



2011 Census Outputs Information Event



Session 1



Welcome and Introduction

Robert Beatty
Head of NI Census

Evacuation Procedures



Fire Alarm

**Follow exit routes
and all instructions**

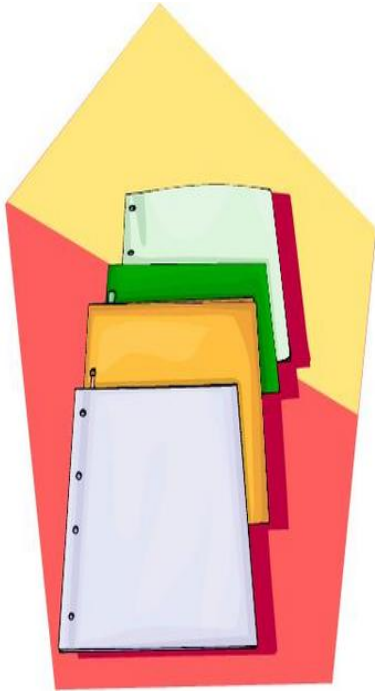
Mobile Telephones



Please –

**Switch off, or
Switch to Silent / Mute mode**

Presentations



**Presentations will be posted on the
NISRA website –**

www.nisra.gov.uk

**Attendees will be notified of their
availability.**



Agenda for the Day

09.30 to 10.00 Welcome & Introduction

10.00 to 10.30 2011 Census Outputs

10.30 to 11.00 Break

11.00 to 11.40 2011 Census Coverage and Quality

11.40 to 12.10 Geography

12.10 to 12.30 Statistical Disclosure control

12.30 to 12.55 Dissemination

12.55 to 13.00 Wrap up

13.00 Lunch

Context – Strategic Aims



- **Include:**
 - Providing high quality VFM statistics that are fit for purpose and meet the needs of users
 - Maximising response rates by actively encouraging public participation in the Census and raising awareness of its important role
 - Protecting, and being seen to protect, the confidential personal information collected through the Census
 - Securing public and user confidence in the final results and delivering them in a timely manner

Context – Strategic Aims



- **Collectively they have implications for**
 - What outputs we produce;
 - How we produce them;
 - When we produce them;
 - Where we make them available; and
 - Who gets access to what

- **Purpose of today is to consider the above**

Coverage – Societal Changes since 2001



- **Growing population**
 - People ↑ 7.7% (to 1.82 million)
 - Households ↑ **15.1%** (to 721 K)
- **Structure of the population is changing**
 - Ageing
 - 85 and over ↑ **36.1%** (to 32 K)
 - Babies
 - aged 1 and under ↑ **13.9%** (to 50 K)
 - Increased complexity of family structures & living arrangements
 - Divorces / Civil Partnerships / HMOs
 - 1 person Households ↑ **31.2%** (to 225 K)

Coverage – Societal Changes since 2001



- **Increased mobility**
 - Second homes for work purposes
- **Migration**
 - **Balanced** migration (1991 – 2001)
 - Net **Inward** migration (2001 – 2011); A8 countries
 - Implications for Community Liaison, Public Interface Services
- **Expectation to engage with government online**
 - Hence providing internet response channel
- **General Public: Increased mistrust, less willing to comply**
 - Survey experience (having to work extremely hard to maintain levels of response)

Coverage – Response

- **2001 Census**
 - 95.2% overall level of response
 - Varied by area, population sub-group, age etc
- **Expectations for 2011**
 - Strategic aims
 - maximise overall response
 - minimise differential non-response
 - Achieving 95.2% response will be challenging
 - Hence revised methodology (***with adjustment for under-enumeration as in 2001***)
- **Quality of outputs contingent on coverage**

Consultation to date

- **Formal consultation**
 - Late 2004 / early 2005 – ‘towards the 2011 Census’
- **Information days**
 - March 2006 (Belfast, Enniskillen, Limavady)
 - June 2007 (Lisburn)
 - June 2010 (Belfast and Omagh)
 - March 2011 (Belfast and Cookstown)
- **Publications**
 - Proposals paper (March 2010)
 - Privacy Impact Assessment (May 2010)
- **Census Advisory Group** (ongoing)



Some key dates

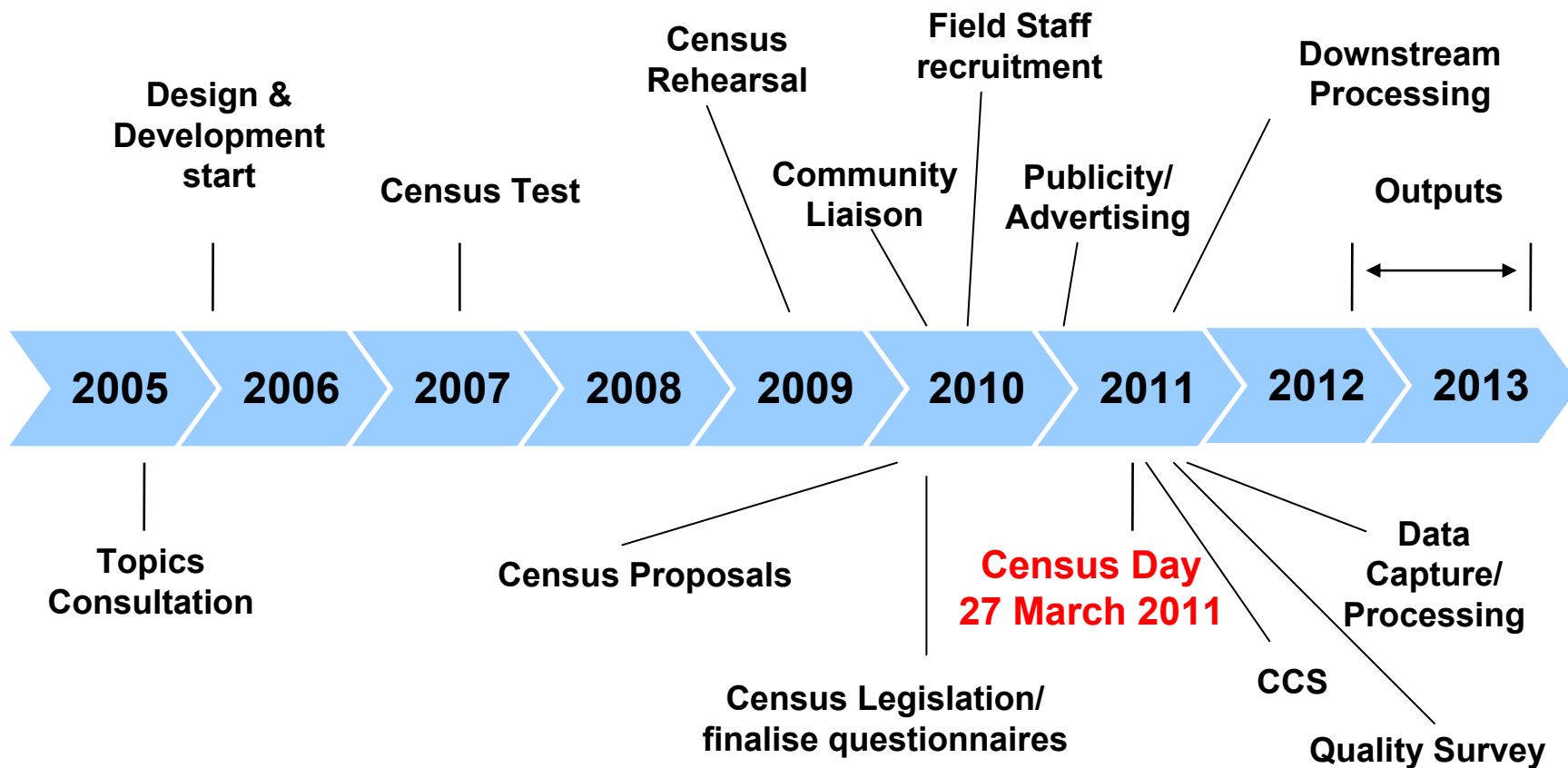
- **Census Test**
 - Spring 2007
- **Census Rehearsal**
 - Autumn 2009
- **Census Order**
 - Assembly debate June 2010
- **Census Regulations**
 - Into effect July 2010



Some key dates

- **Census Test**
 - Spring 2007
- **Census Rehearsal**
 - Autumn 2009
- **Census Order**
 - Assembly debate June 2010
- **Census Regulations**
 - Into effect July 2010
- **Census Day**
 - 27 March 2011

Key 2011 Census Milestones



Business Strategy



- **Key developments for 2011 Census**
 - Post out of pre-addressed questionnaires by Royal Mail
 - Centralised post back/ Questionnaire Tracking
 - Automated receipting via unique barcode associated with address
 - Internet response channel
- **Key drivers: coverage and quality of outputs**

Address Register

- **Need an authoritative Address Register**
 - “Truth Deck” for coverage assessment
 - Recognise it won’t be perfect, hence approach
- **Actively engaged with key stakeholders**
 - Building the address register
 - LPS POINTER address product (*our starting point*)
 - LPS comprises VLA, RCA, OSNI and Land Registers NI
 - Quality Assuring and adding value to the address register
 - District Councils (ownership of address)
 - Royal Mail (assign post town & postcode, UDPRN)
 - NISRA’s CSU (experience from survey activity)
 - Electoral Office (electoral register)

Fieldwork process

- **Develop address register**
- **Print 765k pre-addressed questionnaires**
- **Before Census day**
 - Post out of forms
 - Field staff check the address lists
 - Census Office contact 'communals'
- **Response channels**
 - Internet
 - Post-back
- **After Census day**
 - Census Office visit communals
 - Field staff follow-up non-response

Temporary staff



- **22 Census Area Managers**
 - appointed September 2010
 - Local community liaison and promotion
- **233 Census Team Co-ordinators**
 - Appointed January 2011
 - Manage team of enumerators
- **1,650 enumerators**
 - Address check before Census day
 - Follow up non-response

Publicity



- **Internet**
 - Facebook and Twitter
 - Belfast Telegraph, UTV and so forth
 - Students / Disability / Migrants / Age NI etc
- **Television & Radio**
- **Outdoor and transport**
- **Print media**
 - Advertising and editorial coverage

Thomas St Dungannon



Burn Rd Cookstown



T Sides



Mega Wrap



Coverage



- **Census aim is to secure 100% coverage**
- **But we recognise that we won't cover everyone**
- **What we plan to do about that will be covered in Session 3**

Quality Assurance



- **NISRA will carry out intensive quality assurance of results before publishing**
- **Details of the QA process will also be covered in Session 3**

Data security and confidentiality



- **Security and confidentiality are top priorities for Census Office**
- **Confidentiality protected by law**
- **Strict physical and IT security**
- **Independent Information Assurance Review published on NISRA website**
- **Statistical Disclosure Control (later today)**

Conclusion



- **Census now in full swing**
- **Reminder - www.census.gov.uk/ni**
- **Provided brief overview today**
- **But value of the Census only comes with the outputs**
- **Focus of the rest of the morning on outputs**



Thank you

Any questions?



Session 2



2011 Census Outputs

Richard Elliott

Content



- **Outputs Strategy**
 - Key thrust
 - How the strategy has been informed
 - 2001 Initiatives
 - Registrars' General Agreement
 - Consultation thus far
 - 2011 User requirements to date
- **2011 Output in relation to 2001**
 - What has gone?
 - What has remained?
 - What has changed?
 - What is new?
 - Important Issues
- **2011 Specialised Output**
- **Timetable**
- **Discussion**



2011 Output Strategy

Outputs Strategy



- **Key thrust is to provide comprehensive and robust statistics that:-**
 - Are fit for purpose
 - Meet the needs for users
 - Are released in a timely manner
 - Protect the confidentiality and integrity of the information provided by the general public
- **The Strategy is informed by:-**
 - Positive initiatives deployed in the 2001 Census
 - The Registrars' General Agreement
 - Consultation with users through events such as this

2001 Initiatives



- **Results released via various media:-**
 - Internet (main channel)
 - Printed publications
 - CD/DVD
- **Census data free at the point of access**
- **Dedicated customer service function**
 - Provision of information relating to outputs and where they can be accessed
 - Provision of methodological advice (e.g. census definitions)
 - Facility to request ad-hoc census tables

Registrars' General Agreement



- **The agreement has a UK focus**
- **It provides a commitment to:-**
 - A common disclosure control methodology for 2011 Census outputs that minimises disclosure risk whilst maximising data utility
 - Joined up and co-ordinated Quality Assurance polices
 - Comparable UK outputs using a fully adjusted database with concurrent first release of statistics
 - Free outputs that are delivered to a pre-release timetable

Outputs Consultation



- **Started in 2004 through information days:-**
 - Raised awareness of the 2001 outputs
 - Ensured that users understood how and where they could be accessed
 - Sought user feedback on:-
 - The outputs themselves
 - How they were released
 - The timing of their release
- **Supplemented by engagement with special interest groups and other activities:-**
 - Census Advisory Group (CAG)
 - Microdata Working Group
 - Web surveys (including online blogs and wikis)

Outputs Consultation



- **The most recent event in June 2010 provided the opportunity for users to comment on:-**
 - The context of the planned outputs for 2011
 - The order in which they should be produced
 - The dissemination platform
 - The underlying 2011 Census geography
- **Today's event will focus on the changes we are proposing in response to user needs**
- **It will also provide an opportunity for users to comment on the proposals**

User Requirements



- **Our understanding of what users want**
 - A similar table set at each geographic level as was provided in 2001 (ensuring 2001/2011 comparability where possible)
 - A pre-tabular disclosure control method resulting in tables that are additive and have consistent cell counts
 - A single point of access (NINIS)
 - Bulk data delivered in a variety of formats
- **What are we aiming to deliver?**
 - All of the above



