

# Maternity and Ethnicity in Scotland

Chalmers J, Bansal N, Fischbacher CM, Steiner M,  
Bhopal R, on behalf of the Scottish Health and  
Ethnicity Linkage Study

## Why we should have ethnicity attached to health data

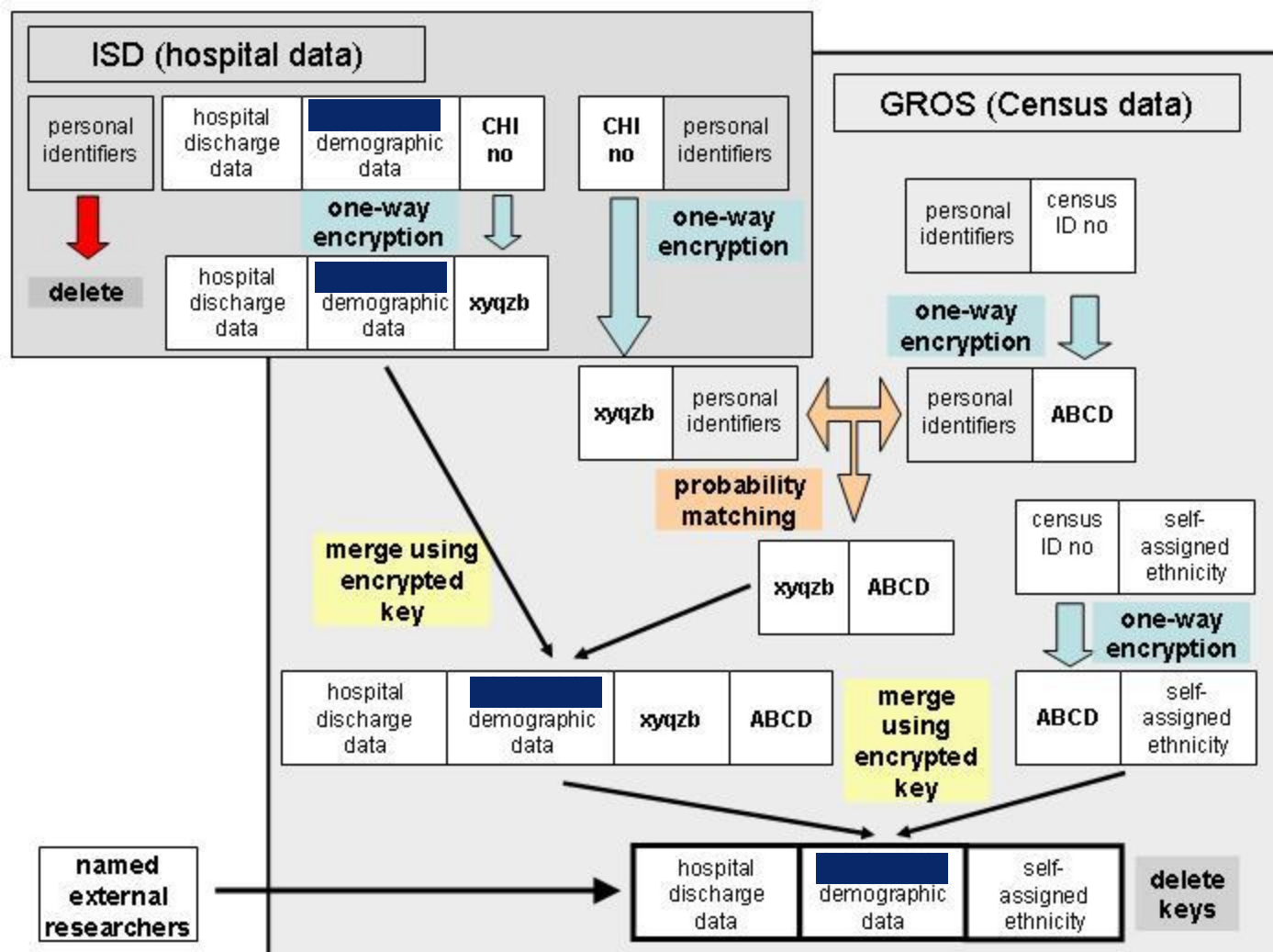
- Measure health inequalities and inequity
  - Monitor impact to reduce these inequalities
  - Respond to legislation and policies on human rights and equality in health and health care
  - Develop and test scientific hypotheses on disease and risk factor variations
- 
- But ethnicity poorly recorded on routine NHS data in Scotland
  - It is recorded on the decennial census though! Let's use that.

