

# 2011 Census



**Using administrative data  
to address under-enumeration**

**Robert Beatty  
Northern Ireland Census Office**

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency



## Background



- **There is no such thing as the UK Census!**
  - Three separate Census operations in the UK
  - ONS (England & Wales), NRS (Scotland) and NISRA (N Ireland)
  - Close cooperation and joint working
  - UK estimates produced by aggregating across the offices

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

## Background



- **Census is statutory**
  - Legal obligation for **everyone** to take part
    - **But not everyone does (hence under-enumeration)**
- **Statistics for 1991 for Northern Ireland**
  - Census published population figure 1.578m
  - Mid-year population estimate 1.607m
  - Difference is 2% - Census under-enumeration
- **2001 statistics**
  - Census outputs adjusted for under-enumeration
  - Census published population figure 1.685m
  - Mid-year population estimate 1.689m

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

## Basic methodology



- **2001 Census**
  - Census Coverage Survey – about 2 per cent of households
  - Re-enumerated independently of Census, face-to-face
  - Matched CCS to Census returns
  - Models developed to quantify under-enumeration
  - Applied across Northern Ireland
  - 6% of HHs imputed through this process
- **2011 Census**
  - The same basic approach, but could we do better?

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

## Use of administrative sources (UK)



- **Lots of potential sources**
  - Health – GP registrations
  - Tax and benefits
  - School Census
  - And so forth ....
- **Mostly used for QA purposes at aggregate level**
  - All have their own shortcomings
  - All maintained and owned separately
  - Legislative barriers around access to individual level data
  - Now being addressed, but not in time for 2011

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

## GP Registrations (N Ireland)

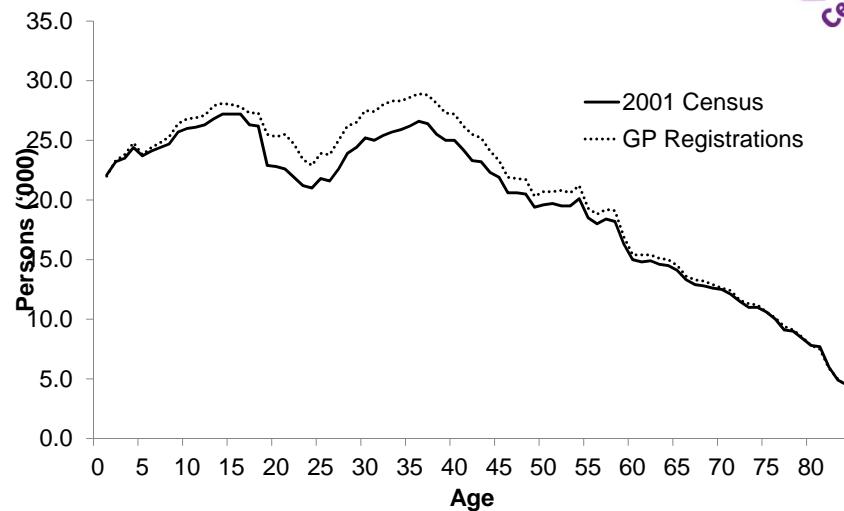


- A single organisation that manages health data across Northern Ireland - Business Services Organisation (BSO) – part of National Health Service (NHS)
- Full population coverage
- But known to have 'list inflation'