2011 Output (in relation to 2001)

2001 Output Products

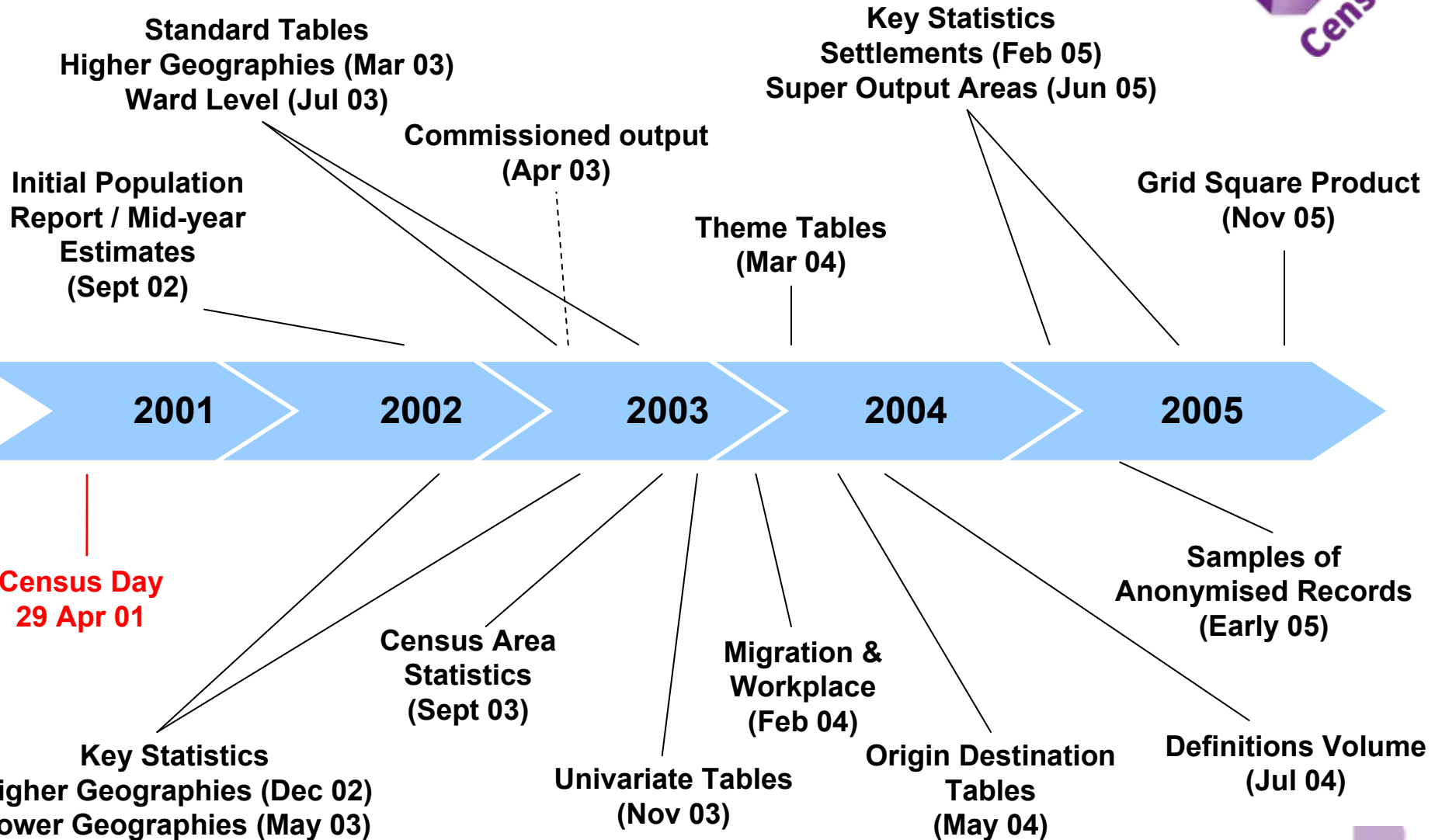


Table KS06: Ethnic Group

Area	All persons	Percentage of persons in ethnic group:											
		White	Irish Traveller	Mixed	Indian	Pakistani	Bangladeshi	Other Asian	Black Caribbean	Black African	Other Black	Chinese	Other ethnic group
Northern Ireland	1,685,267	99.15	0.10	0.20	0.09	0.04	0.01	0.01	0.02	0.03	0.02	0.25	0.08
Local Government District													
Antrim	48,366	99.16	0.02	0.27	0.11	0.07	0.01	0.01	0.02	0.02	0.02	0.25	0.04
Ards	73,244	99.36	0.02	0.19	0.03	0.01	0.08	0.01	0.01	0.02	0.01	0.21	0.06
Armagh	54,260	99.54	0.15	0.11	0.03	-	-	0.01	0.01	0.01	0.01	0.10	0.04
Ballymena	58,609	99.31	0.13	0.15	0.06	0.06	0.01	0.01	-	0.03	0.02	0.16	0.07
Ballymoney	26,889	99.62	0.06	0.09	0.06	-	-	-	-	0.01	-	0.14	0.01
Banbridge	41,392	99.58	0.06	0.14	0.03	0.02	-	0.01	0.01	0.01	0.01	0.08	0.04
Belfast	277,391	98.63	0.09	0.26	0.16	0.06	0.02	0.03	0.02	0.05	0.03	0.48	0.17
Carrickfergus	37,659	99.29	0.01	0.18	0.06	0.02	0.03	0.02	0.02	0.03	0.01	0.23	0.12
Castlereagh	66,488	98.65	0.03	0.25	0.12	0.07	0.04	0.04	0.02	0.09	0.02	0.61	0.08
Coleraine	56,316	99.11	0.06	0.25	0.15	0.02	0.01	0.02	0.02	0.03	0.02	0.28	0.06
Cookstown	32,585	99.52	0.06	0.10	0.02	0.01	0.01	0.01	-	0.01	0.01	0.22	0.02
Craigavon	80,670	99.00	0.16	0.18	0.11	0.15	0.01	-	0.01	0.02	0.02	0.28	0.07
Derry	105,066	99.10	0.16	0.24	0.20	0.03	0.01	0.00	0.03	0.03	0.02	0.14	0.04
Down	63,826	99.35	0.07	0.20	0.03	0.01	-	-	0.03	0.03	0.05	0.16	0.09
Dungannon	47,735	99.22	0.32	0.14	0.05	0.03	0.01	0.01	0.01	0.02	0.03	0.12	0.05
Fermanagh	57,528	99.42	0.15	0.17	0.04	0.02	0.01	0.01	0.01	0.03	0.03	0.08	0.04
Larne	30,831	99.62	0.02	0.19	0.04	0.01	-	-	-	0.01	0.01	0.07	0.03
Limavady	32,421	99.20	0.08	0.19	0.02	-	-	-	0.02	0.02	0.24	0.10	0.14
Lisburn	108,694	99.26	0.05	0.20	0.09	0.02	0.01	0.01	0.01	0.03	0.02	0.23	0.09
Magherafelt	39,779	99.44	0.07	0.16	0.12	0.01	-	-	0.01	0.01	0.01	0.16	0.03
Moyle	15,932	99.69	0.05	0.09	0.04	-	-	-	0.02	-	-	0.09	0.02
Newry and Mourne	87,057	99.41	0.27	0.11	0.02	0.02	0.00	-	0.01	0.01	0.01	0.11	0.03
Newtownabbey	79,995	99.01	0.03	0.18	0.14	0.08	0.01	0.01	0.01	0.04	0.01	0.40	0.08
North Down	76,323	99.09	0.02	0.29	0.04	0.07	0.04	0.03	0.04	0.03	0.01	0.27	0.05
Omagh	47,949	99.36	0.24	0.10	0.11	0.02	-	-	0.01	0.02	0.01	0.09	0.05
Strabane	38,245	99.50	0.14	0.17	0.11	-	-	-	0.01	0.01	0.02	0.03	0.03
Health and Social Services Board													
Eastern	665,968	98.94	0.06	0.24	0.10	0.04	0.03	0.02	0.02	0.04	0.02	0.36	0.12
Northern	426,965	99.29	0.05	0.18	0.09	0.04	0.01	0.01	0.01	0.02	0.01	0.23	0.05
Southern	311,119	99.32	0.20	0.14	0.05	0.05	0.01	0.00	0.01	0.01	0.02	0.15	0.05
Western	281,215	99.27	0.16	0.19	0.12	0.02	0.01	0.00	0.02	0.02	0.04	0.10	0.05

• Key Statistics Tables – key variables down to Output Area level (5022 areas) copyright 2002

Table S002: Age by Sex and Marital Status

Table population: All persons

	All persons	Males							Females						
		Total	Single (never married)	Married (first marriage)	Re-married	Separated (but still legally married)	Divorced	Widowed	Total	Single (never married)	Married (first marriage)	Re-married	Separated (but still legally married)	Divorced	Widowed
All persons	1685260	821447	430361	310987	17935	19388	21909	20867	863813	393909	312671	16490	30031	31091	79621
0 to 15	398066	204261	204261	-	-	-	-	-	193795	193795	-	-	-	-	-
16	27180	13855	13852	3	-	-	-	-	13325	13322	3	-	-	-	-
17	26272	13302	13287	15	-	-	-	-	12970	12945	25	-	-	-	-
18	25393	13000	12972	25	-	3	-	-	12393	12350	43	-	-	-	-
19	23245	11552	11505	42	-	4	-	-	11693	11561	123	-	9	-	-
20 to 24	109385	54913	52628	2059	8	145	57	16	54472	48796	5045	8	523	68	32
25 to 29	114704	56628	39833	15277	89	1004	394	31	58076	32448	22010	260	2451	784	123
30 to 34	127517	62487	24815	32647	760	2418	1761	86	65030	18489	36933	1273	4982	3043	310
35 to 39	129639	63430	14853	40201	2009	3189	3017	161	66209	10798	41786	2337	5777	4943	568
40 to 44	117335	57432	9507	38138	2668	3102	3710	307	59903	7085	38506	2756	4962	5674	920
45 to 49	102464	51686	7119	34822	2748	2771	3694	532	50778	4748	33607	2538	3563	4841	1481
50 to 54	98426	48484	5709	34051	2599	2173	3123	829	49942	3952	34037	2372	2851	4254	2476
55 to 59	88732	43585	4599	31344	2167	1713	2471	1291	45147	3447	30672	1784	2017	3069	4158
60 to 64	73587	35401	3767	25442	1619	1130	1689	1754	38186	3205	24334	1222	1273	1898	6254
65 to 69	65341	30406	3556	21337	1184	816	1051	2462	34935	3498	19274	761	801	1168	9433
70 to 74	57852	25089	3296	16463	891	514	555	3350	32783	3970	13568	570	487	723	13465
75 to 79	46542	18562	2493	11070	625	246	245	3883	27980	3772	8060	378	204	371	15195
80 to 84	30289	11090	1454	5687	388	120	95	3346	19199	2820	3296	157	87	164	12675
85 to 89	16116	4707	618	1898	136	32	40	1983	11409	1832	1042	59	29	64	8383
90 and over	7185	1597	236	466	44	8	7	836	5588	1076	307	15	15	27	4148

- Standard Tables

- Cross classification of variables

- Available down to Electoral Ward level (582 areas)

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Table CA5002: Age By Sex And Marital Status

Table population : All persons

	All persons			Males			Females		
	Total	Married or re-married	Single (never married), separated, divorced or widowed	Total	Married or re-married	Single (never married), separated, divorced or widowed	Total	Married or re-married	Single (never married), separated, divorced or widowed
All persons	1685267	658083	1027184	821449	328922	492527	863818	329161	534657
0 to 15	398056	-	398056	204261	-	204261	193795	-	193795
16 to 19	102097	279	101818	51711	85	51626	50386	194	50192
20 to 24	109385	7120	102265	54913	2067	52846	54472	5053	49419
25 to 29	114704	37636	77068	56628	15366	41262	58076	22270	35806
30 to 34	127517	71613	55904	62487	33407	29080	65030	38206	26824
35 to 39	129639	86333	43306	63430	42210	21220	66209	44123	22086
40 to 44	117335	82068	35267	57432	40806	16626	59903	41262	18641
45 to 49	102464	73715	28749	51686	37570	14116	50778	36145	14633
50 to 54	98426	73059	25367	48484	36650	11834	49942	36409	13533
55 to 59	88732	65967	22765	43585	33511	10074	45147	32456	12691
60 to 64	73587	52617	20970	35401	27061	8340	38186	25556	12630
65 to 74	123193	74048	49145	55475	39875	15600	67718	34173	33545
75 to 79	46542	20133	26409	18562	11695	6867	27980	8438	19542
80 to 84	30289	9528	20761	11090	6075	5015	19199	3453	15746
85 to 89	16116	3135	12981	4707	2034	2673	11409	1101	10308
90 and over	7185	832	6353	1597	510	1087	5588	322	5266

- Census Area Statistics (CAS Tables)

- Available down to Output Area level (5022 areas)
- Marital Status variable collapsed to 2 categories (from 6 in the Standard Table)
- Age collapsed (e.g. 16 and 19 years now grouped)

Table UV026: QUALIFICATIONS

Table population: All persons aged 16 to 74
Geographical level: District Council

	All persons	No qualifications	Level 1	Level 2	Level 3	Level 4	Level 5
Northern Ireland	1187079	494277	204478	194265	106548	129741	57770
95AA Antrim	34579	13391	6931	6208	3081	3606	1362
95BB Ards	52878	20783	10521	9234	4686	5493	2161
95CC Armagh	37752	16475	6433	6284	3420	3674	1466
95DD Ballymena	41948	18875	6628	7176	3389	4427	1453
95EE Ballymoney	18887	9205	3402	3103	1269	1395	513
95FF Banbridge	29283	12206	5249	5098	2523	3080	1127
95GG Belfast	197519	82611	29163	26294	21496	24181	13774
95HH Carrickfergus	26951	10231	5263	4752	2479	3077	1149
95II Castlereagh	47155	16749	7909	7797	4254	6958	3488
95JJ Coleraine	40089	15976	6575	6563	4035	4651	2289
95KK Cookstown	22417	10728	3729	3737	1734	1751	738
95LL Craigavon	56305	25683	9643	9268	4489	5244	1978
95MM Derry	72665	31750	12493	11303	6156	7435	3528
95NN Down	44249	16897	8028	8111	4127	4994	2092
95OO Dungannon	32835	14755	5335	5622	2613	3277	1233
95PP Fermanagh	39898	17870	7118	6698	2819	3806	1587
95QQ Larne	22086	9258	4187	3832	1785	2180	844
95RR Limavady	22761	10680	4098	3745	1872	1691	675
95SS Lisburn	76476	28592	14112	13445	6887	9330	4110
95TT Magherafelt	27424	12158	4691	4651	2258	2609	1057
95UU Moyle	11073	4963	1902	1956	778	1054	420
95VV Newry and Mourne	59568	26248	10250	9803	5121	5625	2521
95WW Newtownabbey	57907	22599	10715	9589	5551	6702	2751
95XX North Down	54882	17000	9950	10743	5458	8280	3451
95YY Omagh	33045	14323	5926	5531	2497	3464	1304
95ZZ Strabane	26447	14271	4227	3722	1771	1757	699

- Univariate Tables

- Counts of all variables
- Available down to Output Area level (5022 areas)

Table T50: Theme Table on Marital Status (continued)

	All persons aged 16 and over	Single (never married)	Married (first marriage)	Re-married	Separated (but still legally married)	Divorced	Widowed
Community Background (Religion or Religion Brought Up In)							
Catholic	539243	209724	247801	6580	24208	17099	33831
Protestant and other Christian (including Christian related)	718117	203191	364347	26621	24013	34126	65819
Other religions and philosophies	5228	1639	2682	212	216	289	190
None	24623	11660	8828	1012	983	1489	651
Ethnic Group							
White	1278636	423138	619204	34194	49175	52706	100219
Mixed	1584	834	512	52	55	72	59
Asian	2000	461	1295	55	51	63	75
Black	877	360	362	20	50	33	52
Chinese or other ethnic group	4114	1421	2285	104	89	129	86
Country of Birth							
Northern Ireland	1156637	388504	560031	28219	43898	46547	89438
Elsewhere within the UK	69366	19531	33003	4538	3308	4372	4614
Republic of Ireland	36613	9208	19072	696	1311	1061	5265
Ireland - part not specified	2382	1047	977	20	121	83	134
Elsewhere outside the UK	22213	7924	10575	952	782	940	1040
General Health							
Good health	815712	322607	392619	19259	24989	25879	30359
Fairly good health	297586	71022	149125	9211	13316	14590	40322
Not good health	173913	32585	81914	5955	11115	12534	29810

- Theme tables

- A variety of cross-classifications in the same table
- Available down to Electoral Ward level (582 areas)

What Has Gone?