# Looking at maternity issues

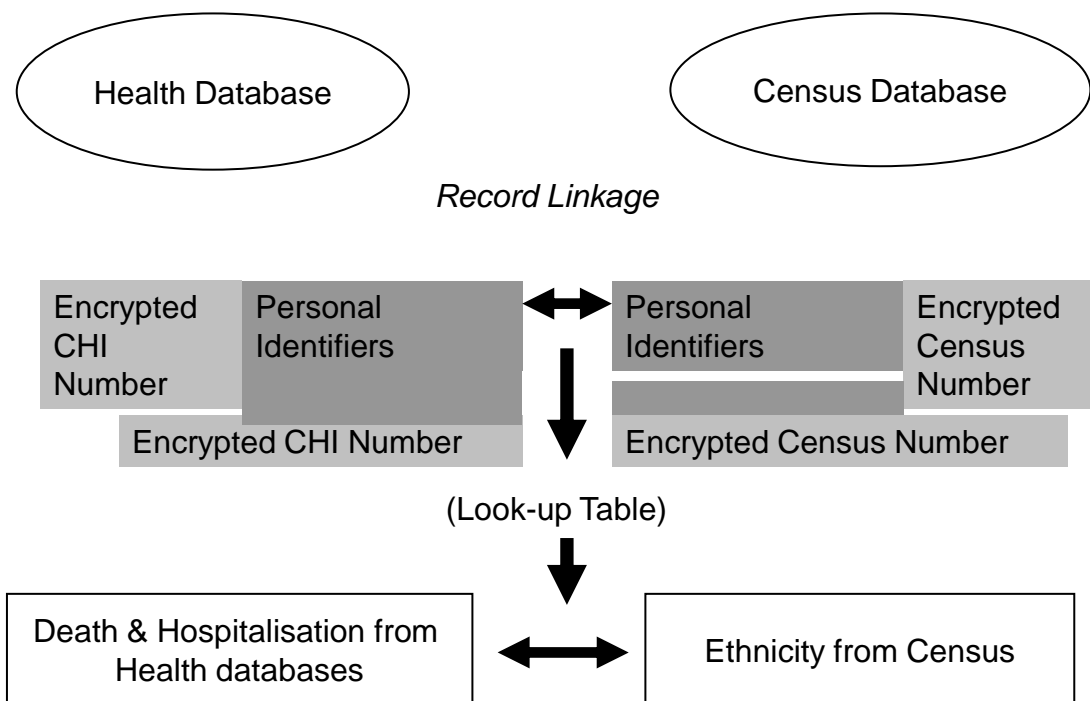
- Poor recording of ethnicity related to births in Scotland
- How do the different ethnic groups in Scotland compare for various measures of maternity activity
- Do the ethnic minority groups in Scotland behave similarly to the same groups in England
  - England has poorer maternity data but better ethnicity data
    - **Millennium cohort**
    - **NHS Numbers for Babies (NN4B)**

# The Rules

- To comply with data protection legislation, Census Act 1920 and the Census Confidentiality Act 1991
  - An identified individual's response to the Census must never be linked to their health records
  - An identified individual's health records must never be linked to Census information
- Deal with imperfect matching information
  - “probability matching”



# Anonymised Linkage of Health Databases to Census Databases: conceptualising the procedure



## Methods

- Population – women in Scotland on census night who subsequently deliver a baby (up to April 2008) in Scotland recorded on SMR02 (98% of all deliveries)
- Restriction to first baby
  - “Purer” data
    - Subsequent deliveries strongly influenced by first delivery
      - Particularly caesarean sections
    - Parous women different from nulliparous

