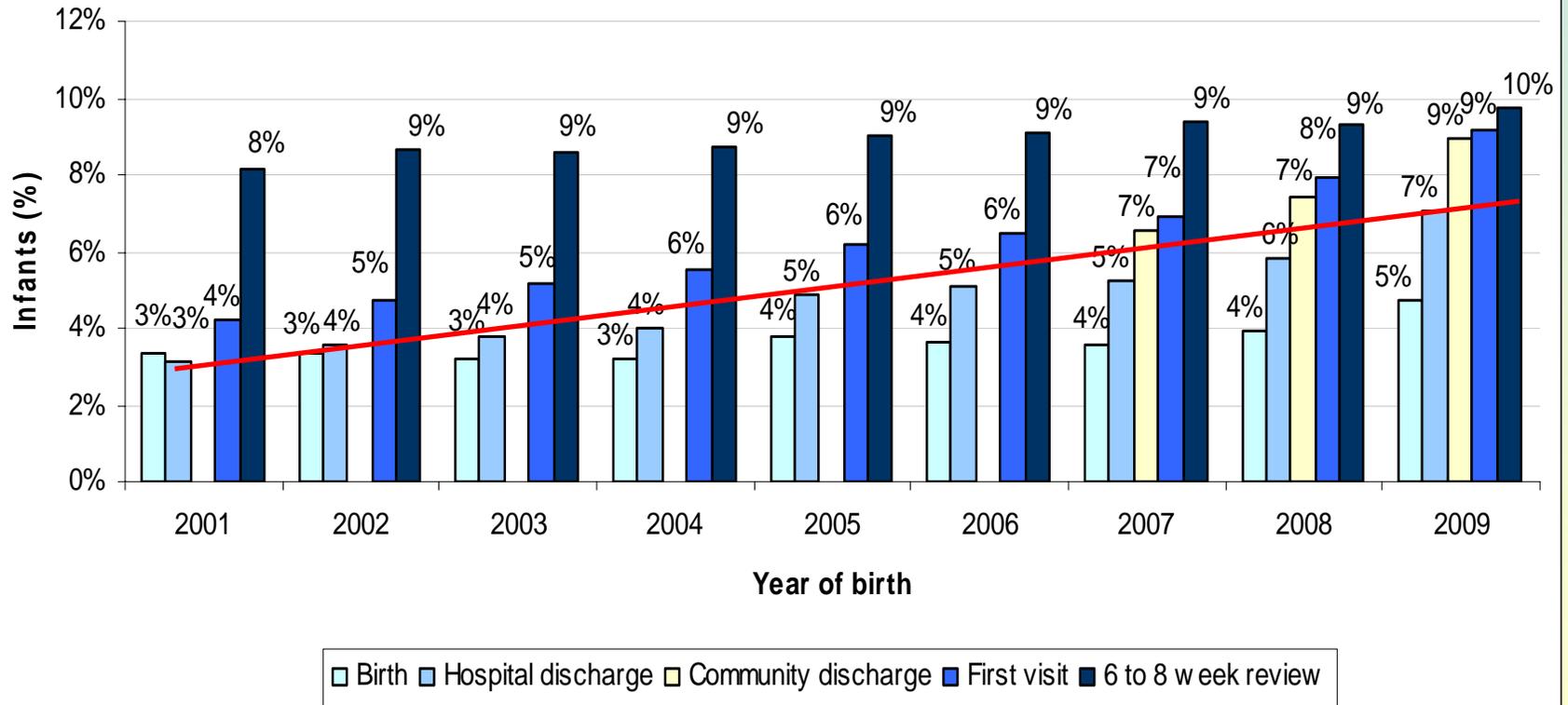
Source: GROS, CHSP-PS/ ISD Scotland linked extract