- **Topics dropped from 2001**
 - Amenities (availability of Bath/Shower/Toilet)
 - Number of floors / Lowest floor level
- **Hence, associated tables no longer available**
 - 1 of 37 Key Statistics tables
 - 7 of 178 Standard tables
 - 5 of 97 CAS tables
 - 3 of 80 Univariate tables
- **All other tables will be unaffected by the exclusion of these topics**

What Has Remained?

- **Topics identical to 2001**
 - Accommodation type, Self-contained, No. of rooms, Tenure, Cars or Vans
 - 6 of 14 HH questions
 - Age, Sex, Student, A1YA, COB, Ethnicity, Unpaid Care, Religion, Activity last week, Occupation, Industry
 - 22 of 45 Individual questions
- **Hence, associated tables still available**
 - 29 of 37 Key Statistics tables
 - 132 of 178 Standard tables
 - 71 of 97 CAS tables
 - 72 of 80 Univariate tables
 - 1 of 26 Theme tables

What Has Changed?

- **Topics similar to 2001**
 - Central heating
 - 1 of 14 HH questions
 - Marital status, Language ability, General health, LLTI, Qualifications, Hours worked, Travel to work, Workplace address
 - 8 of 45 Individual questions
- **Hence, associated tables available (but with appropriate changes)**
 - 6 of 37 Key Statistics tables
 - 36 of 178 Standard tables
 - 18 of 97 CAS tables
 - 4 of 80 Univariate tables
 - 24 of 26 Theme tables

2011 Tables



In summary

Table	Number in 2001	Identical	Similar	Unavailable
Key Statistics	36	29	6	1
Standard Tables	175	132	36	7
CAS Tables	94	71	18	5
Univariate Tables	79	72	4	3
Theme Tables	25	1	24	-

Work is ongoing with the other UK Census Offices to harmonise the content of tables wherever possible

What Will Be New?

- **Topics introduced for 2011**
 - Adapted accommodation
 - 1 of 14 HH questions
 - Migration, Passports held, National identity, Main language, Nature of disability, Voluntary work
 - 11 of 45 Individual questions
- **Hence, new tables will be required**
- **Decisions still to be made as to:-**
 - What univariate tables to produce on the new topics
 - Which existing topics will be analysed against the new topics
 - Standard tables, Theme tables e.t.c.

Important Issues



- **Changes to the state pension age (SPA) for women**
 - Between 2010 and 2020 the SPA for women will gradually increase from 60 to 65
 - Gradual increase: one month every second month
 - Note: Also effects the “Working Age” population
- **Changes to information that is captured on the questionnaire**
 - Questions relating to Employment, Education, Industry and Occupation now asked of all those aged 16 and over
 - Previously 16 to 74 in 2001
- **Some tables will require modification to account for the above**

Important Issues



How will tables change?

- **Changes to the state pension age (SPA) for women**
 - The term “Pensionable Age” will be dropped from tables
 - Instead, modified age groupings will be used where possible
 - Aim is to retain comparability with 2001 (where possible)
 - Upper age ranges will be, as a minimum:-
 - ... to 59, 60 to 64, 65 and over
 - Where age does not appear in a table and “Pensionable age” or “Pensioner” was previously used in 2001 to describe a group, we will define these groups as:-
 - All persons aged 65 and over

Important Issues



- **Working age**
 - The term “Working Age” will be dropped from tables
 - Modified age groupings will be used where possible:-
 - Aim is to retain comparability with 2001 (where possible)
 - Age ranges will be, as a minimum:-
16 to 59, 60 to 64, 65 and over
 - Where age does not appear in a table and “Working age” was previously used to describe a group, we will define this group as:-
 - All persons aged 16 to 64
- **Labour Market questions now asked of all those aged 16 and over**
 - To retain comparability with 2001, tables with the age category will, as a minimum, have the upper age groups:-
 - 16 to 74, 74 and over



2011 Specialised Output

2011 Specialised Output



- **Also planning the following (as in 2001)**
 - **Origin-Destination Statistics**
 - Information on flows of migrants
 - Information on travel to work/study
 - **Samples of Anonymised Records (SARs)**
 - UK wide product that will include samples of records from the 2011 Census in Northern Ireland
 - Early days: All subject to additional licensing arrangements
 - **Grid Square Product**
 - Traditional Census Product for NI (produced since 1971)
 - Provides historical information on how **fixed** areas have changed over time
 - Output is mainly univariate - produced for 100m and 1km squares
 - **The provision of metadata**
 - To accompany the outputs and aid understanding

2011 Specialised Output



- **The production of data “cubes”**
 - Likely to be Theme/Topic based
 - e.g. Health, Identity, Labour Market etc
 - Number of variables and their associated detail will be subject to SDC considerations
 - This is still under consideration
 - Aim is to allow users to generate their own output
 - Via web interface (NINIS)

Timetable

- **Establishing the Output Production System**
 - Autumn 2011
- **Finalising the Table specifications**
 - Autumn 2011
- **Finalising the SDC method for specialised outputs**
 - Spring 2011
- **Developing our metadata plans**
 - Autumn 2011
- **Developing our Outputs Geography**
 - Spring 2012
- **Developing and publishing a pre-release timetable**
 - TBA with other UK Census Offices
- **Developing a manageable and sustainable charging policy**
 - TBA with other UK Census Offices



Discussion

Discussion



- **Are users happy with the proposed approach?**
 - Release of results via:-
 - The internet
 - Printed reports
 - CD/DVD products
 - Continued Customer Services function for ad-hoc requests
 - Output content similar to 2001 (subject to the changes outlined)
 - Additive and consistent tables
 - A single point of access (NINIS)
 - Bulk data delivery in a variety of formats

Discussion



- **Are users happy with the proposals relating specifically to:-**
 - The changes in state pension age for women?
 - The associated changes to working age?
 - The changes to some of the Labour Market questions with respect to reported age groups?
 - Specialised outputs
 - Origin-Destination Statistics
 - Samples of Anonymised Records (SARs)
 - Grid Square Product

Discussion

- **Have users any preference for the order of production?**
 - EITHER
 - Particular table types produced for all geographies (as in 2001; e.g. Key Stats tables for all geographies)
 - OR
 - A variety of table types for specific geographic areas (e.g. LDG report containing Key Stats, Standard Tables etc)
 - OR
 - A mix of the above (Please specify)

Discussion



- **Have users any specific requirements for themed data cubes?**
- **Are there any specific views on the output from new questions?**
 - Adapted accommodation
 - Migration, Passports held, National identity, Main language, Nature of disability, Voluntary work
- **Univariate analysis**
- **Multivariate analysis**
- **Preferred geographic levels**



Thank you

Any questions?



Session 3



2011 Census Coverage & Quality

Brian Green

Content



- **Coverage**
 - Review of 2001 Coverage
 - Outline of 2011 Census Design
 - 2011 Census Coverage Assessment & Adjustment process
- **Quality**
 - Quality Assurance Strategy
 - Data availability
 - Quality Assurance approach
 - Upstream Processing (Early Extract data)
 - Downstream Processing (Tranche 1 data)

Background



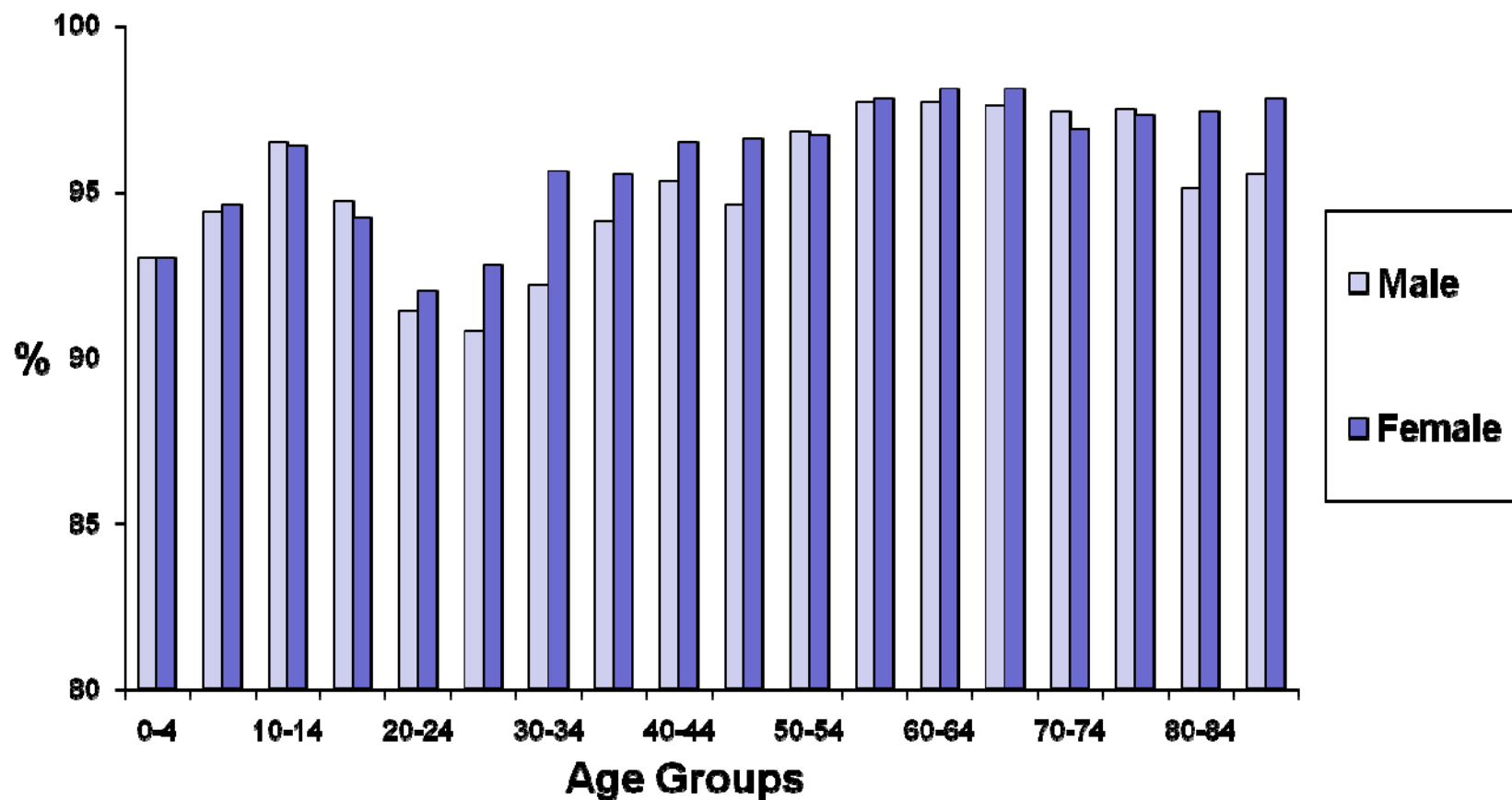
- **Census is important**
 - Governs how much money is allocated to Northern Ireland by the UK Government
 - Also informs how that money is distributed across essential services (e.g. housing, roads, schools, hospitals etc)
- **Census is compulsory**
 - Census Act (1969) NI – every HH and individual legally required to complete their Census questionnaire
 - Could be fined up to £1,000 for not taking part
- **Those who do not comply**
 - Give rise to coverage problems

2001 Coverage



Varied by **age**, area, population sub-group, etc

Overall RR – 95.2%

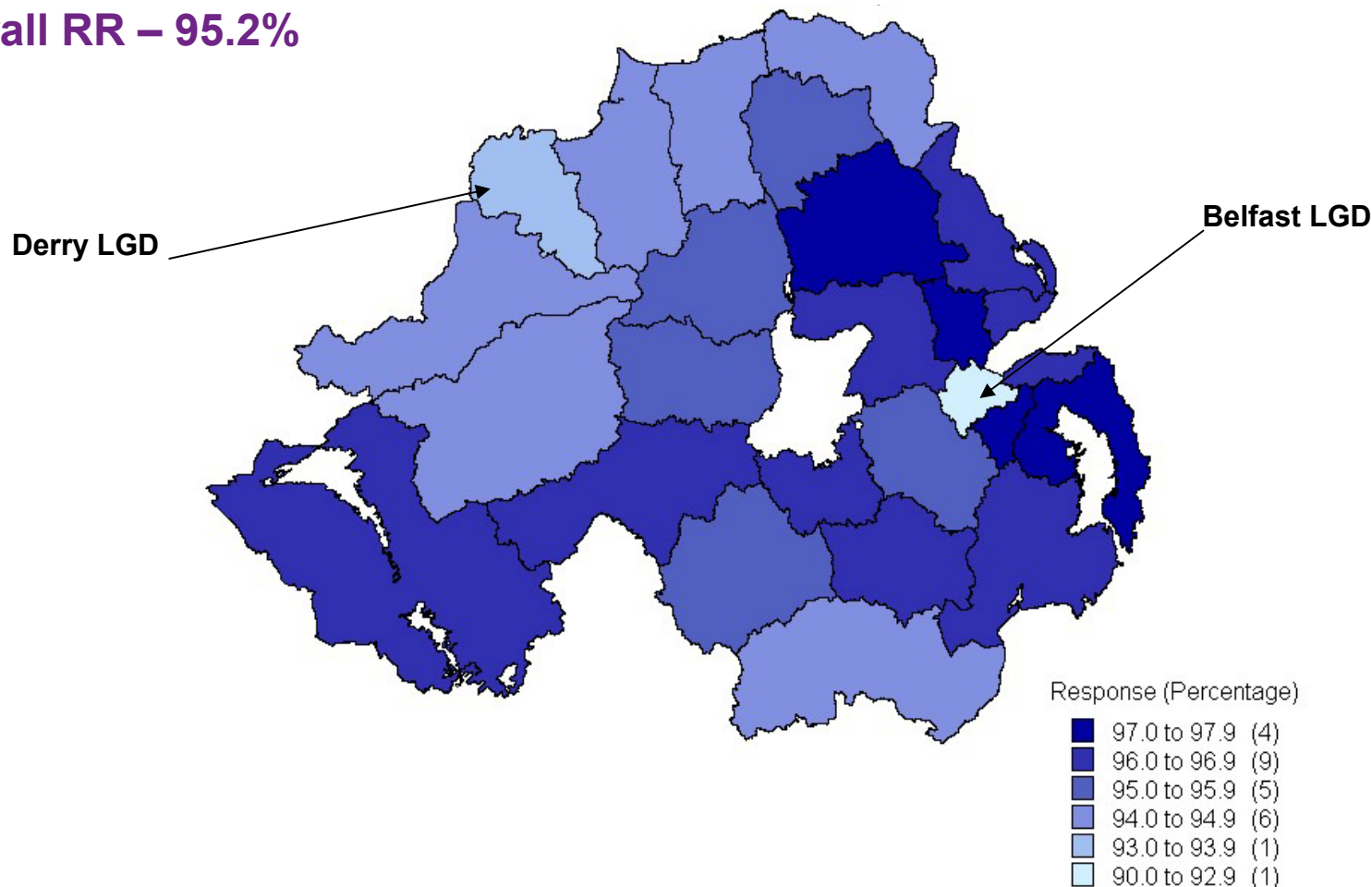


2001 Coverage



Varied by age, **area**, population sub-group, etc

Overall RR – 95.2%





2011 Census Design

2011 Census Design



- **Post-out by Census Office/ post-back by general public**
 - Underpinned by authoritative Address Register – our initial **Truth Deck** for coverage assessment (LGD involvement through PSF)
 - All field staff responsible for one fixed area and list of addresses
 - Field staff rectify any deficiencies in the Address Register through a **full** address check
 - All undelivered questionnaires are checked by the field staff
 - 65% of activities now devoted to follow-up (30% in 2001)
 - Questionnaire tracking system identifies non responding HHs for follow-up visits
 - Non compliance procedures invoked if necessary
 - Placeholder form for any non-responding HHs
 - Indicates response was expected (important for CAA)