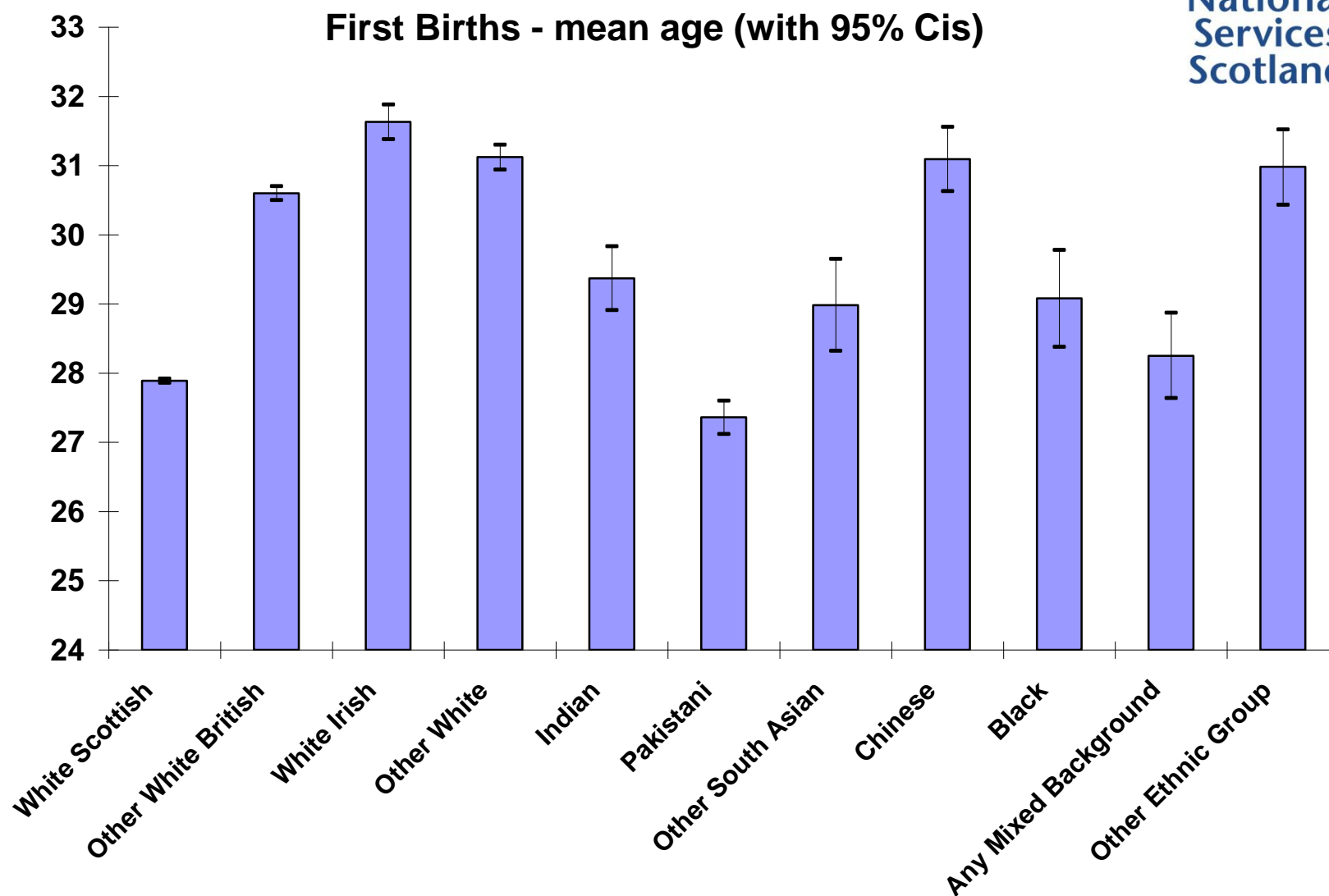
## Overall results

- 95% of 2001 population of 4.9 million linked
- 363,990 records from new SMR02 (maternity record) file that fall in study period (May 2001 to April 2008)
  - Of these 192,803 link to census and are first single birth records only.