Scotland: Mixed feeding trends

Mixed feeding trends 2001 - 2009

Source: GROS, CHSP-PS/ ISD Scotland linked extract

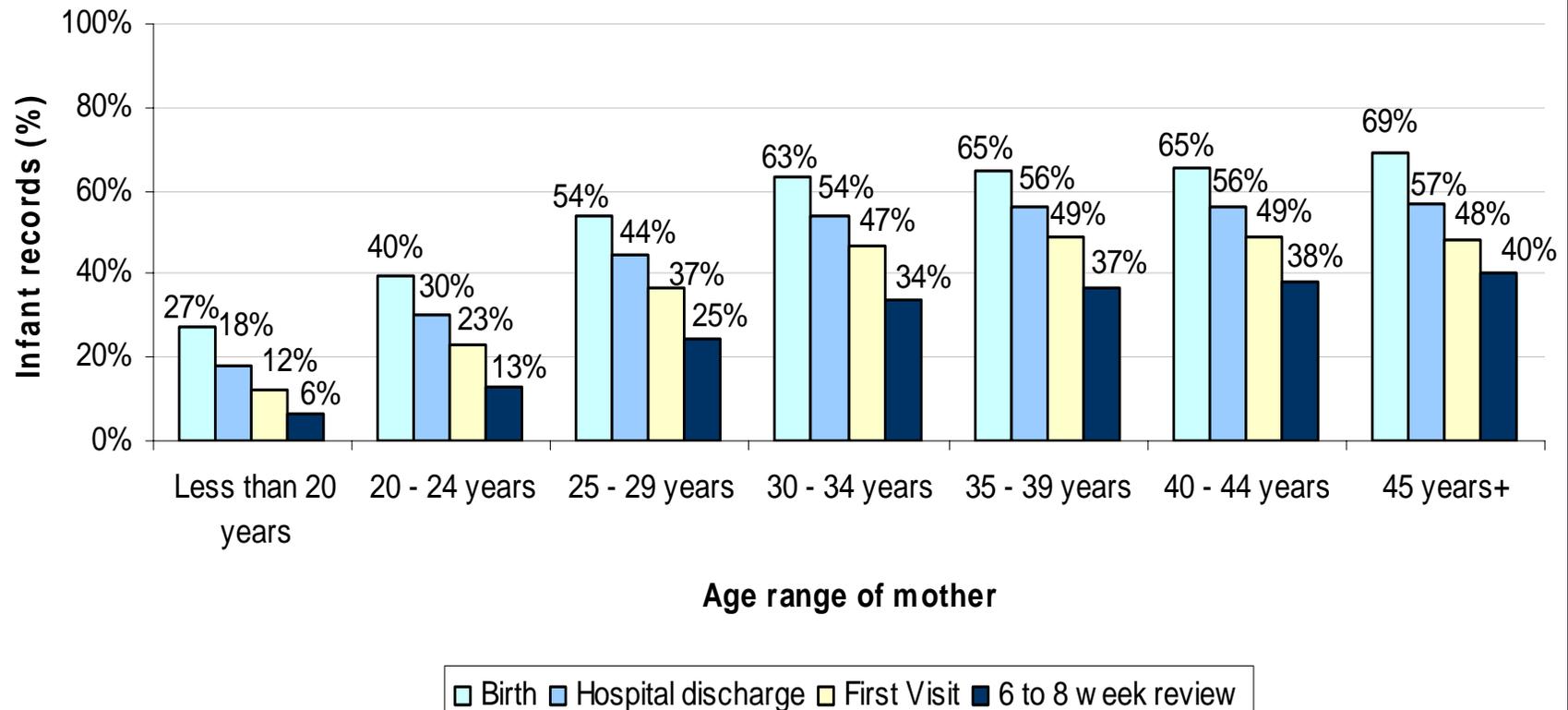


Influence of demographic, maternal and child-related factors

Breastfeeding (exclusive) trends and maternal age

Breastfeeding (exclusive) trends by age of mother 2001 - 2009

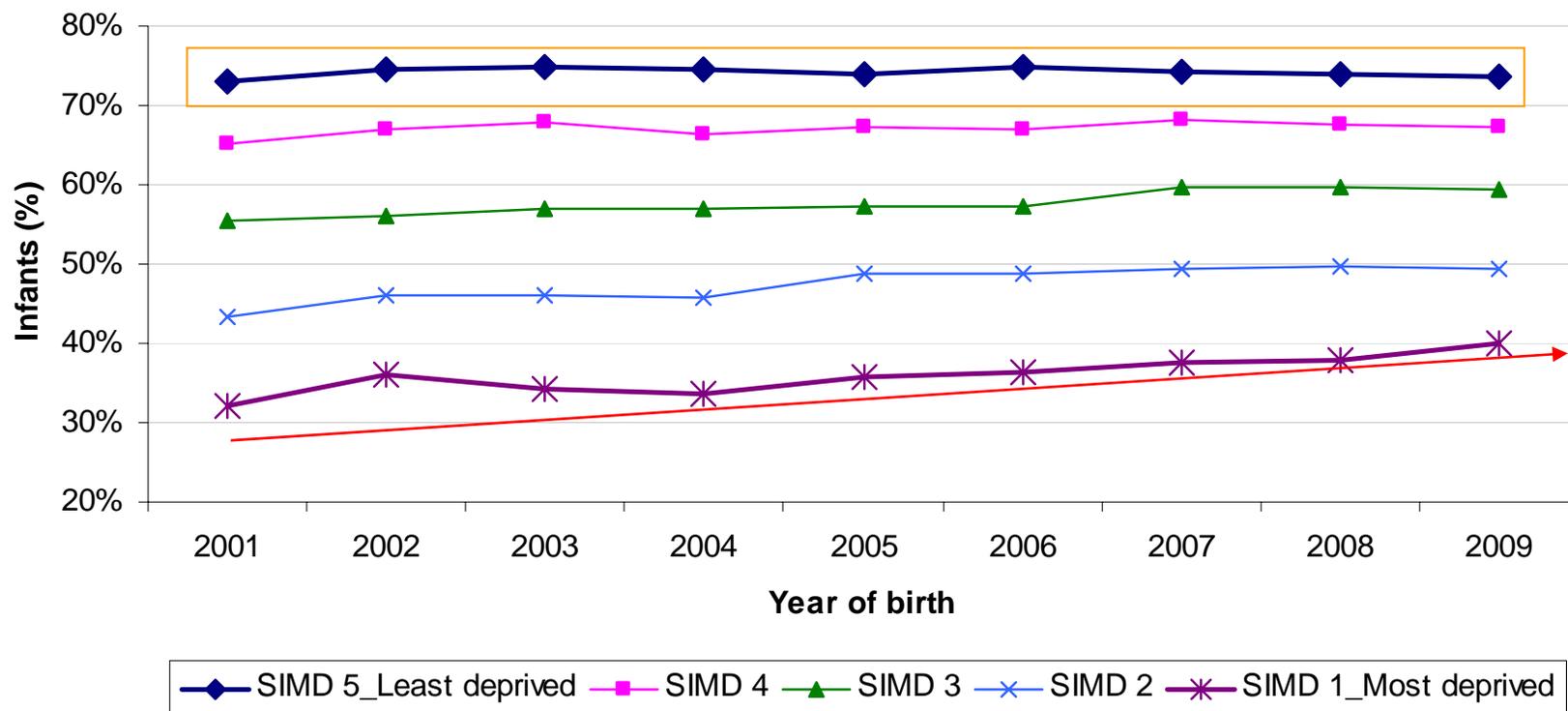
Source: SMR02, CHSP- PS/ISD linked extract