2011 Census Design



- **Community Liaison / Public Interface Services**
 - Meetings held with key representative groups (e.g. Travellers, NICEM, RNIB) to optimise the operation and assistance provided
 - Extensive publicity campaign in place (TV, radio, posters and buses)
 - Dedicated help available (via online system, telephone helpline, fulfilment centre, field visits)
 - Translations of questionnaire available in 15 languages
 - Large print and Braille versions available
 - Interpretation services available
 - Two response channels
 - Paper plus internet

2011 Census Design



- **ED planning**
 - Road Centre line dataset used to delineate ED boundaries
 - Local knowledge of areas used to QA EDs
 - Outcome - cleaner ED geography, easier to navigate

- **Field staff maps**
 - Better quality (both large vector + ortho) plus better currency
 - Addresses in ERBs spotted on maps using GRs
 - Key to linking delivery and follow-up
 - Map atlases tailored for each ED – scale/ combination
 - New properties spotted on maps by field staff
 - Grid Reference then captured

Census 2011 - Example ED (North Down)



Questionnaire identifier	Address detail	Address check outcome	Additional no
A	B	C	
EDI: N1010105 EDRN: 005	28 BALLOO ROAD BALLOO BANGOR BT19 7PG	QEA <input type="checkbox"/> DER/DEM <input type="checkbox"/> NR <input type="checkbox"/> CF <input type="checkbox"/> DUP <input type="checkbox"/> CE <input type="checkbox"/>	
EDI: N1010105 EDRN: 006	30 BALLOO ROAD BALLOO BANGOR BT19 7PG	QEA <input type="checkbox"/> DER/DEM <input type="checkbox"/> NR <input type="checkbox"/> CF <input type="checkbox"/> DUP <input type="checkbox"/> CE <input type="checkbox"/>	
EDI: N1010105 EDRN: 015	32 BALLOO ROAD BALLOO BANGOR BT19 7PG	QEA <input type="checkbox"/> DER/DEM <input type="checkbox"/> NR <input type="checkbox"/> CF <input type="checkbox"/> DUP <input type="checkbox"/> CE <input type="checkbox"/>	
EDI: N1010105 EDRN: 002	34 BALLOO ROAD BALLOO BANGOR BT19 7PG	QEA <input type="checkbox"/> DER/DEM <input type="checkbox"/> NR <input type="checkbox"/> CF <input type="checkbox"/> DUP <input type="checkbox"/> CE <input type="checkbox"/>	
EDRN	EDRN	EDRN	
SPACE FOR ADDITIONAL QUESTIONNAIRE BARCODE STICKERS	SPACE FOR ADDITIONAL QUESTIONNAIRE BARCODE STICKERS	SPACE FOR ADDITIONAL QUESTIONNAIRE BARCODE STICKERS	



2011 Coverage Assessment & Adjustment

2011 Coverage Assessment & Adjustment



Over count

- **Main sources**
 - Children of separated parents
 - Students
 - With different home and term-time addresses
 - Second homes
 - Individuals at CEs
- **Detected by matching the full NI data to itself**
 - Automated + manual
- **Duplicate records will be removed**
 - Implemented prior to assessment of under coverage

2011 Coverage Assessment & Adjustment



Under count

- **CCS: Independent re-enumeration of specifically chosen areas**
 - 15,000 HHs, six weeks after Census Day (25% increase)
 - Door step interview by NISRA's CSU
 - Random sample of postcodes selected from each DC in accordance with HTC weightings
 - Key factors in HTC index are:-
 - Community Background (majority P/ RC/ Mixed)
 - Urban/rural
 - Deprivation (Deprived/ non deprived)

The CCS Questionnaire



Includes questions for matching purposes

- Name
- Sex
- Age
- Marital/Civil Partnership Status
- Student (schoolchild) status
- Current religion
- Lived outside NI for one year or more
- Usual address one year ago
- Current activity (employment, retirement, student, etc.)
- Visitors

The CCS Questionnaire



Includes questions for coverage assessment purposes

2011 Census Questionnaire

H1 Who usually lives here? → Tick all that apply.

- Me, this is my permanent or family home
 - Family members including partners, children, and babies born on or before 27 March 2011
 - Students and/or schoolchildren who live away from home during term time
 - Housemates, tenants or lodgers
 - People who work away from home within the UK, or are members of the Armed Forces, if this is their permanent or family home
 - People staying, or expecting to stay, in a residential establishment (such as a hospital, care home, or hostel) for less than 6 months
 - People who usually live outside the UK who are staying in the UK for 3 months or more
 - People who are temporarily outside the UK for less than 12 months
 - People staying temporarily who usually live in the UK but do not have another UK address (for example, relatives, friends)
 - Other people who usually live here, including anyone temporarily away from home (see page 31 for further information)
- OR** No-one usually lives here (for example, this is a second address or holiday home) → Go to **H4**

Interviewer Showcard

How many people usually lived here/lived there on 27 March 2011?

Please include:

- yourself
- family members (including partners, children and babies born on or before 27 March 2011)
- students and/or schoolchildren who lived away from home during term time
- housemates, tenants or lodgers
- people who work away from home within the UK, or members of the Armed Forces, if the household's address on 27 March 2011 was their permanent or family home
- people staying, or expecting to stay, in a residential establishment (such as a hospital, care home, or hostel) for less than 6 months
- people who usually live outside the UK who were staying in the UK for 3 months or more
- people who are temporarily outside the UK for less than 12 months
- people staying temporarily who usually live in the UK but do not have another UK address (for example, relatives, friends)
- other people who usually live with your household, including anyone temporarily away from home

The CCS Questionnaire



Includes questions for coverage assessment purposes

H11 I just need to check we haven't forgotten anybody. Other than the people you have already told me about, is there anyone else who, on 27 March 2011, usually lived here/at your old address but was:

- | | | |
|---|-----------------------------|------------------------------|
| working away? → | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| in the Armed Forces? → | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| in hospital or residential home (for less than 6 months)? → | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| away on holiday? → | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| a new baby born on or before 27 March 2011? → | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| a housemate, tenant or lodger? → | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| at university/college or boarding school? → | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| moved out after 27 March 2011? → | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| temporarily outside the UK for less than 12 months? → | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| visiting overnight? → | <input type="checkbox"/> No | <input type="checkbox"/> Yes |

Check if usual resident (see **5**) and include on questionnaire (questions 1-14) or if visitor (questions V1 - V4)

Coverage



- **Census aim is to maximise coverage**
 - Using CCS (supplemented with admin data) to assess undercount
- **The Census coverage assessment and adjustment process involves:-**
 - Identifying households and people missed in the Census
 - Making adjustments to the Census dataset to incorporate representative details for them



2011 Census Quality

Purpose of QA Strategy



- **To ensure that data underpinning the 2011 Census Outputs is of sufficient coverage and quality to meet the needs of users**
- **Essentially this amounts to:-**
 - Ensuring that the count and characteristics of the population are accurate
 - For NI as a whole and all lower level geographical areas
 - While preserving the confidentiality of the information provided by the general public
- **QA Strategy is currently under development and will be published on the NISRA website in due course**

Background



- **Key data capture and processing activities will include:-**
 - Receipting of questionnaires (questionnaire tracking)
 - Scanning of questionnaires (information capture)
 - Character recognition (e.g. write-in fields)
 - Coding (resolution of tick and text response combinations)
 - Delivery of data (from contractor to Census Office)



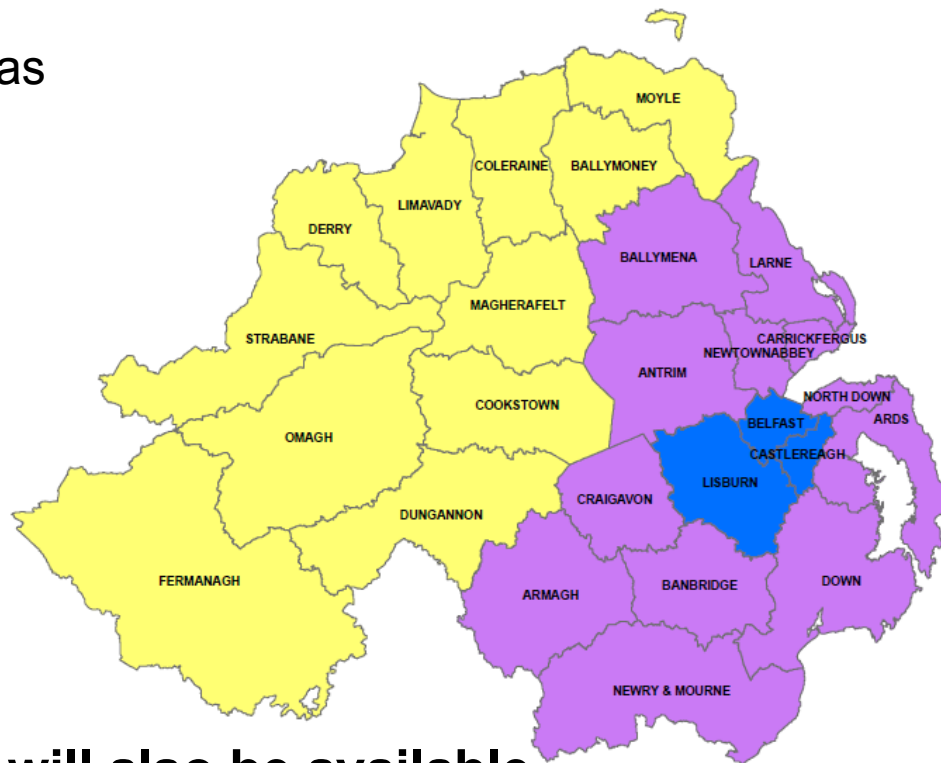
Data Availability

Delivery of Census Data for QA



- **Captured data will be analysed in three batches**

- Belfast and the surrounding areas
- East of NI
- West of NI



- **Early Extract data in raw form will also be available**
 - Used to ensure there are no systematic errors in the data



The QA Approach

Quality Assurance Approach



- **Undertaking specifically developed checks and exploratory data analysis to examine:**
 - The integrity of the data; and
 - How it aligns with a variety of comparator data sets
- **High level checks (e.g. age by sex distribution) will be automated**
- **But the majority will be undertaken manually**
 - Using tailored analyses to examine overall distributions and those for specific variables
 - Both upstream and downstream
- **We recognise that the results and comparators will not align precisely**
 - Hence will use diagnostic ranges and tolerance levels to govern acceptable quality

Upstream Processing



Contractor activity

- **Data Capture Requirements Specification**
 - Governs how the contractor should code the data and handle various tick and text combinations
- **Service Levels**
 - Govern the levels of accuracy expected
 - Double coding used to check accuracy
 - Random checks conducted by Census Office

Upstream Processing



Census Office Activity (Early extract data)

- **Quality assurance checks to**
 - Assess how well the routing was followed on the questionnaire
 - Assess the extent to which the questions were answered correctly
 - Looking for systematic errors
- **Four main areas of focus:-**

Routing	Are there responses to questions when we wouldn't have expected them?
Single tick questions	Have most people ticked only one box?
Multi-tick questions	Have most people ticked a small number of boxes?
Range checks	Have most people entered valid values?
Frequency distributions	Do these look plausible?

QA for Systematic Errors



Questionnaire routing

Question 5	Question 6
Yes	Expect an answer
No	Don't expect an answer

Question 10	Questions 11 & 12
Yes	Expect an answer
No	Don't expect an answer

5 Are you a schoolchild or student in full-time education?

Yes

No → Go to **7**

6 During term time, do you live:

at the address on the front of this questionnaire?

at another address? → Go to **45**

10 Have you lived outside Northern Ireland for a continuous period of one year or more?

Yes

No → Go to **13**

11 During this time outside Northern Ireland, what was the last country you lived in?

12 When did you most recently arrive to live in Northern Ireland?

Month Year

QA for Systematic Errors



Single tick questions

- Would expect all people to tick 1 box only
- In question 7, If 'Elsewhere...' is ticked, would expect most people to have written something in

Key Question

- Does the distribution of responses look sensible?

H7 What type of accommodation is this?

A whole house or bungalow that is:

- detached
- semi-detached
- terraced (including end-terrace)

A flat, maisonette or apartment that is:

- in a purpose-built block of flats or tenement
- part of a converted or shared house (including bedsits)
- in a commercial building (for example, in an office building, hotel, or over a shop)

A mobile or temporary structure:

- a caravan or other mobile or temporary structure

7 What is your country of birth?

- Northern Ireland → Go to **10**
- England → Go to **10**
- Scotland → Go to **10**
- Wales → Go to **10**
- Republic of Ireland
- Elsewhere, write in the current name of country

QA for Systematic Errors



Multi tick questions

- Would expect the majority of people to tick 1 box only?
- Would expect a smaller number to tick a combination of boxes
- If 'Other' is ticked, would expect most people to have written something in

14 What passports do you hold?

➤ Tick all that apply.

United Kingdom

Ireland

Other, write in

None

Key Question

- Does the distribution of responses look sensible?

QA for Systematic Errors



Range checks

- If number provided is valid, then that number will be included in the data. Otherwise 'invalid response'.

Key Question

- Does the distribution of coded written responses look sensible?

H9 How many rooms are available for use only by this household?

- Do not count bathrooms, toilets, halls or landings, or rooms that can only be used for storage such as cupboards.
- Count all other rooms (for example, kitchens, living rooms, utility rooms, bedrooms, studies and conservatories).
- If two rooms have been converted into one, count them as one room.

Number of rooms

H14 In total, how many cars or vans are owned, or available for use, by members of this household?

- Include any company car(s) or van(s) available for private use.

