

Statistical Disclosure Control (SDC)

- ▶ **Statistical Disclosure Control (SDC)** enables us to help safeguard information given in confidence by developing methods to **reduce the disclosure risk**.



SDC Importance to Census

- ▶ Census users require:
 - a **high level of detail**
 - data relating to **small populations**
- ▶ Without SDC **personal information could be deduced**.
- ▶ This would be **in breach of legal and other obligations** and likely **affect public trust**.



Census 2011 - Development of SDC Methodology

The 2006 Registrar General's agreement:

- ▶ **Small cell counts would be allowed**, provided that:
 - uncertainty** is systematically created, and
 - that creating this uncertainty **does not significantly damage the data**
- ▶ **Targeted record-swapping** is the primary disclosure control method.



UK Census SDC: 2001 v 2011

2001

- ▶ Thresholds for OA size
- ▶ Table design
- ▶ **Random** record-swapping
- ▶ **England & Wales applied additional small-cell adjustments** (Scotland did not)

2011

- ▶ Thresholds for OA size
- ▶ Table design
- ▶ **Targeted** record-swapping
- ▶ **Small cell values are allowed**
- ▶ Additional tests carried out on specific output tables to assess disclosure issues

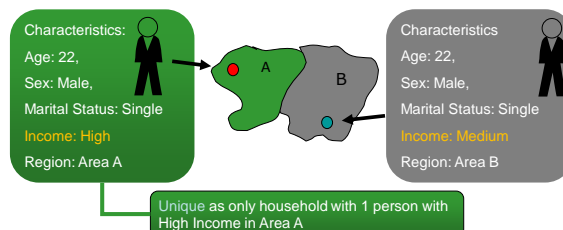


Targeted Record Swapping

- ▶ **Targeted** to those with the **greatest risk of identification**.
- ▶ Swapped entire households and individual communal establishment residents.
- ▶ The level of swapping varied depending on the level of **imputation** within a particular area.



Record-Swapping - illustrative example



Treatment:

- ▶ Identify another household in a different area with virtually all the same characteristics.
- ▶ Swap the two households.



Targeted Record Swapping – Advantages

- ▶ Creates **uncertainty**.
- ▶ **Targets the most risky records**.
- ▶ Output tables are **internally additive**.
- ▶ **Totals are consistent** across output tables.
- ▶ **Higher geographies** are the **sum** of corresponding tables at **lower geographies**.
- ▶ **Higher geographies** are **largely unaffected** by the swapping.

Targeted Record Swapping – Challenges

- ▶ Relationship between variables and with local geography can be affected.
- ▶ Public perception of disclosure may remain.
- ▶ Some swapping details need to remain restricted.



Summary – Current situation with Census SDC

- ▶ **Targeted record swapping** has been carried out.
- ▶ Tests are continuing to **assess output tables prior to publication**.
- ▶ This has resulted in some **redesign of output tables**.
- ▶ SDC for microdata and Origin-Destination products.
- ▶ Development of processes for assessing **commissioned table requests**.