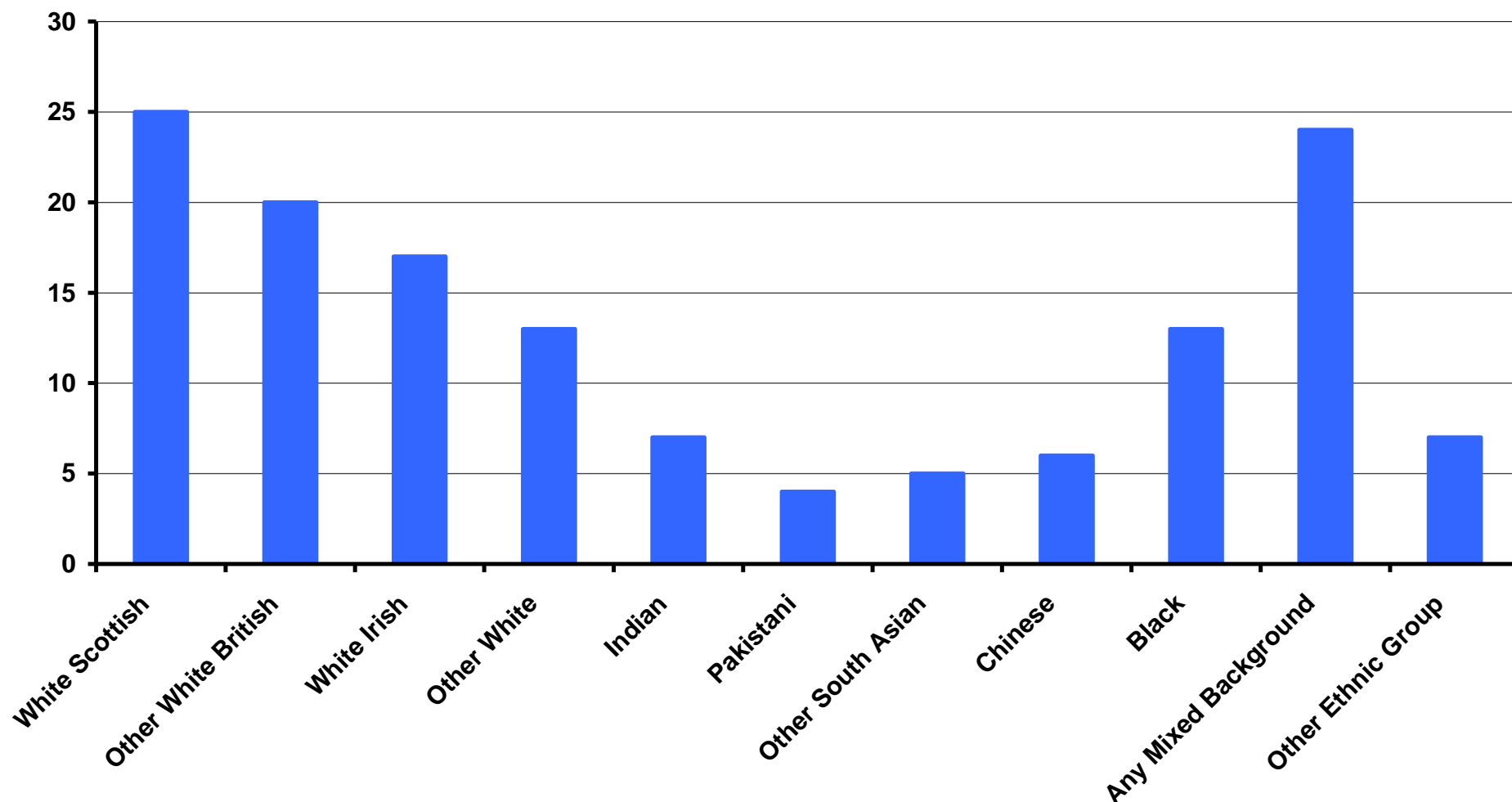


## Areas of interest

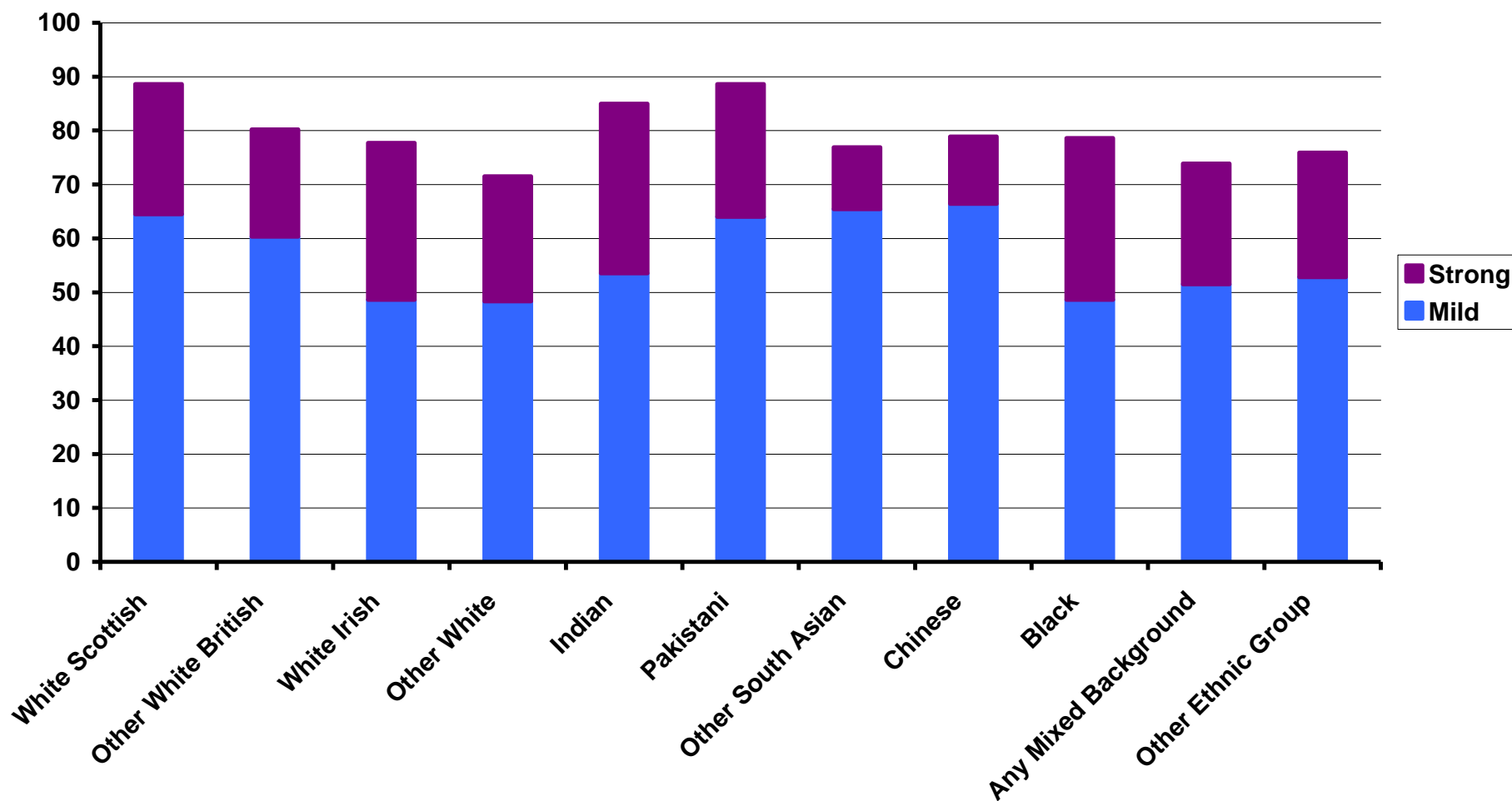
- Maternal age
  - Strong influence on risk of caesarean section
- Smoking
  - Strong influence on birthweight
- Type of delivery
- Analgesia
- Birthweight and Gestation
  - Previous evidence of ethnic differences