None

1

2

3

4 or more, write in number

QA for Systematic Errors

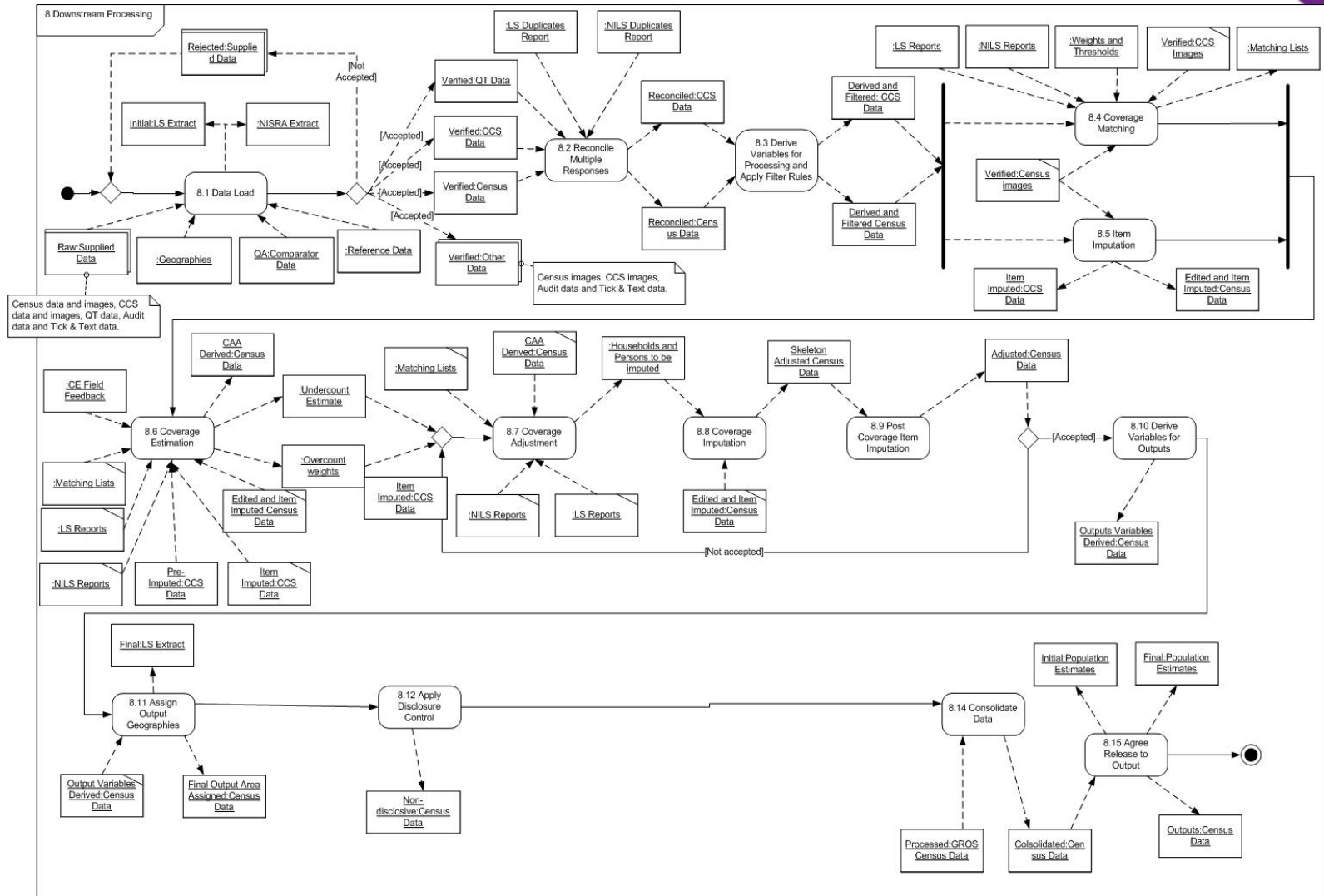


Frequency distributions

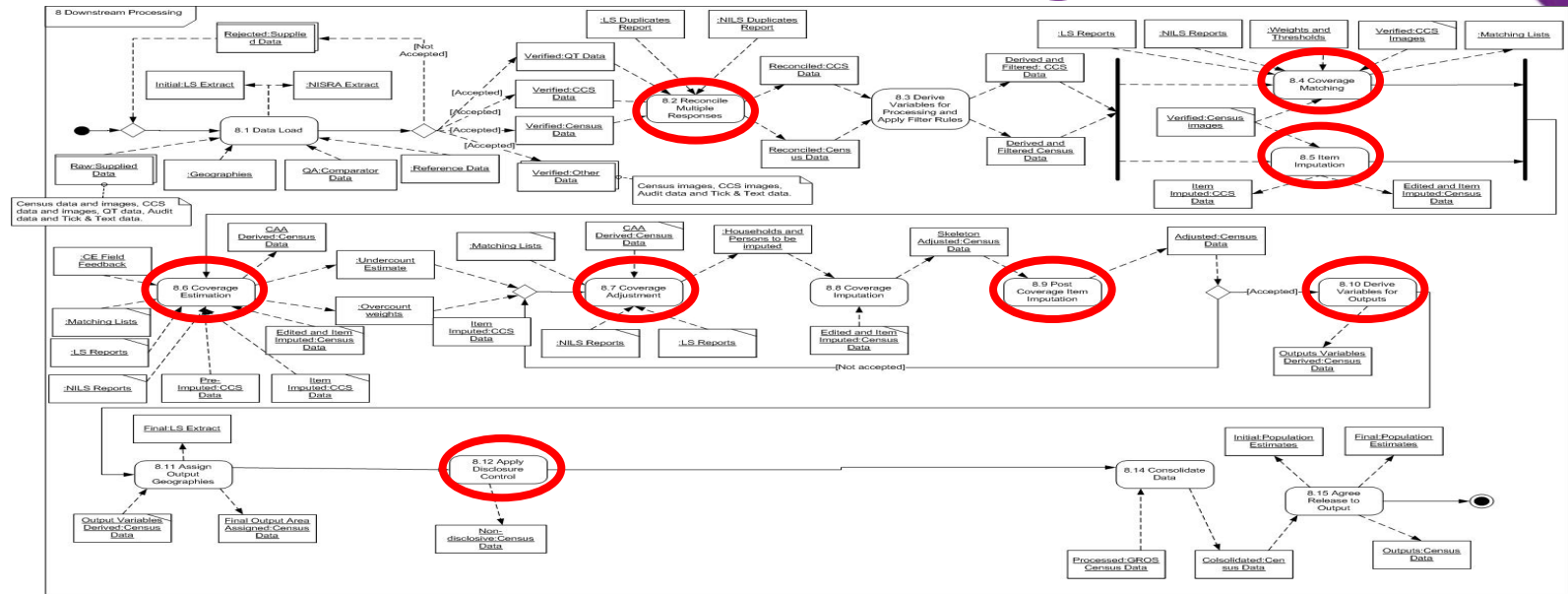
- Expect the distribution of responses to vary with age
- ‘No condition’ – perhaps the highest response category?
- Wouldn’t expect a high percentage of respondents to tick the ‘No condition’ box with one or more of the other tick boxes

- 23** Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months?
- Tick all that apply.
- Deafness or partial hearing loss
 - Blindness or partial sight loss
 - Communication difficulty (a difficulty with speaking or making yourself understood)
 - A mobility or dexterity difficulty (a condition that substantially limits one or more basic physical activities such as walking, climbing stairs, lifting or carrying)
 - A learning difficulty, an intellectual difficulty, or a social or behavioural difficulty
 - An emotional, psychological or mental health condition (such as depression or schizophrenia)
 - Long-term pain or discomfort
 - Shortness of breath or difficulty breathing (such as asthma)
 - Frequent periods of confusion or memory loss
 - A chronic illness (such as cancer, HIV, diabetes, heart disease or epilepsy)
 - Other condition
 - No condition

Downstream Processing



Downstream Processing



- **Key stages entail:-**

- Removal of duplicate responses
- Coverage matching, assessment and adjustment
- Imputation of missing details
- Generating Derived Variables for outputs (e.g. HH Composition)
- Application of SDC

Downstream Processing



Census Office Activity (Tranche 1 data)

- **Quality assurance carried out at each phase of DSP**
 - Main strand - after Coverage Adjustment phase
 - Will build on the early extract data checks
 - Will identify any necessary DFAs against the coding frame
- **QA outputs will be compared against a variety of comparator datasets**
 - 2011 Census Address Register, Electoral Register
 - Small Area Population Estimates and Mid-year Estimates
 - Birth data, Fertility and Mortality ratio data
 - Patient Registrations Database
 - Child Benefit
 - School Census, Education data
 - Pensions
 - Migration
 - 2001 Census (e.g. extent of 'missingness', key variable distributions)
 - Armed forces data, Prisoner data

Downstream Processing



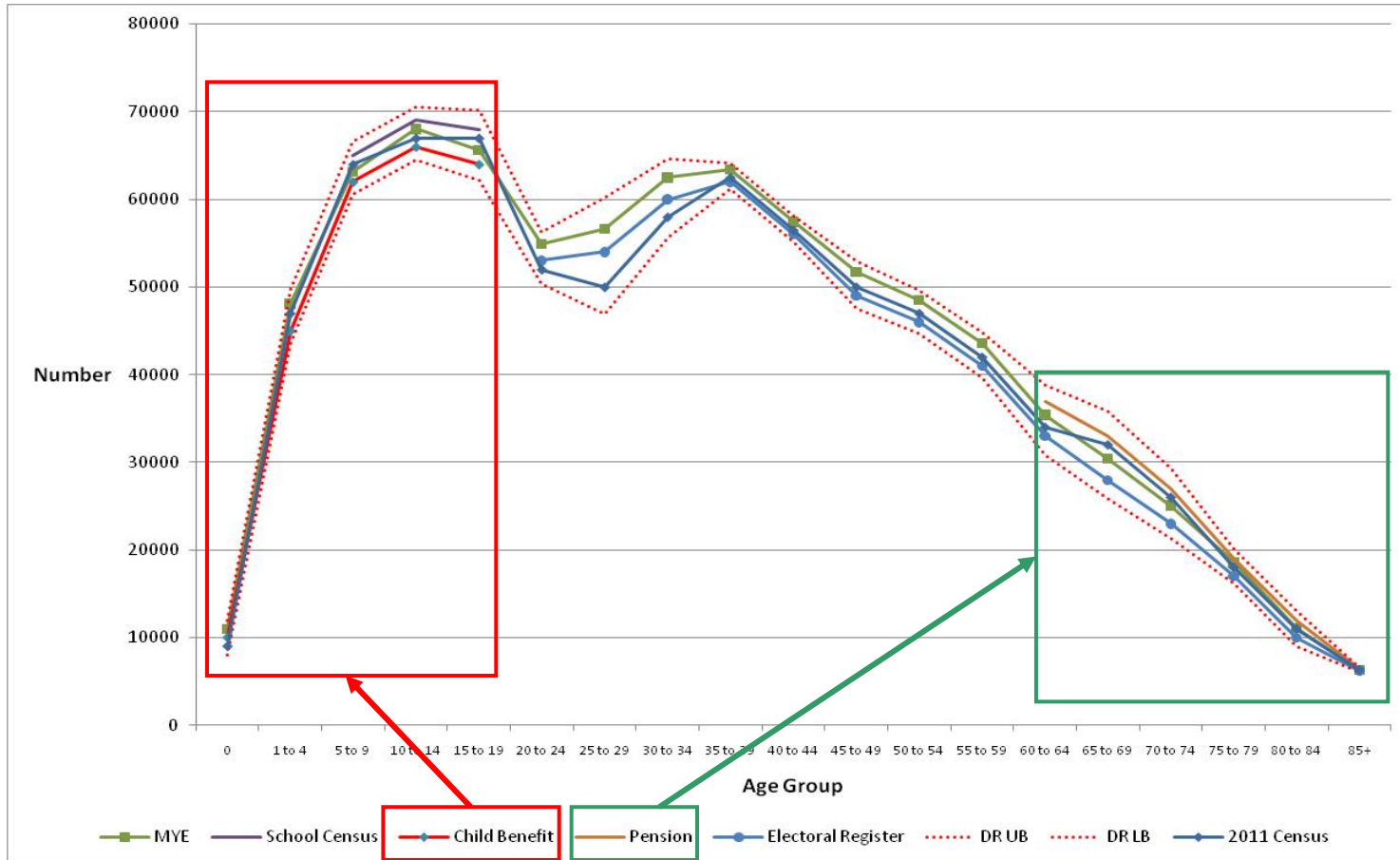
Examples of Tranche 1 QA checks

- **Core checks**
 - Age / Sex distributions and ratios for population sub-groups (e.g. students)
 - Age specific mortality and fertility ratios – do they look plausible?
 - Babies under 1 year
 - Ratio of young people to old people
 - Unemployment rates – do they look plausible?
 - Number of households and average household size
 - Communal Establishment residents – does it look plausible?
- **Topic checks**
 - Look at the plausibility of variable distributions
 - Tolerance level used if only one comparator dataset
 - Diagnostic range used if more than one comparator dataset
 - Where variables are identical to 2001, does the extent of change look plausible?

Downstream Processing



Sample diagnostic range (DR) chart



Summary



- **The aim of all the coverage and QA work is:**
 - To ensure that the 2011 Census outputs:-
 - Are fit for purpose
 - Meet the needs for users



Thank you

Any questions?



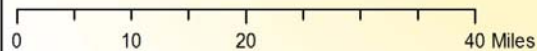
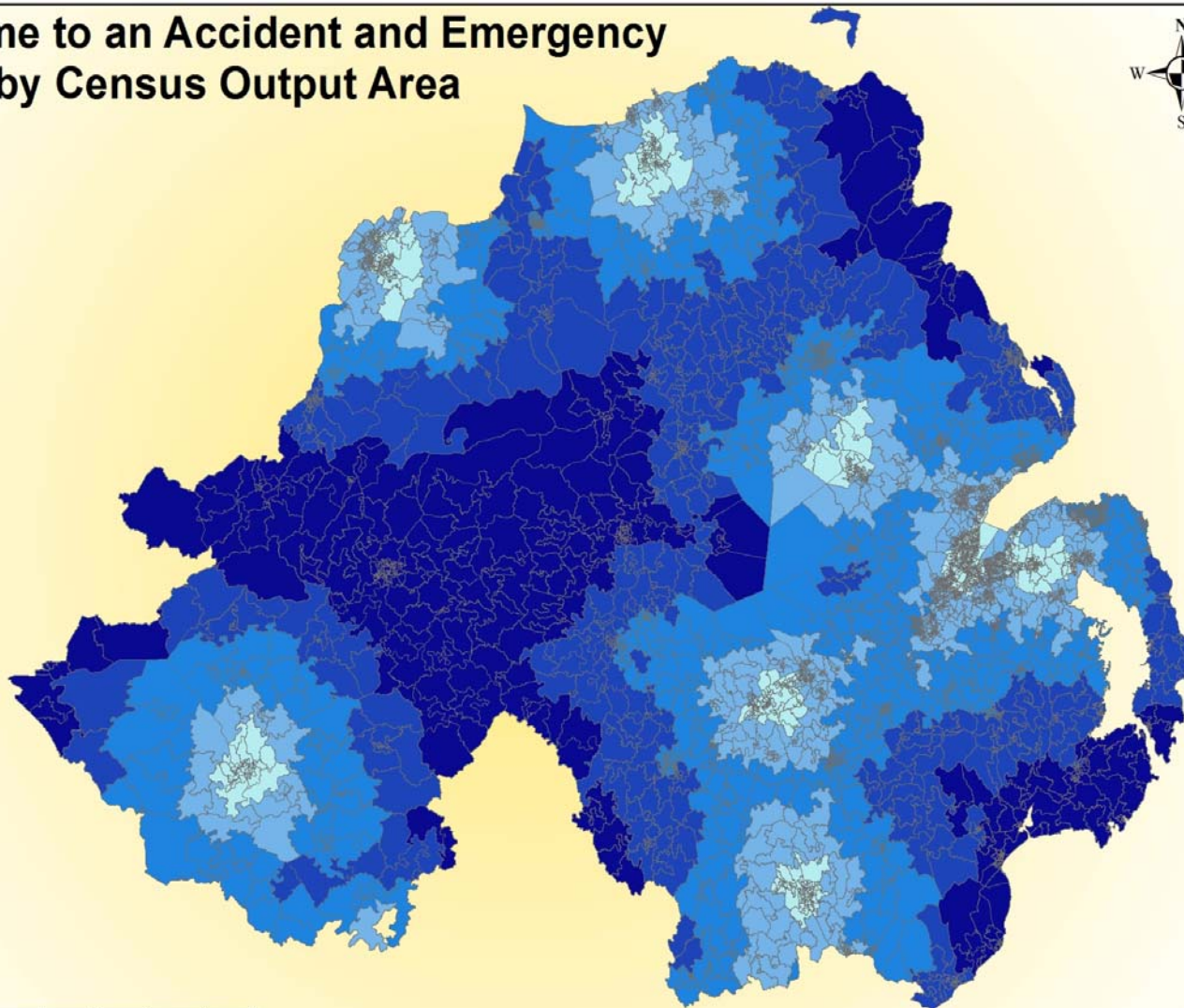
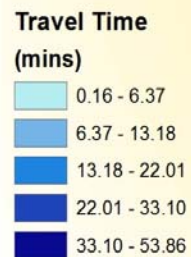
Session 4