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

## GP Registrations – List Inflation



Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

## Wider health data – ‘activity’

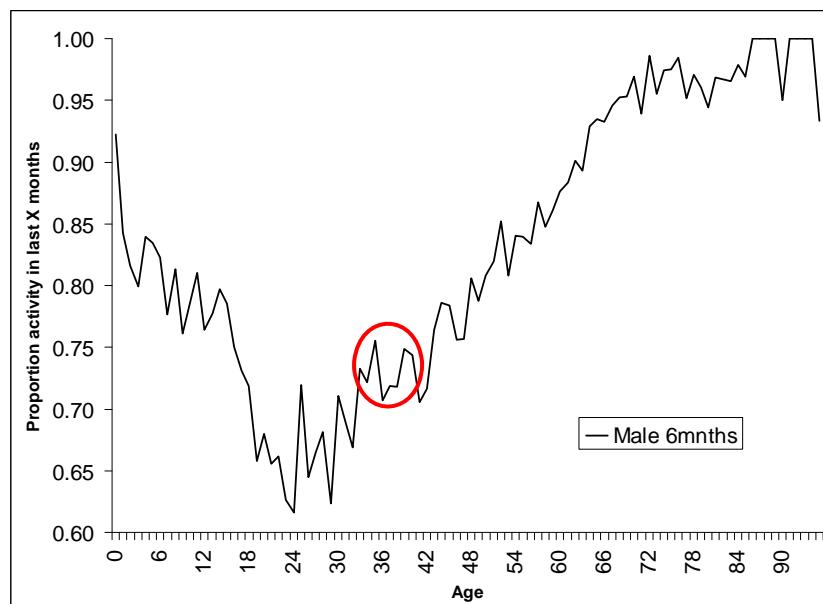


- Separate databases on prescriptions, dentists, opticians and so forth
- BSO already undertaking major matching exercise, and developed person-based database
- Identifying ‘active’ persons
- NISRA statisticians in BSO & Data Access Agreement

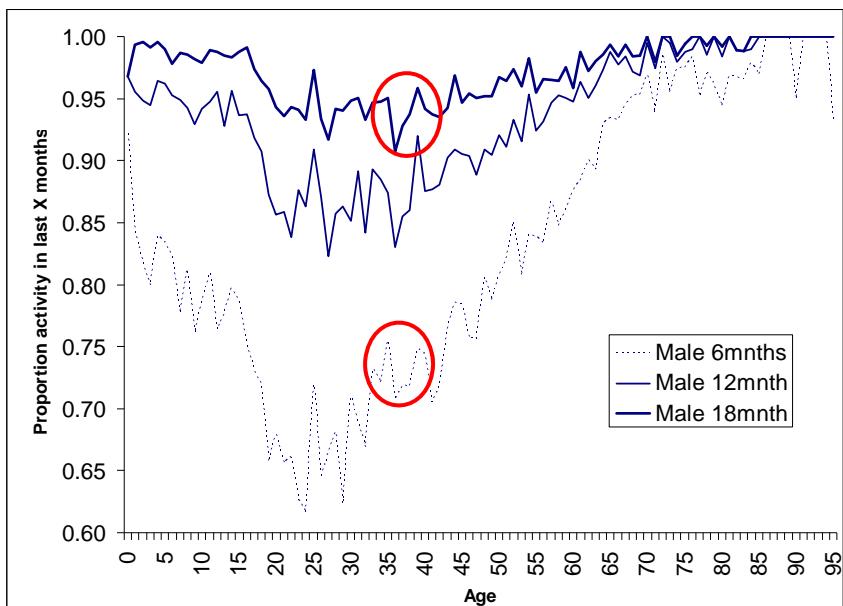
Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

Proportion activity in the last 6 months, by age (males)



### Proportion activity in the last X months, by age (males)



### Census Under-enumeration Project



- To enhance the 2001 adjustment process - make the Coverage Survey have 'less work' to do
- Health and Census matched on address (UPRN) and date of birth
- 'Populate' non-respondent households with information from GP registrations
  - name, sex, date of birth
  - Based on 'activity' information

## Final rules for inclusion



- 18month activity
- No duplicate in 2011 Census (name, dob, sex)
- Include all household members
- Exclude child-only households
- Exclude 13+ households
- Manual check of 7+ households with multiple surnames