Breastfeeding at birth (exclusive) trends by area deprivation

Breastfeeding (exclusive) trends at birth and area deprivation 2001 - 2009

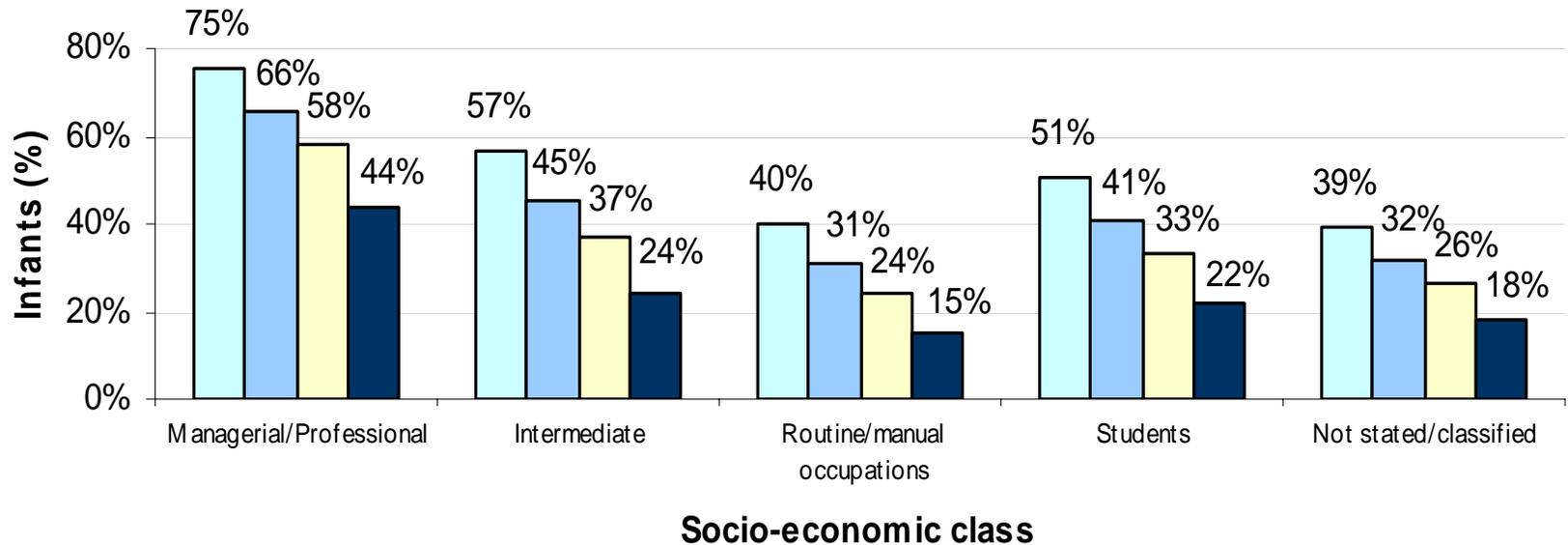
Source: GROS, CHSP-PS, SIMD 2006/ISD Scotland linked extract