2011 Census Output Areas

Erin Montgomery

Travel time to an Accident and Emergency hospital by Census Output Area



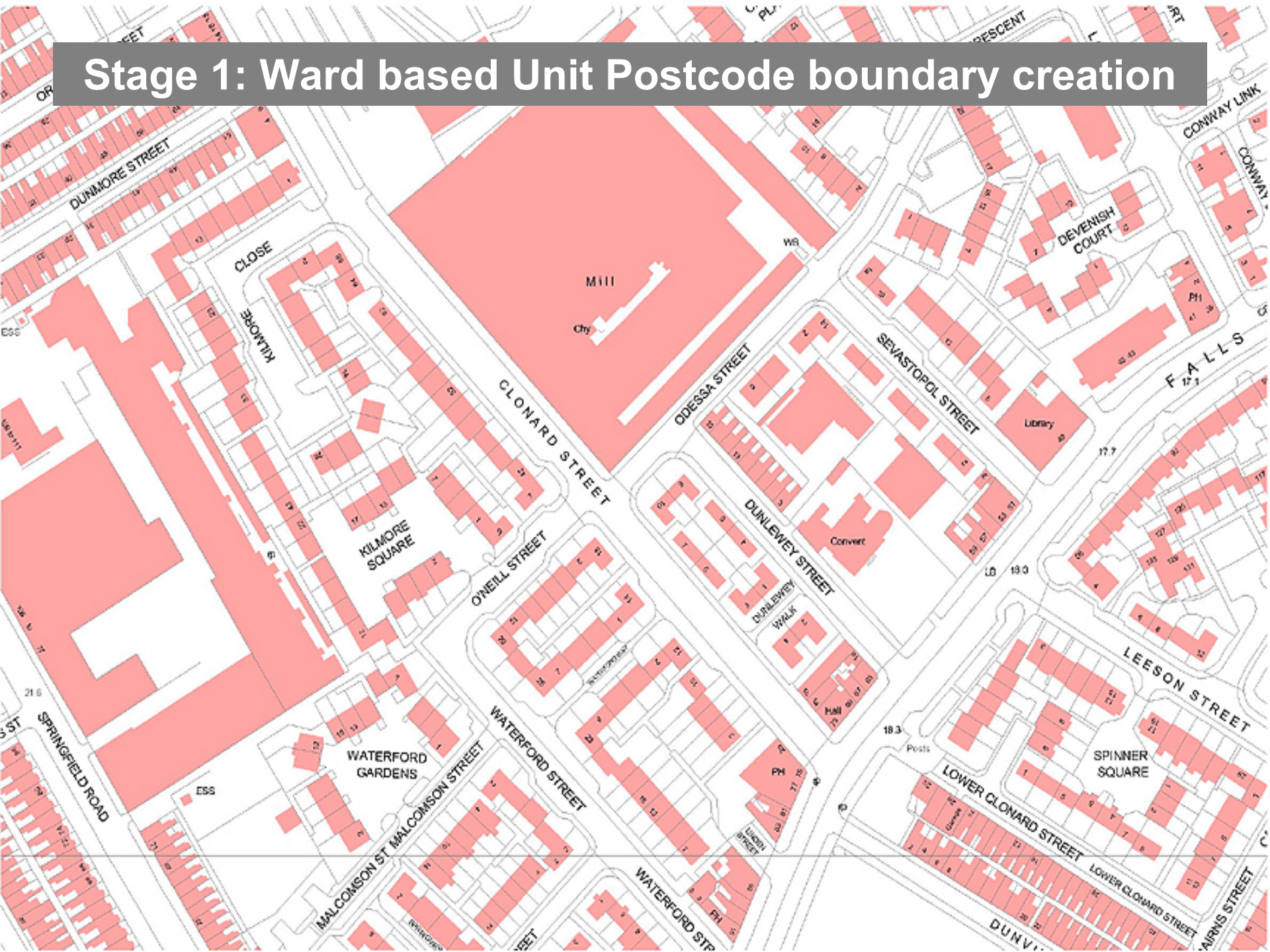
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Census Output Areas (COAs)

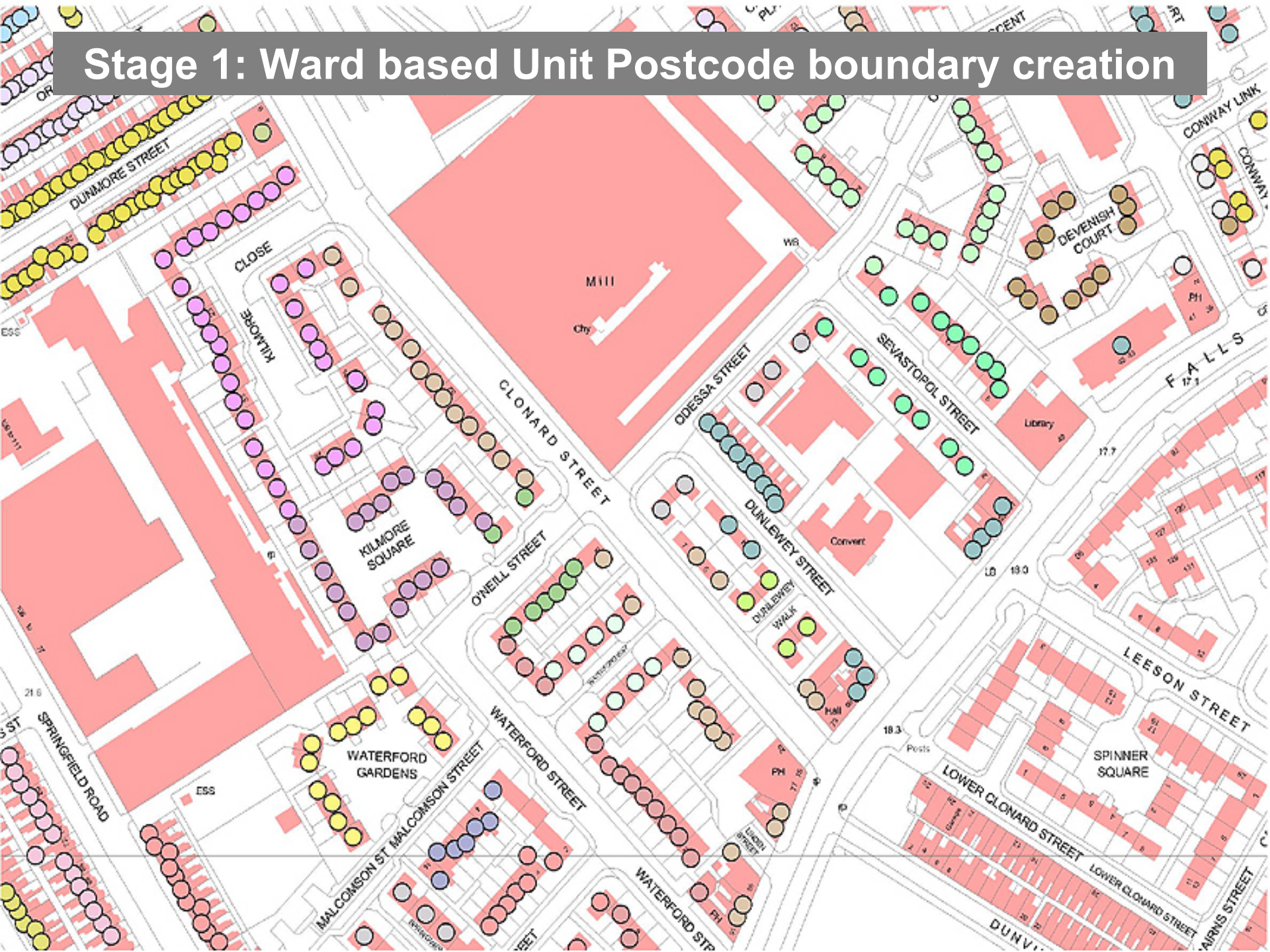


- **New for 2001 Census**
- **Statistical geography specifically for low-level census outputs**
- **Aligned to 1992 wards**
- **Small size – c125 households/ c340 people**
- **5,022 COAs in Northern Ireland**
- **Digital Boundaries and images available**

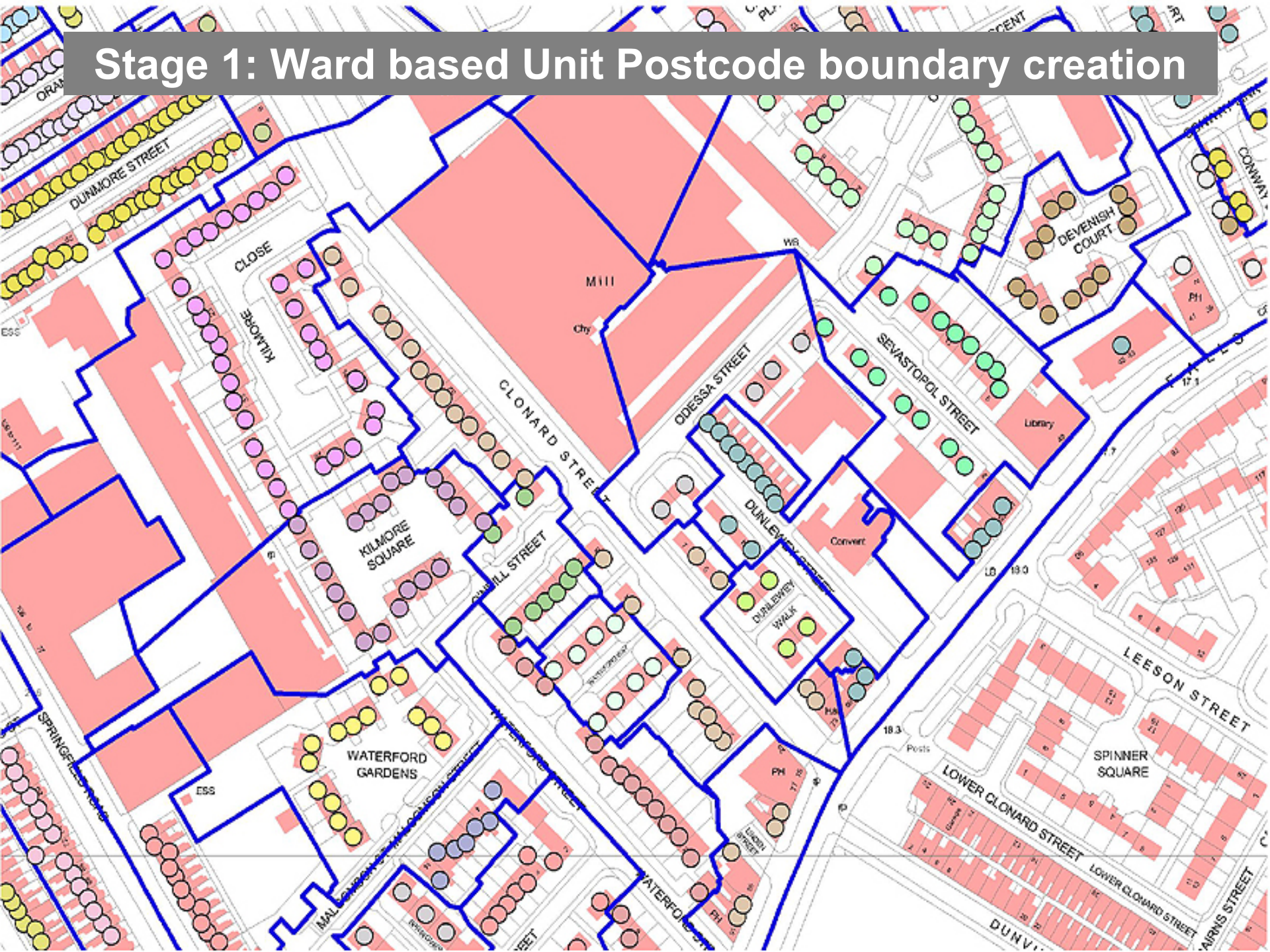
Stage 1: Ward based Unit Postcode boundary creation