## Percentage of women smoking during pregnancy

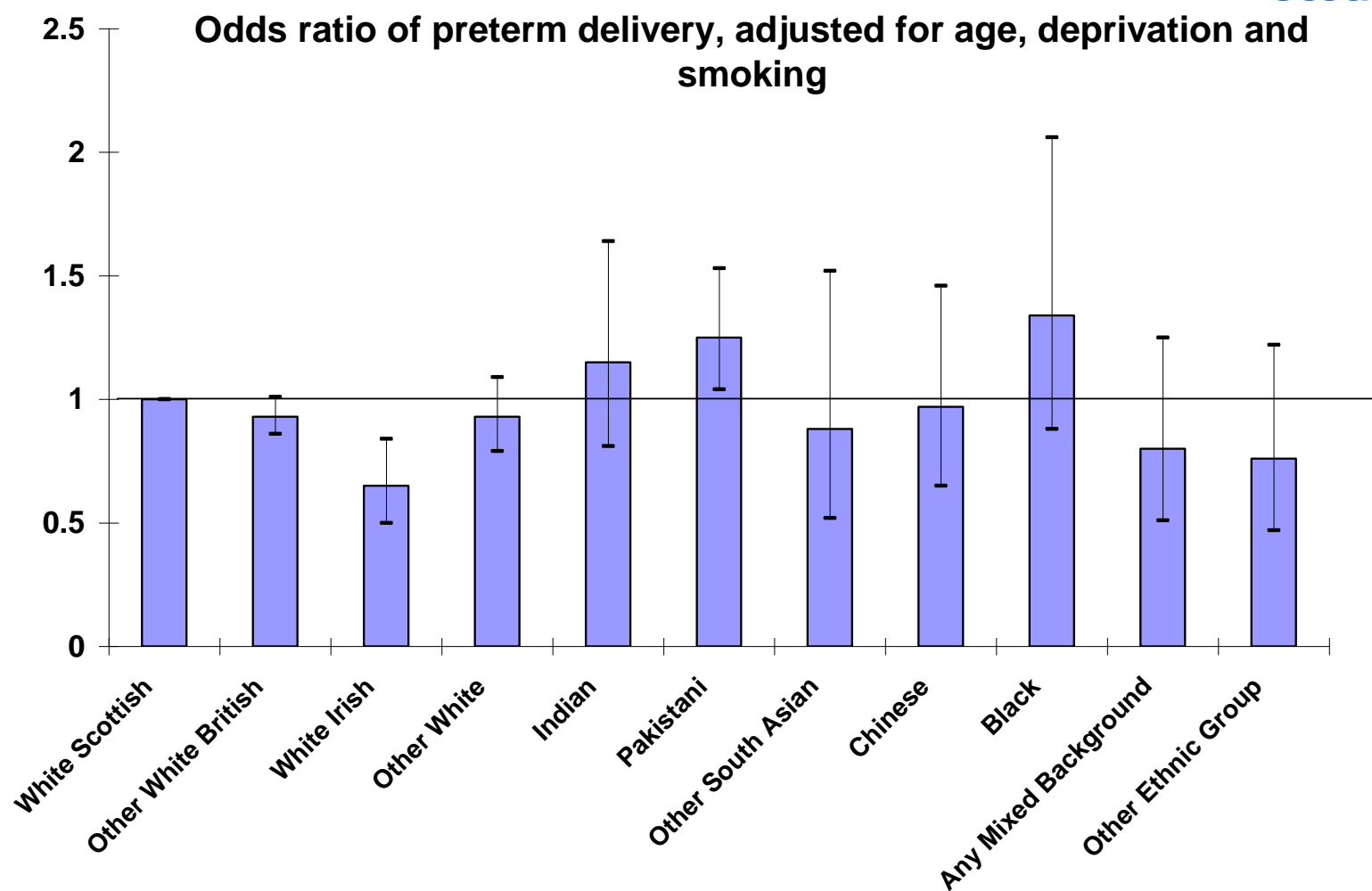


## Percentage using strong or mild analgesia in labour



## Caesarean section rates

- No statistically significant difference
  - Contrasts with higher rates noted in most of the ethnic minority groups in a London cohort (Ibison 2005)
- Perhaps White rate has caught up



## Birthweight – multivariate analysis

- Pakistani and Indian – 260 grams lower
- Black – 119 grams lower
- Maternal age – 5.8 grams increase with each year
- Gestation – 183 grams increase with each week
- Smoking – 275 grams reduction
- Deprivation – least deprived decile 185 grams heavier than most deprived decile
- No “migrant status” effect

## Conclusions

- Some ethnic variations in maternity measures
- Generally aligned with results from other UK studies
- Specific effects on birthweight and gestation
- Important for predicting prenatal growth.



# Numbers

<b>Ethnic Group</b>	
<b>White Scottish</b>	<b>170803</b>
<b>Other White British</b>	<b>12992</b>
<b>White Irish</b>	<b>1681</b>
<b>Other White</b>	<b>3159</b>
<b>Indian</b>	<b>537</b>
<b>Pakistani</b>	<b>1689</b>
<b>Other South Asian</b>	<b>295</b>
<b>Chinese</b>	<b>483</b>
<b>Black</b>	<b>307</b>
<b>Any Mixed Background</b>	<b>440</b>
<b>Other Ethnic Group</b>	<b>416</b>

## Maternal age at first birth

- Note general association between deprivation and low maternal age
  - May explain older “white immigrants”
- Pakistani women tend to be young
  - Also noted in millennium cohort