Breastfeeding trends and maternal socio-economic status

Breastfeeding (exclusive) trends and maternal socio-economic class

Source: GROS, CHSP-PS/ISD linked extract

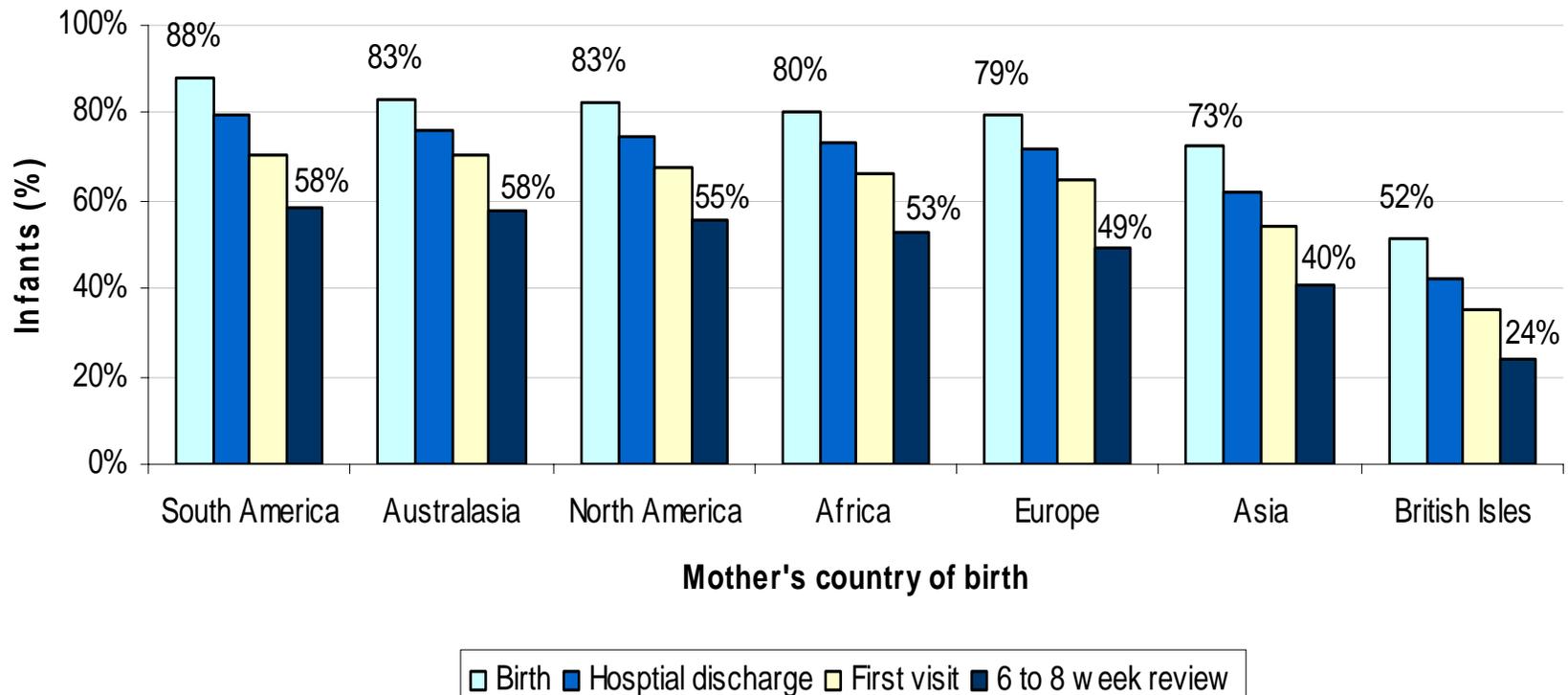


■ Birth
 ■ Hospital discharge
 ■ First visit
 ■ 6 to 8 week review

Breastfeeding (exclusive) trends by mother's country of birth

Breastfeeding (exclusive) trends by mother's country of birth 2001 - 2009

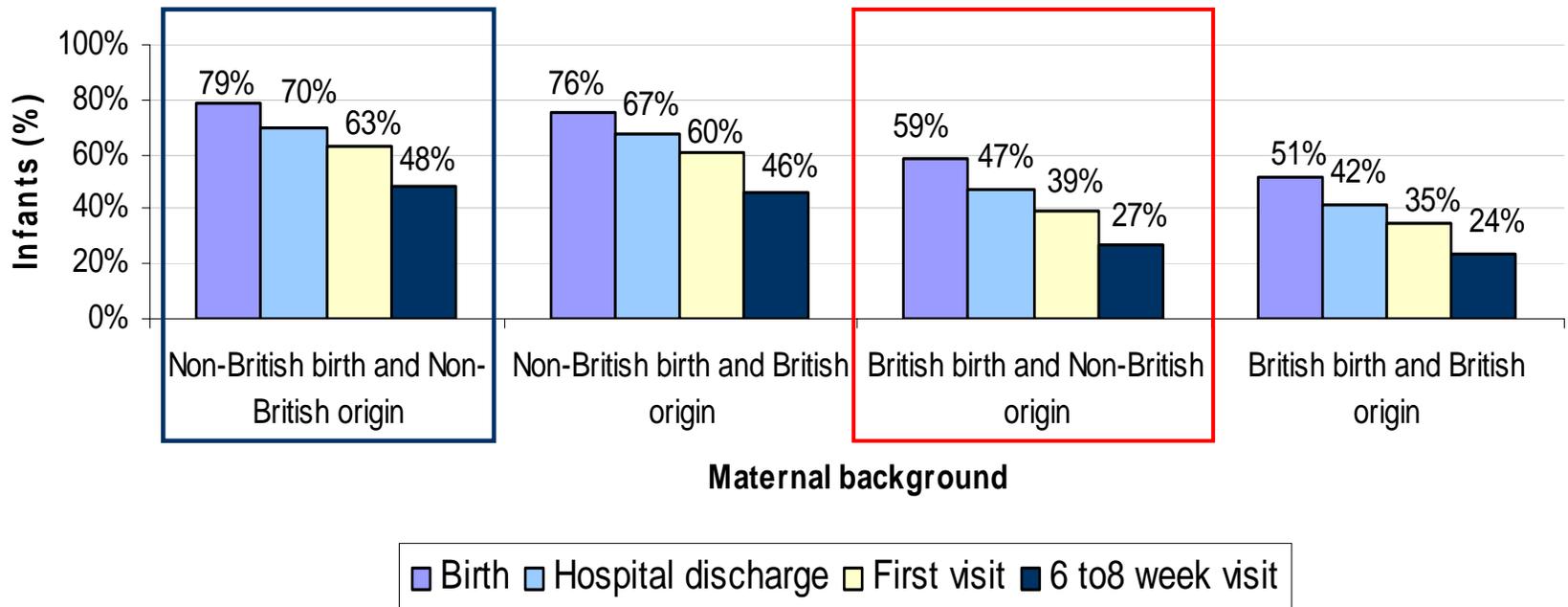
Source: GROS Births, CHSP-PS/ISD Scotland linked extract