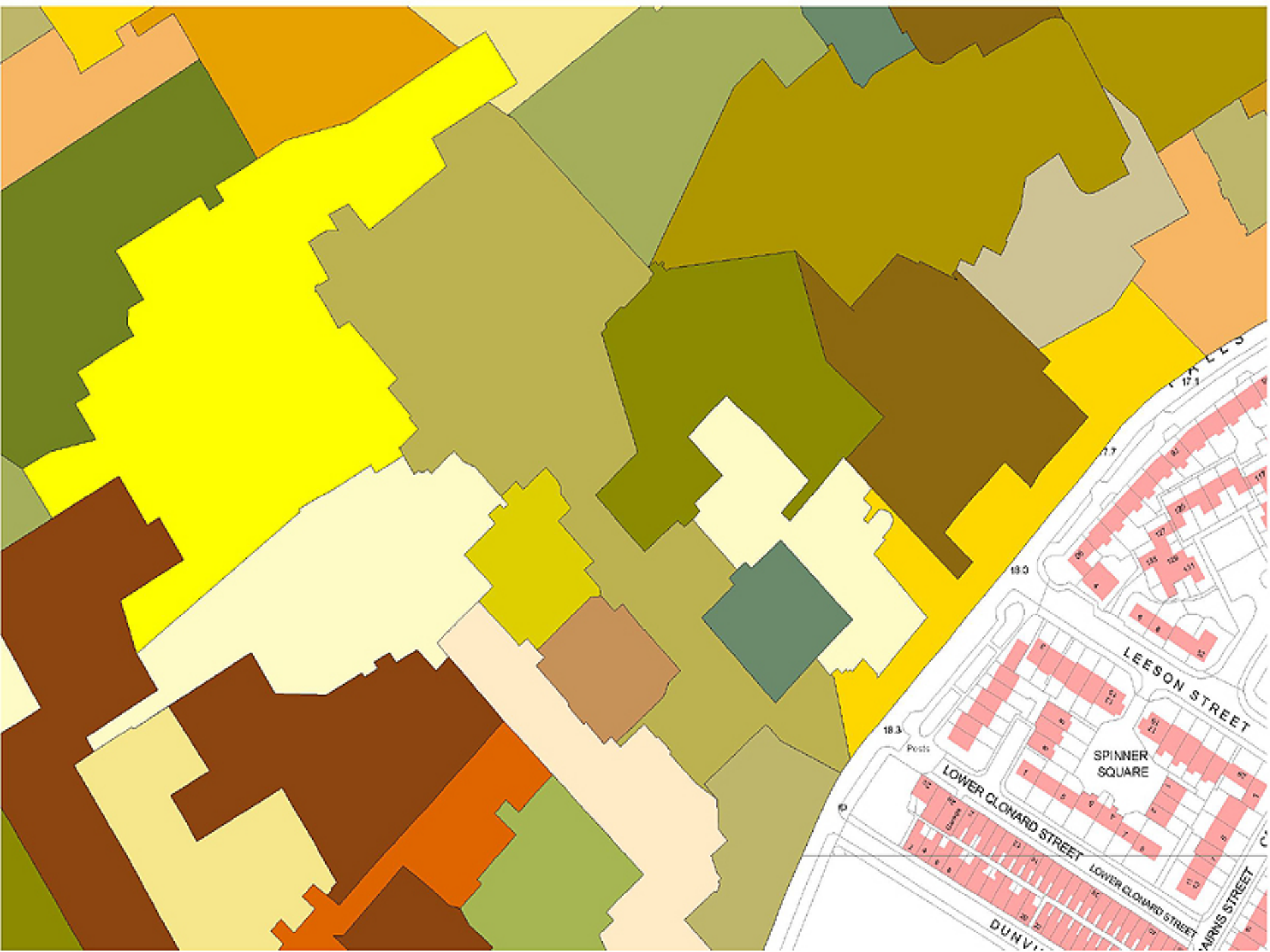


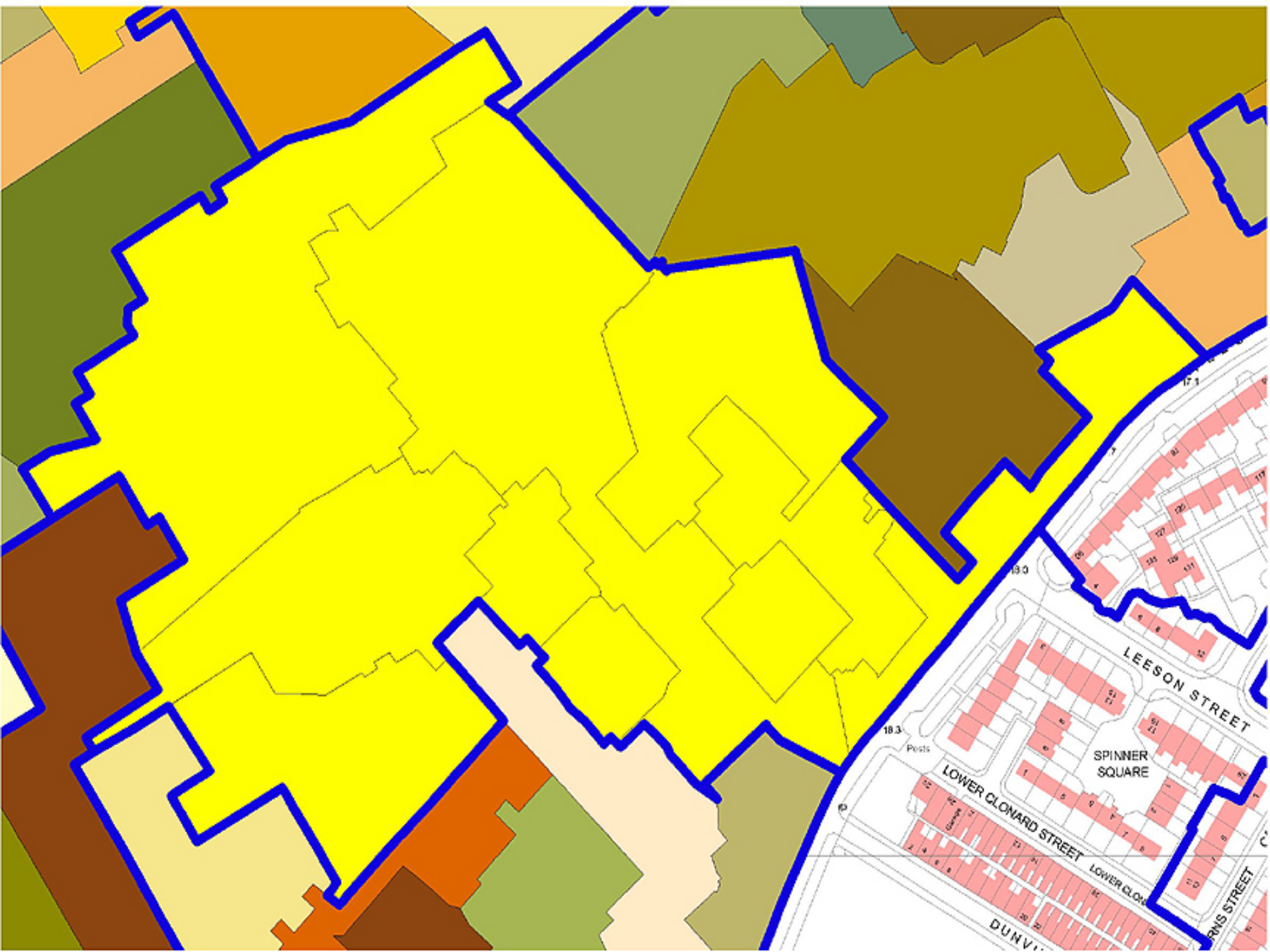
Stage 1: Ward based Unit Postcode boundary creation



Stage 1: Ward based Unit Postcode boundary creation







COA production

- **How are the postcodes put together?**
- **Mandatory:**
 - Contiguous
 - adjacent to each other, not cross ward boundaries
 - Thresholds
 - Min 40 HHs and 100 people (for confidentiality)
- **Desirable (ideal):**
 - Size (125 HH), shape (regular), homogeneity (socio-economic/tenure), urban/rural (separated)

2001 Composition

Households

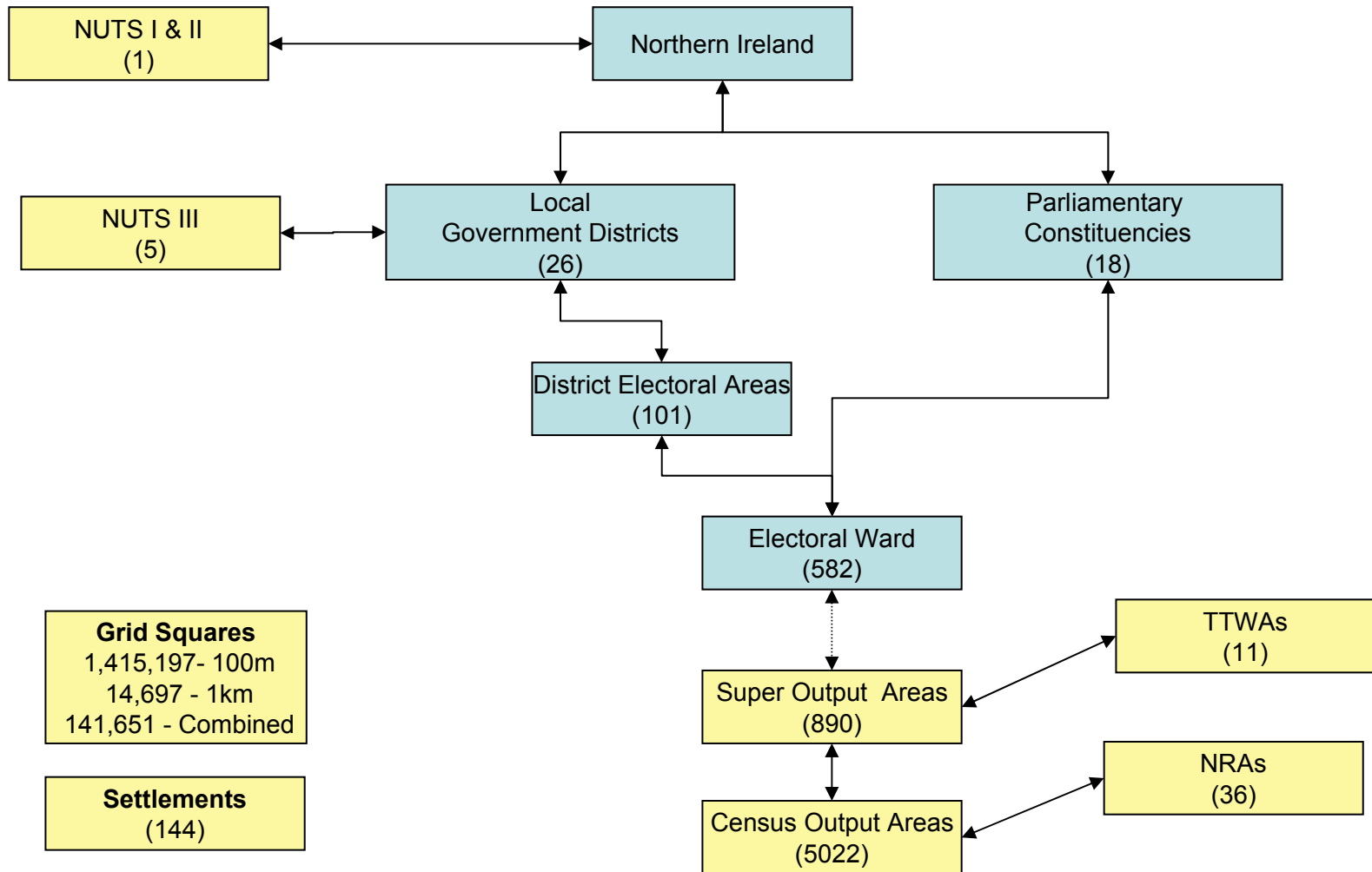
- **2001**
 - 49 min; 522 max

Population

- **2001**
 - 109 min; 2,582 max

Minimum threshold critical for
non-disclosure purposes

Current Statistical Geographies



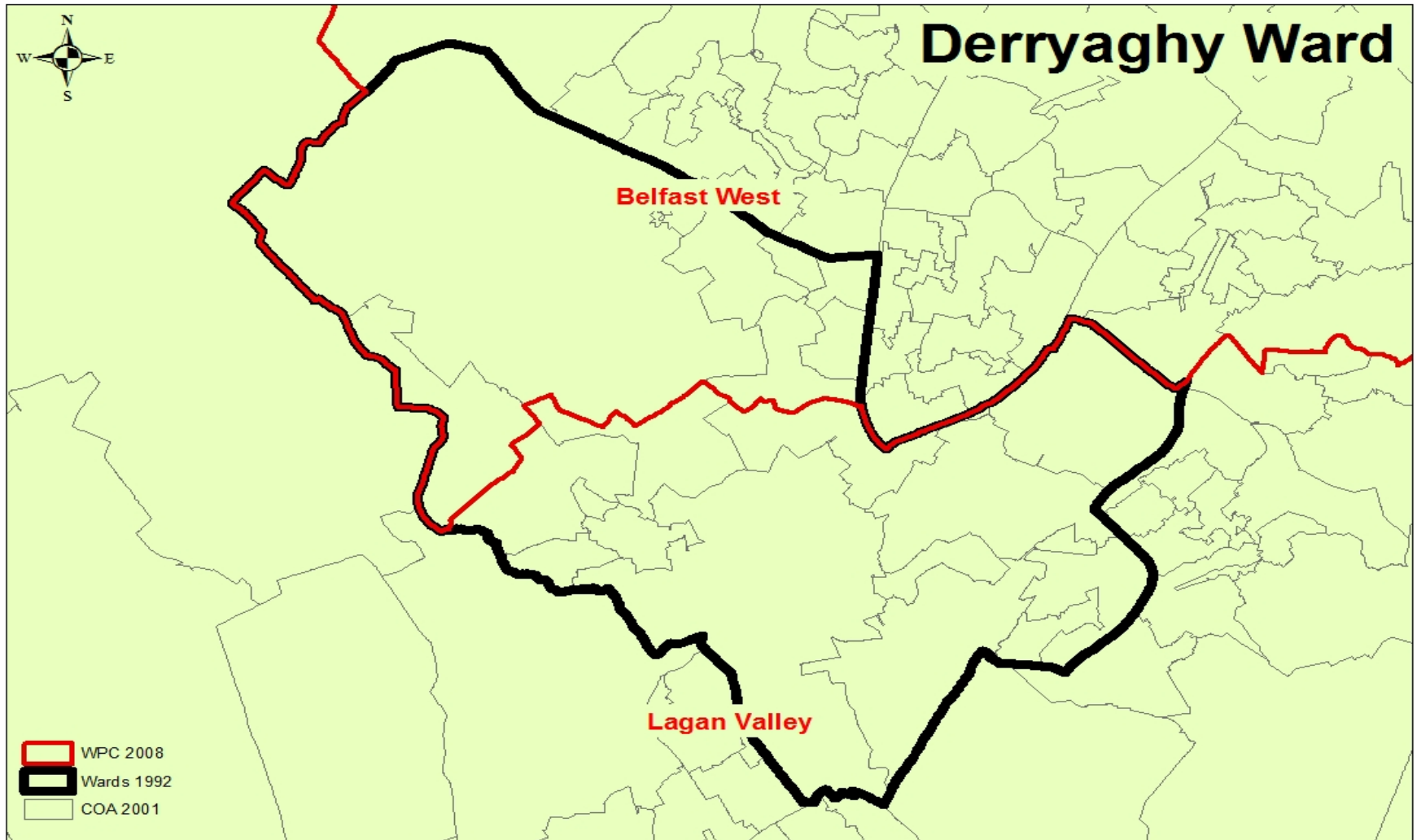
Is change required?

- **Widely used**
- **Carefully constructed**

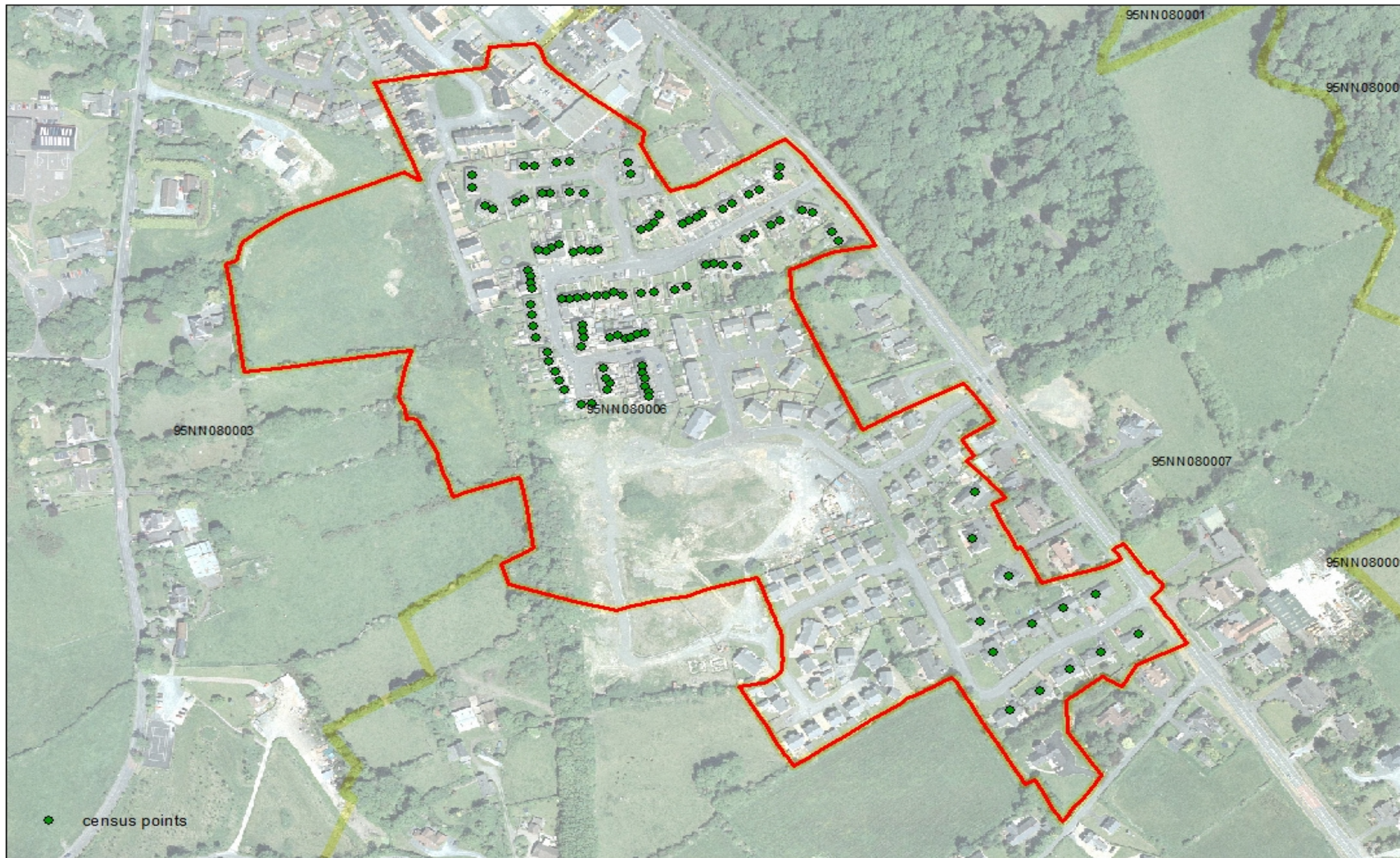
... So what is wrong?