# Smoking in pregnancy

- Higher in White groups
- Similar pattern to studies in England

# Analgesia in labour

- No particular pattern

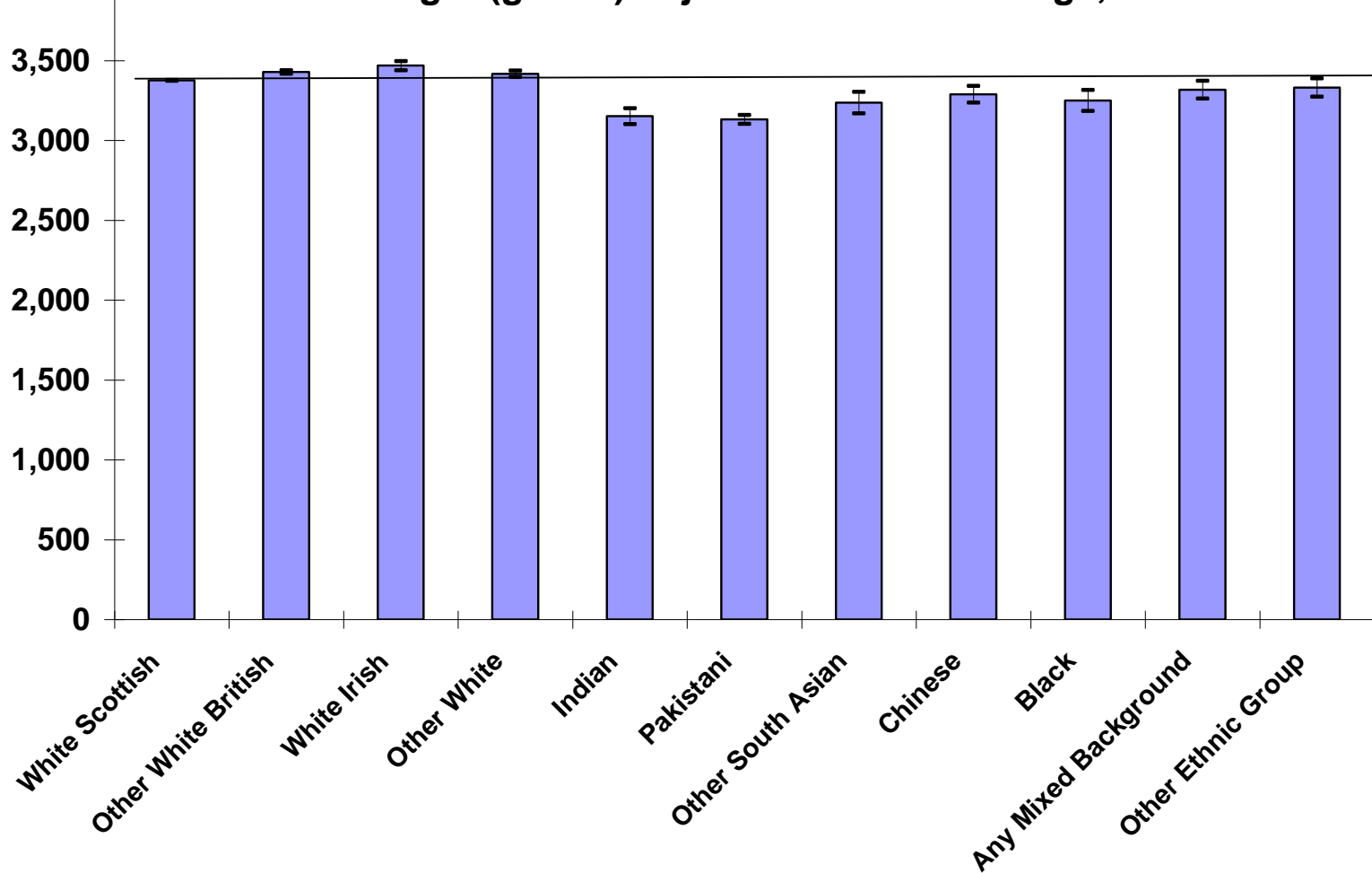
# Birthweight and gestation

- Complex area – mechanisms poorly understood
- Gestation has major effect on birthweight but not all differences in birthweight explained by gestation
  - Physiologically
    - Balance between baby's "desire for optimal environment" and mother's "accommodation" and ability to deliver safely
  - Epidemiologically
    - Genetic factors (influencing maternal and baby size and birth mechanisms), nutrition, smoking, specific illnesses, deprivation, intervention etc
- Important to discern effect of ethnicity