Breastfeeding (exclusive) trends and mother's place of birth and ethnicity

**Breastfeeding trends (exclusive) and maternal ethnicity and place of birth
2001 - 2009**

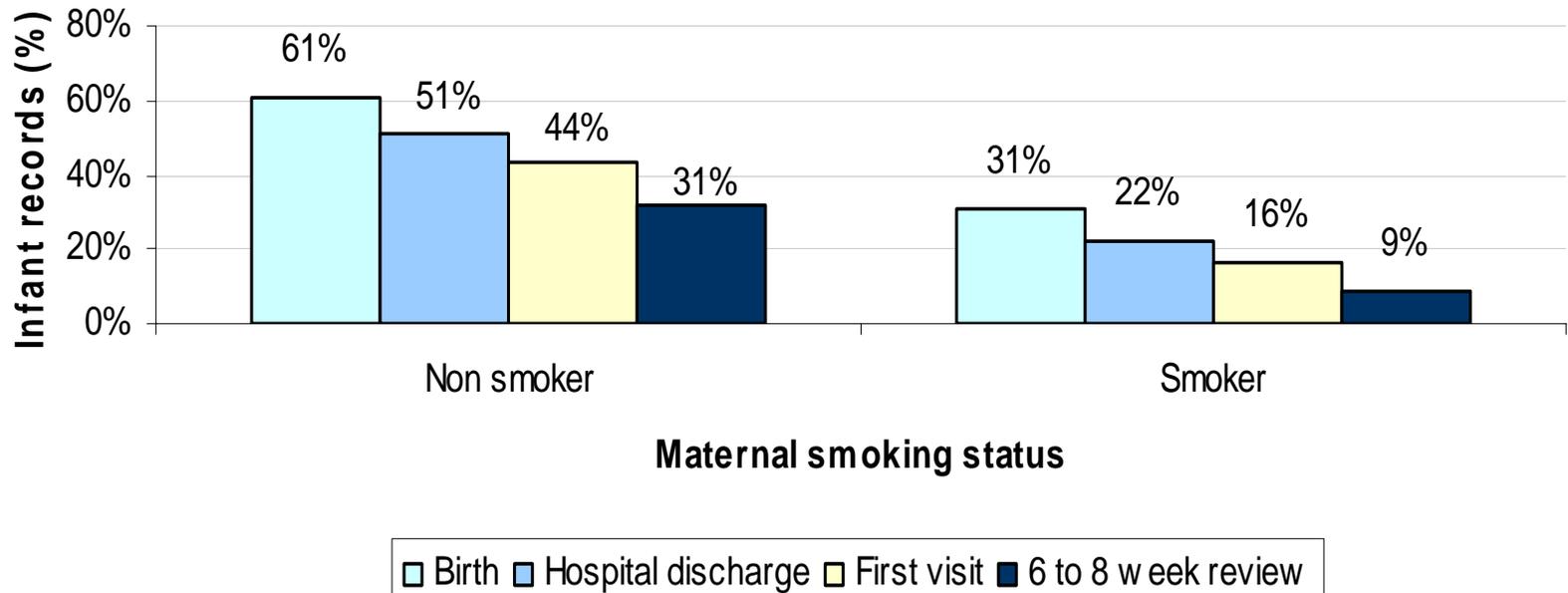
Source: GROS Births, ONOMAP, CHSP-PS/ISD Scotland linked extract