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

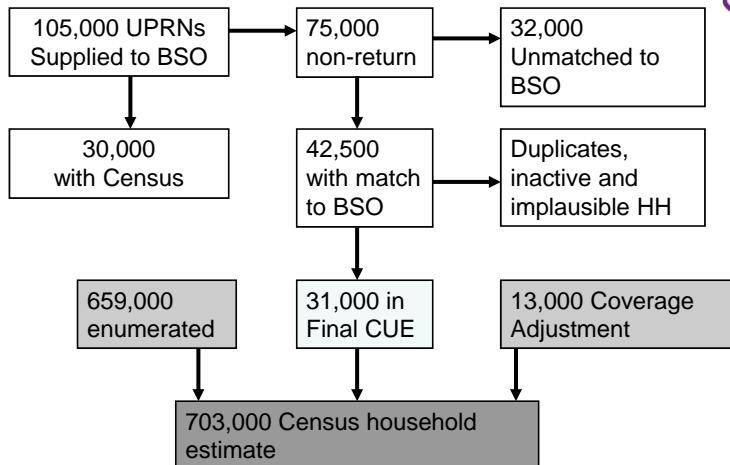
## Data used

- Returned Census forms by September 2011
- 105,000 UPRNs (**Addresses**) supplied to BSO-HSC
  - 30,000 with Census return (sample)
  - 75,000 without Census return (all)
- BSO data at these UPRNs (**Addresses**)
  - full name, DOB, sex, and month of last activity

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

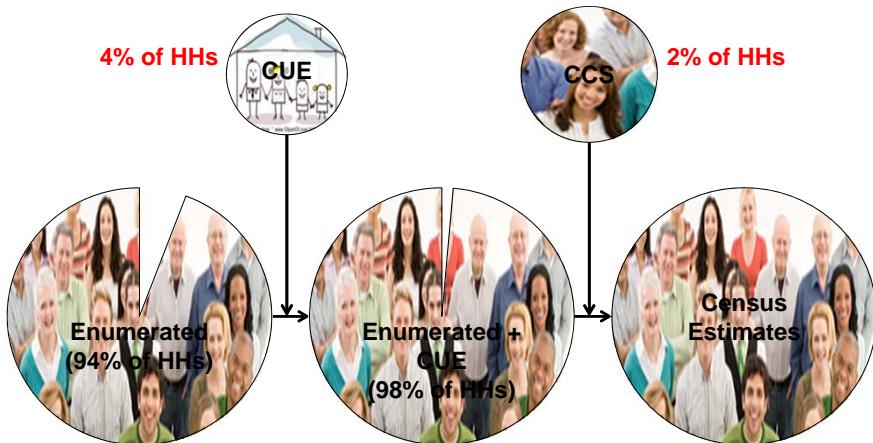
## High Level Numbers



Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

## 2011 Adjustment Process



Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

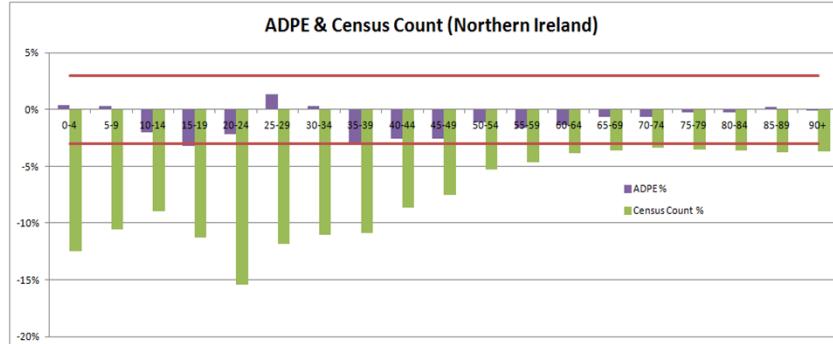
## Conclusion



- Consider the Census under-enumeration project to have been a success
- We believe that it enhanced the 2011 Coverage adjustment process and ultimately improved the quality of the 2011 Census estimates, which cover the whole of the population
- Considerable future scope – user further data sources beyond health

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency



Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

## Way forward – tentative thoughts



- Within the scope of the 'Beyond 2011' project – greater use of administrative data
- For 2021, have the address register pre-prepared
- Pre-populate with 'strong' activity-based records - age and sex as a minimum. Maybe more?
- Over-write (?) – validate - (?) pre-populated information with Census returns as they come in

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

## Way forward – tentative thoughts



- Focus Census activity (publicity etc) on areas / groups there is no (or limited) evidence of 'activity'?
- Focus Census non-response field activity on addresses with no (or limited) evidence of 'activity'?
- Consideration in design of the Coverage Survey

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency

# 2011 Census



## Using administrative data to address under-enumeration

<http://www.nisra.gov.uk/archive/census/2011/methodology/under-enumeration.pdf>

Help tomorrow take shape

© Northern Ireland Statistics & Research Agency