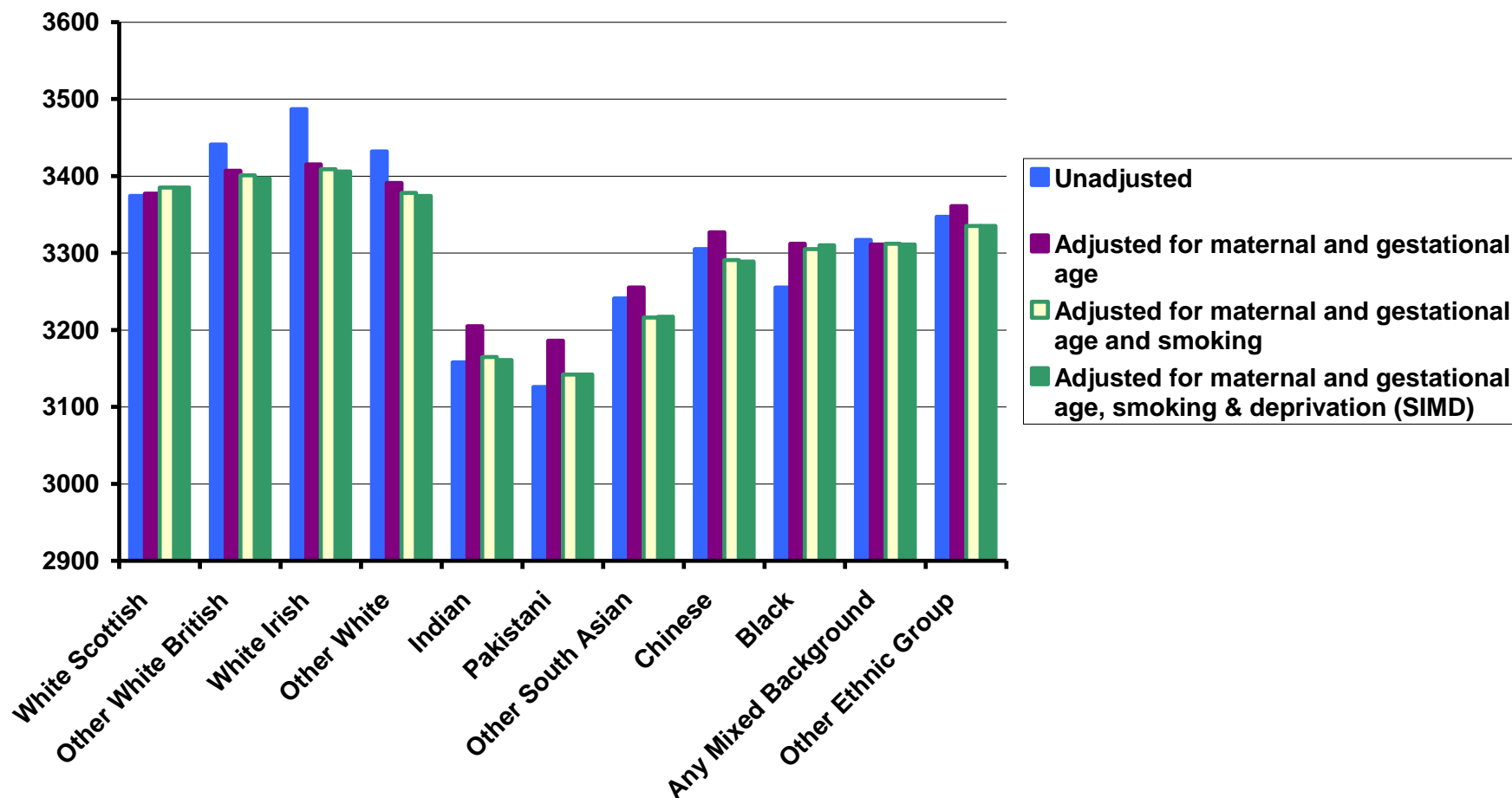
# Gestation

- Pakistani babies have shorter gestation
- Observed in millennium cohort, along with most minority ethnic groups
- Interest in generational effect

**Mean Birthweight (grams) adjusted for maternal age, with 95% CIs**



## Effects of various adjustments on birthweights (grams)





# Birthweight

- All non-white groups seem to have smaller babies
  - Some of this effect mediated by shorter gestations
  - Minimal influence of smoking and deprivation
  - Effect seen even when restricted to term babies
  - Difficult to adjust for interventions
- General agreement with other UK data