Breastfeeding (exclusive) and maternal smoking status

Breastfeeding (exclusive) trends and maternal smoking status 2001 - 2009

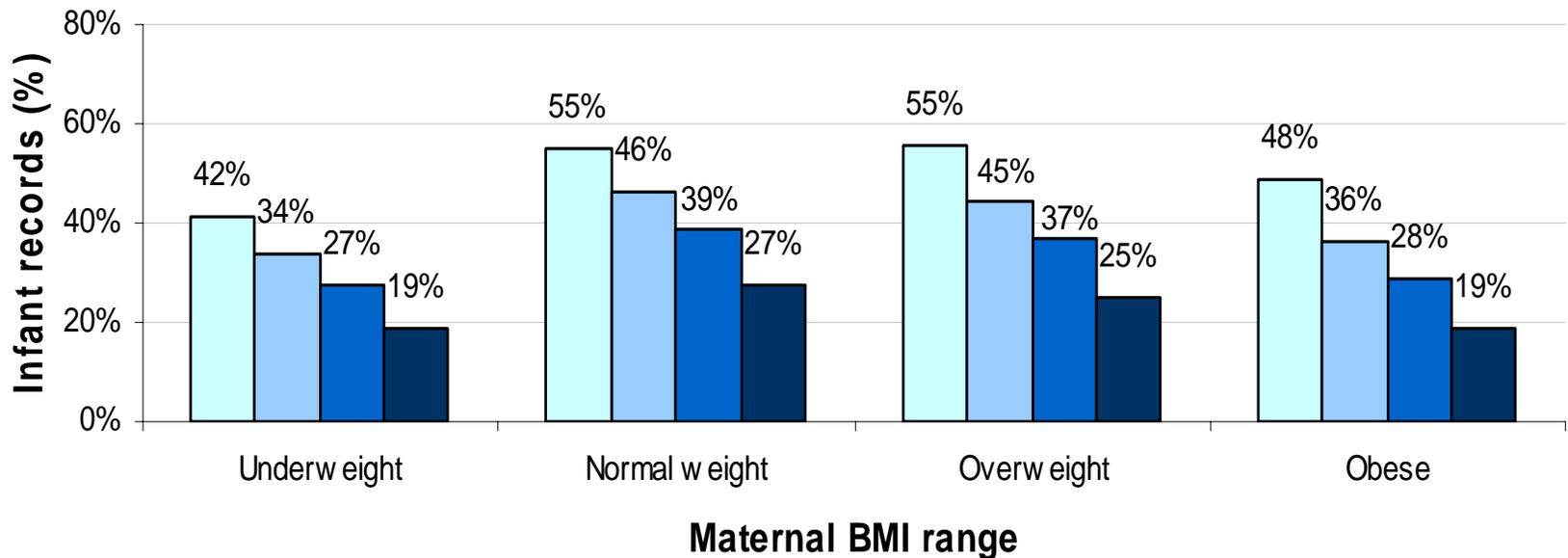
Source: CHSP-PS/ISD Scotland linked extract



Breastfeeding (exclusive) and maternal body mass index

Breastfeeding (exclusive) trends and maternal body mass index 2003 - 2009

Source: SMR02, CHSP-PS, GROS/ ISD Scotland linked extract

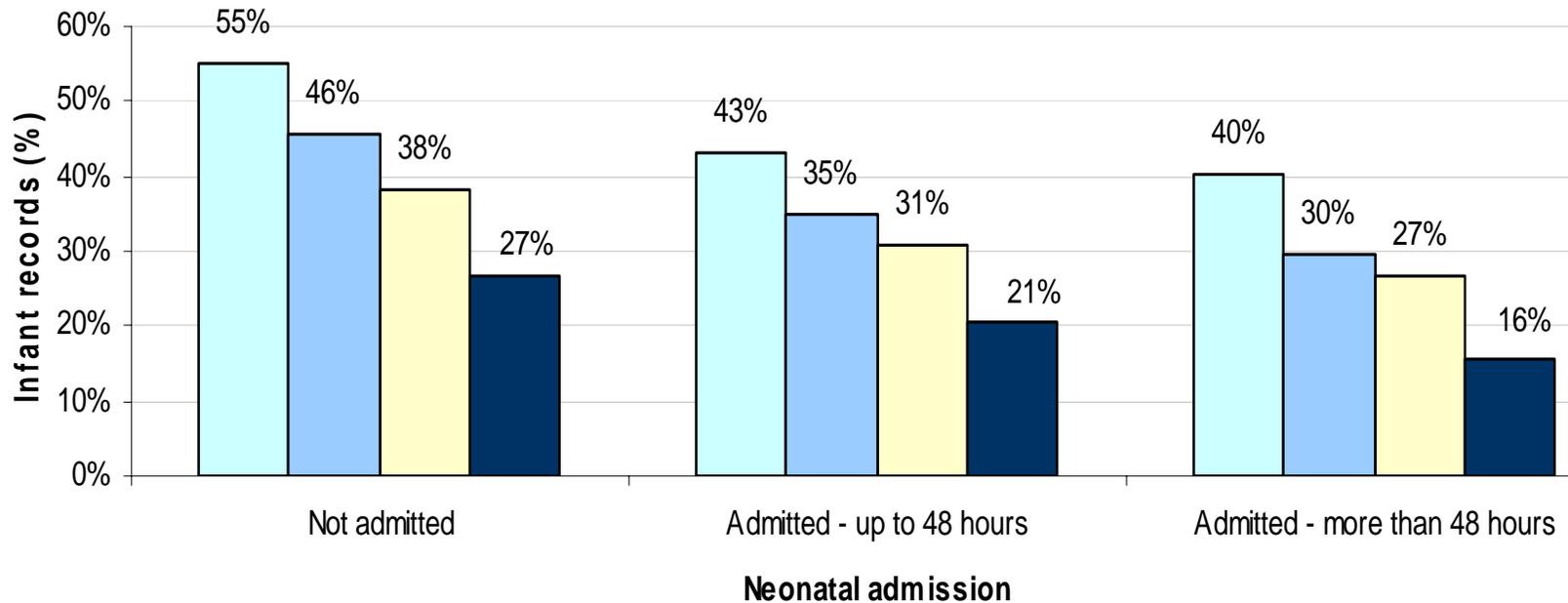


Birth Hospital discharge First visit 6 to 8 week review

Breastfeeding (exclusive) and neonatal admission

Breastfeeding (exclusive) trends and neonatal admission 2001 - 2009

Source: SMR02, CHSP- PS/ ISD Scotland linked extract



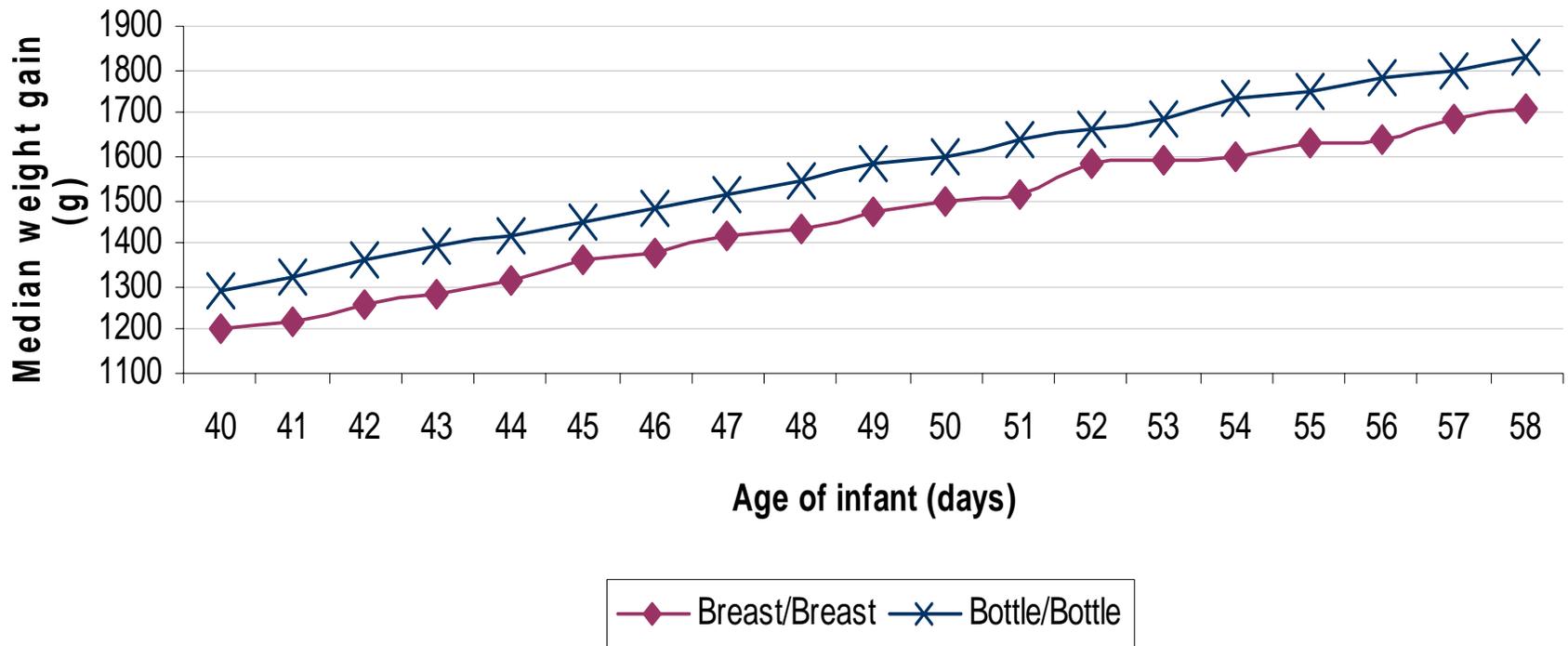
Birth Hospital discharge First visit 6 to 8 week review

Infant feeding patterns

Weight gain at 6 to 8 week review (median)

Patterns of infant feeding and weight gain (median) 2001 - 2009

Source: CHSP-PS/ISD Scotland linked extract



Predictors of any breastfeeding in first time mothers (singleton births): 2003 – 2009

<p>Demographic</p>	<p>maternal age, paternal age, area deprivation (SIMD), mother and father's socioeconomic status, marital status, mother's country of birth (and father's), maternal religious background, year of birth</p>
<p>Maternal and infant health</p>	<p>maternal body mass index, mode of delivery, maternal health at delivery, maternal smoking status, neonatal admission, infant gestation/birth weight, infant health, infant sex, estimated gestation, mode of feeding at birth*</p>
<p>Health services</p>	<p>full baby friendly accreditation, timing of review visits*, length of postnatal stay</p>

Predictors of any breastfeeding continued...

Variables that predict any breastfeeding: mixed and exclusive (<u>reference</u>)	Odds ratios (95% confidence intervals)		
	Birth	First visit	6 to 8 weeks
Maternal age (<u>teenage mother</u>)			
20 – 24 years	1.36 (1.30 – 1.43)	1.27 (1.19 – 1.36)	1.33 (1.24 – 1.44)
25 – 30 years	1.67 (1.58 – 1.76)	1.57 (1.46 – 1.69)	1.76 (1.62 – 1.91)
30 – 34 years	2.00 (1.88 – 2.12)	1.92 (1.78 – 2.08)	2.19 (2.01 – 2.39)
35 – 40 years	2.09 (1.95 – 2.25)	2.08 (1.90 – 2.27)	2.41 (2.19 – 2.65)
40 + years	2.36 (2.09 – 2.67)	2.28 (2.11 – 2.28)	2.70 (2.37 – 3.07)
Deprivation (<u>Most deprived</u>)			
SIMD 2	1.27 (1.22 – 1.31)	1.11 (1.06 – 1.16)	-
SIMD 3	1.54 (1.48 – 1.61)	1.27 (1.21 – 1.34)	1.14 (1.09 – 1.19)
SIMD 4	1.85 (1.78 – 1.93)	1.44 (1.37 – 1.51)	1.32 (1.26 – 1.37)
SIMD 5 _Least deprived	2.07 (1.97 – 2.17)	1.54 (1.46 – 1.63)	1.37 (1.32 – 1.43)
Year of birth (<u>2003 – 2005</u>)			
2006 - 2009	1.04 (1.01 – 1.07)	0.95 (0.92 – 0.98)	0.89 (0.87 – 0.92)

Predictors of any breastfeeding continued...

Variables that predict any breastfeeding: mixed and exclusive (<u>reference</u>)	Odds ratios (95% confidence intervals)		
	Birth	First visit	6 to 8 weeks
Country of birth (<i>British</i>)			
Mother of Non-British birth	2.80 (2.60 – 3.20)	2.63 (2.45 – 2.83)	2.27 (2.14 – 2.41)
Marital status (<u>married parents</u>)			
Cohabiting parents	0.83 (0.81 – 0.86)	0.90 (0.87 – 0.93)	0.87 (0.84 – 0.91)
Single/separated parent	0.55 (0.52 – 0.57)	0.72 (0.68 – 0.76)	0.67 (0.63 – 0.72)
Smoking status (<u>non smoker</u>)			
Smoker	0.62 (0.60 – 0.65)	0.67 (0.64 – 0.70)	0.58 (0.55 – 0.61)
Maternal BMI (<u>normal BMI</u>)			
Underweight	0.78 (0.70 – 0.86)	-	-
Overweight	-	0.85 (0.80 – 0.89)	0.82 (0.78 – 0.86)
Obese	0.86 (0.82-0.90)	0.68 (0.64 – 0.72)	0.66 (0.62 – 0.70)
Baby friendly facility (<u>Partial or Non BFI</u>)			
Full Accreditation	1.15 (1.11 – 1.18)	1.16 (1.12 – 1.20)	1.13 (1.09 – 1.16)

Predictors of any breastfeeding continued...

Variables that predict any breastfeeding: mixed and exclusive (<u>reference</u>)	Odds ratios (95% confidence intervals)		
	Birth	First visit	6 to 8 weeks
Length of stay (<u>2 days or less</u>) 3 days or more	1.60 (1.55-1.65)	1.17 (1.13 – 1.22)	–
Partner's age (<u>< than 24 yrs</u>) 25 – 34 years	1.25 (1.20 – 1.29)	1.26 (1.19 – 1.32)	1.16 (1.10 – 1.23)
35 years or older	1.35 (1.29 – 1.41)	1.41 (1.32 – 1.50)	1.32 (1.24 – 1.41)
Parental background (<u>British</u>) Either parent of Non-British country of origin	1.44 (1.35 – 1.54)	1.25 (1.17 – 1.35)	1.21 (1.13 – 1.29)
Both parents of Non-British country of origin	2.07 (1.79 – 2.39)	1.85 (1.62 – 2.13)	1.21 (1.11 – 1.32)
Either parent of unknown country of origin	2.14 (1.54 – 2.98)	1.56 (1.36 – 1.80)	–

Summary

A range of infant and maternal characteristics influence type and duration of infant feeding.

- Older mothers, mothers living in less deprived areas, those married or living with a partner, mothers who did not smoke and those born outside the British Isles or with a non-British ethnic origin had higher levels of **breast-feeding**
- In contrast, younger mothers, mothers living in more deprived areas, single mothers, smokers and mothers born in Britain or of British origin had higher rates of **bottle feeding**
- Mode of delivery, parity, length of maternal stay in hospital, gestation and infant health also clearly influence type and duration of infant feeding
- Mixed feeding has increased over time and appears more prevalent in mothers who are 'traditionally' likely to breastfeed exclusively. It is also the major source of breast milk for infants of mothers of Non-British birth, younger mothers, deprived mothers and infants with prolonged stay in hospital.

Next steps...

- Publish papers for Phase I
- Follow up Phase 2: *Additional linkage to other schemes to explore the relationship between infant feeding and maternal ethnic background and infant outcomes within the first few years of life i.e. infant weight gain, illness etc.*

Acknowledgements

- The project is being managed by Bruce Whyte (GCPH)
- Advisory group:
 - James Egan (Public Health Programme Manager, GCPH)
 - Pauline Craig (Health Scotland)
 - Jim Chalmers (Public Health Consultant, ISD Scotland)
 - Judith Tait (Child Health Information Team Leader, ISD Scotland)
 - Linda Wolfson (Infant Feeding Advisor, NHS GG&C),
 - Jill Muirie (Public Health Advisor, NHS Health Scotland)
 - Ruth Campbell (Consultant Dietitian, NHS Ayrshire & Arran)
 - Louise Johnstone (Scottish Government)
 - David Tappin (Senior Clinical Lecturer, PEACH unit, Royal Hospital for Sick Children, Glasgow)
- Colleagues at ISD Scotland, GROS and GCPH

Thank you!