- Do we need to change them?
- Can they be left the same as before?
 - If so, what are the consequences?

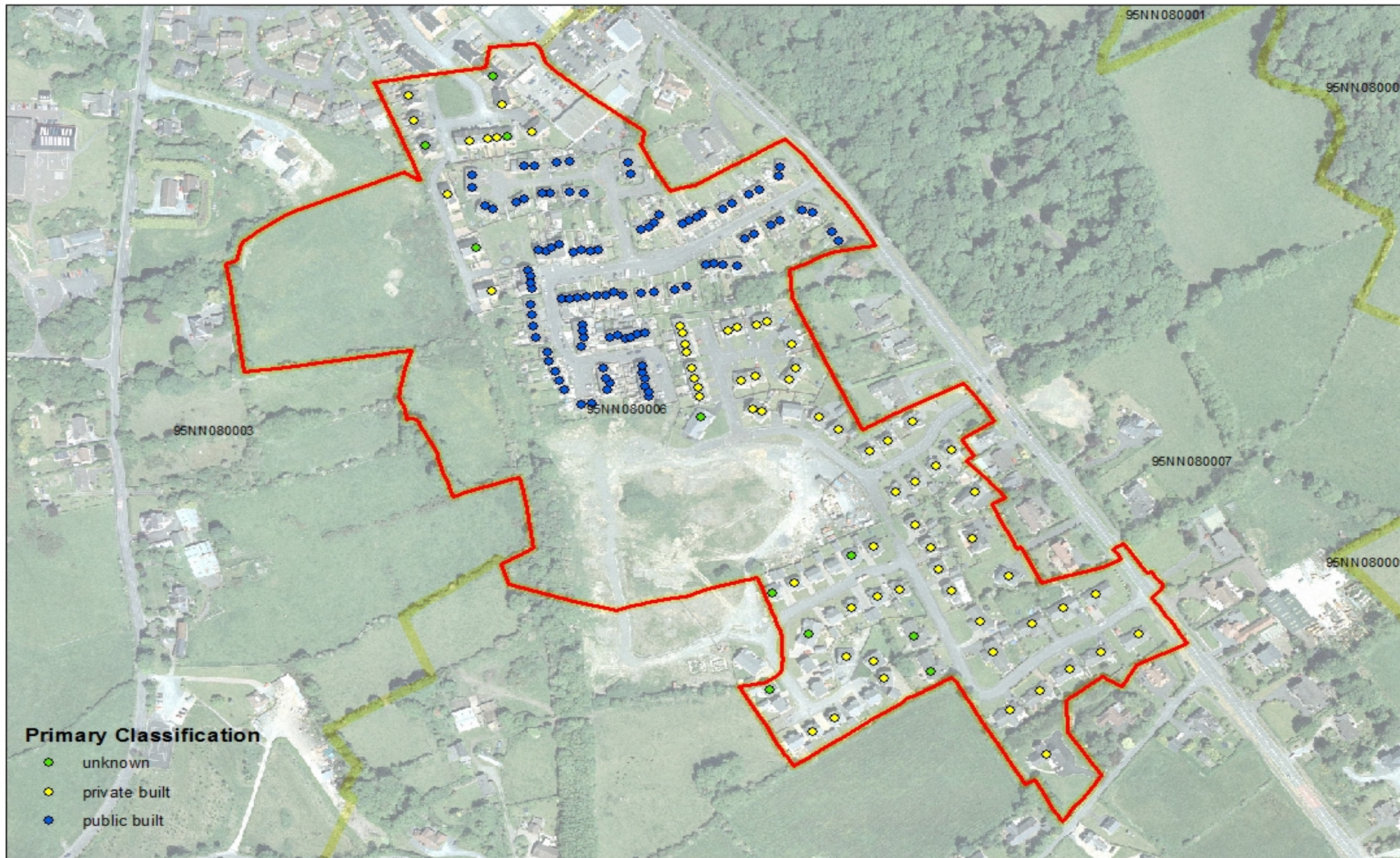
An enforced change



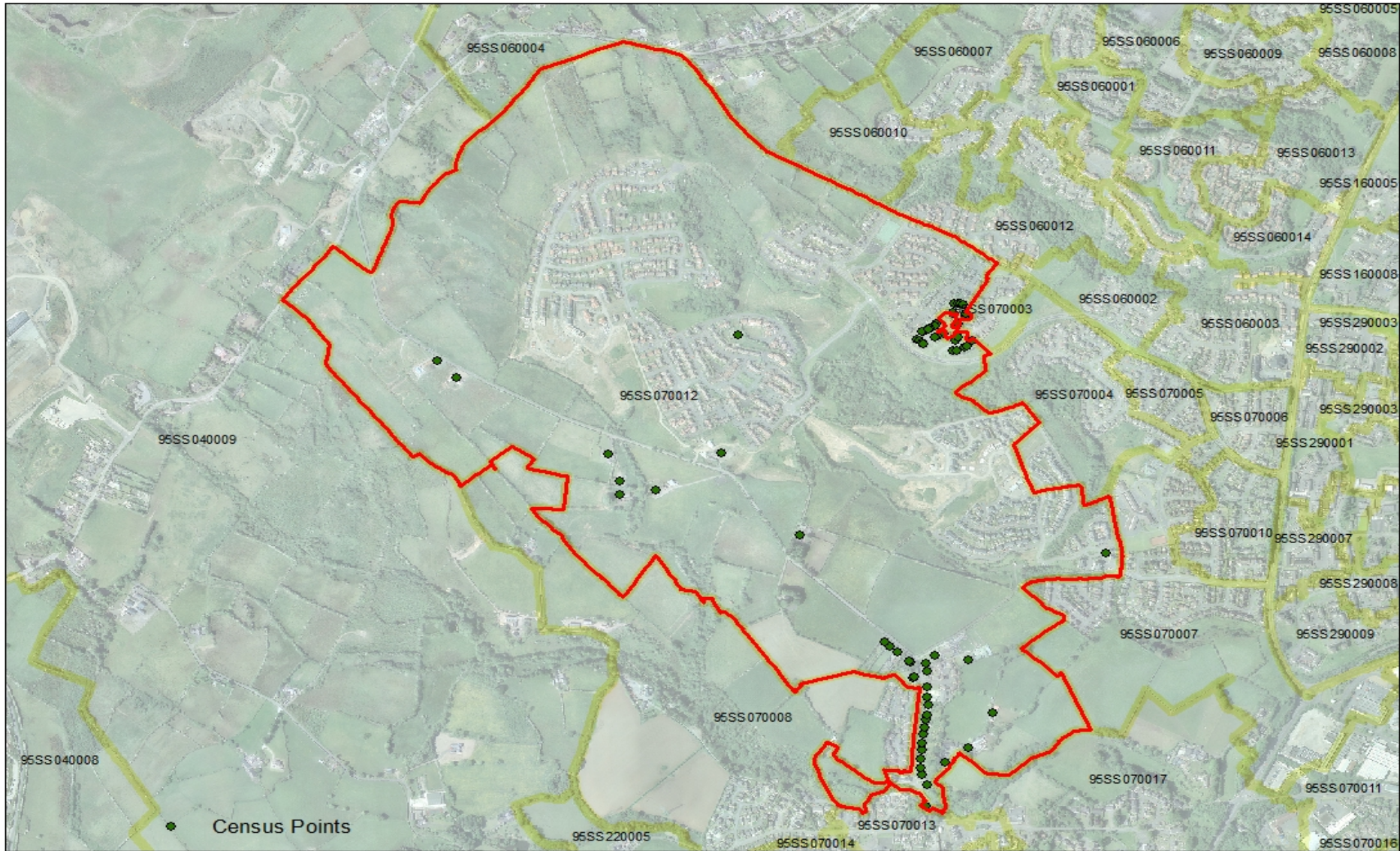
Crossgar—2001



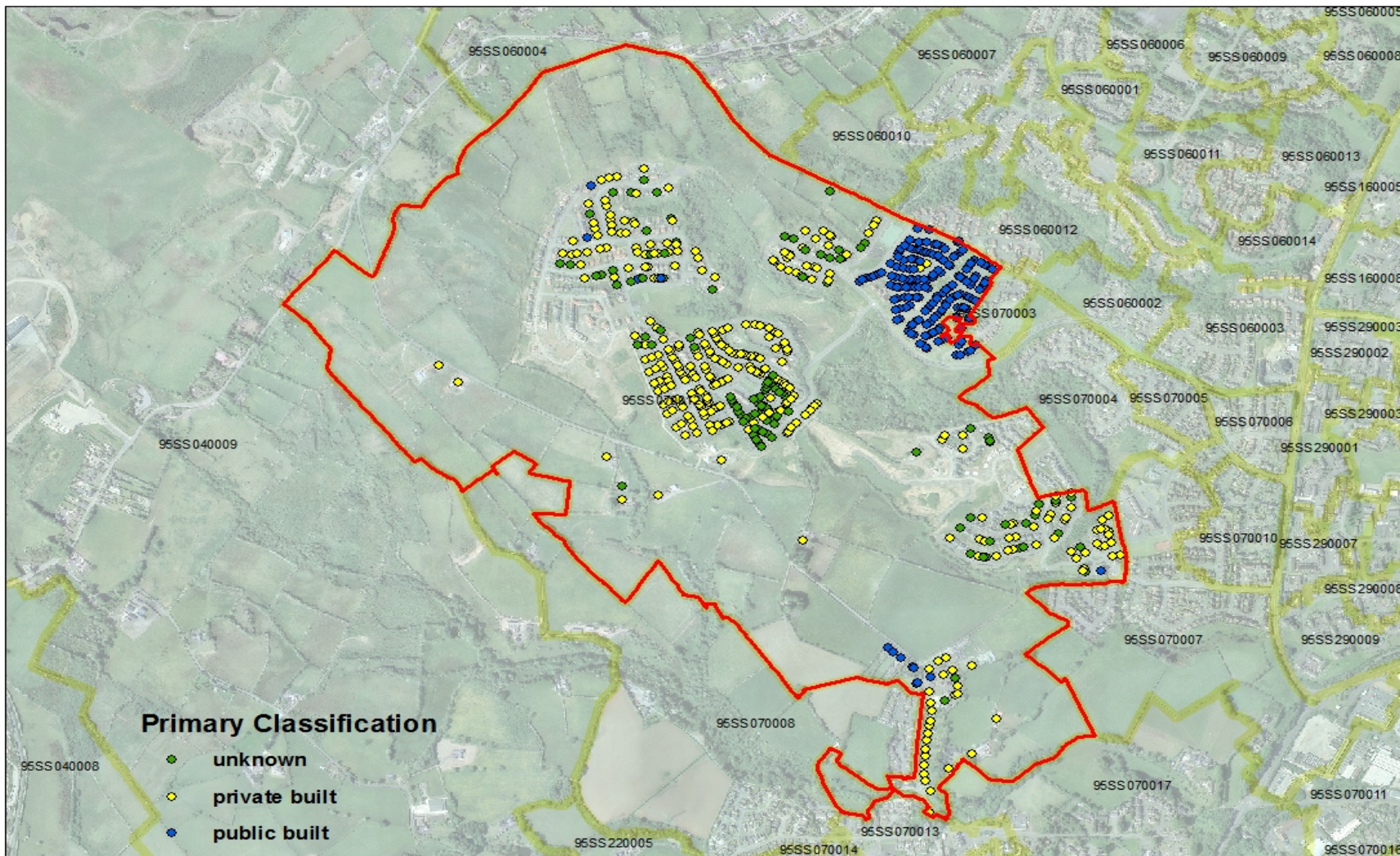
Crossgar—2010



Derryaghy—2001



Derryaghy—2010



3 Options for change



1. **Complete re-draw (Start again)**
2. **Change the worst, say, 5%**
3. **Change minimally (where we REALLY have to)**

Option 1



- **Complete re-draw**
 - postcode polygons or road polygons?

Belfast Enumeration Districts from ABCu level



Option 2



- **Change up to 5% (c250 COAs)**
 - too big
 - too small
 - no longer homogeneous
 - described as “problematic”



Option 3



- **Minimally change a handful of areas**
 - In excess 2001 size thresholds

2001 vs. 2008



Households

- **2001**
 - 49 min; 522 max
- **2008 estimates**
 - 0 less than min
 - 1 greater than max
- **4 SOAs also exceed HH thresholds**

Population

- **2001**
 - 109 min; 2,582 max
- **2008 estimates**
 - 2 less than min
 - 0 greater than max
- **43 SOAs also exceed population thresholds**

3 Options compared



	Advantages	Disadvantages
Option 1 (Re-draw)	<ul style="list-style-type: none">•Optimum solution for “pure” COA•Excellent regular shapes (intuitive)•Less amendment over time	<ul style="list-style-type: none">•Backward compatibility lost•VERY resource intensive (time AND effort)
Option 2 (5%)	<ul style="list-style-type: none">•Decent backward compatibility•Tackles size/socio-economic homogeneity issue	<ul style="list-style-type: none">•Still “awkward” shapes (counter intuitive)•Leaves many COAs as socially non-homogeneous
Option 3 (minimal)	<ul style="list-style-type: none">•Easy to implement•Excellent backward compatibility	<ul style="list-style-type: none">•Worst non-homogeneity left untackled•Still awkward shapes

What happens next?



- **OAs finalised and drawn (digitised) prior to output production**
- **ANY changes = new GSS codes**
- **Guidance document provided**
 - Explain OA changes
- **We recommend Option 3...**
 - ...all views welcome—announce in May



Thank you

Any questions?



Session 5



Statistical Disclosure Control

Robert Beatty

Overview



- **What is Disclosure Risk?**
- **Context**
- **Record Swapping**
- **2001 vs 2011**
- **Communal Establishments**
- **Further work**

What is disclosure risk?



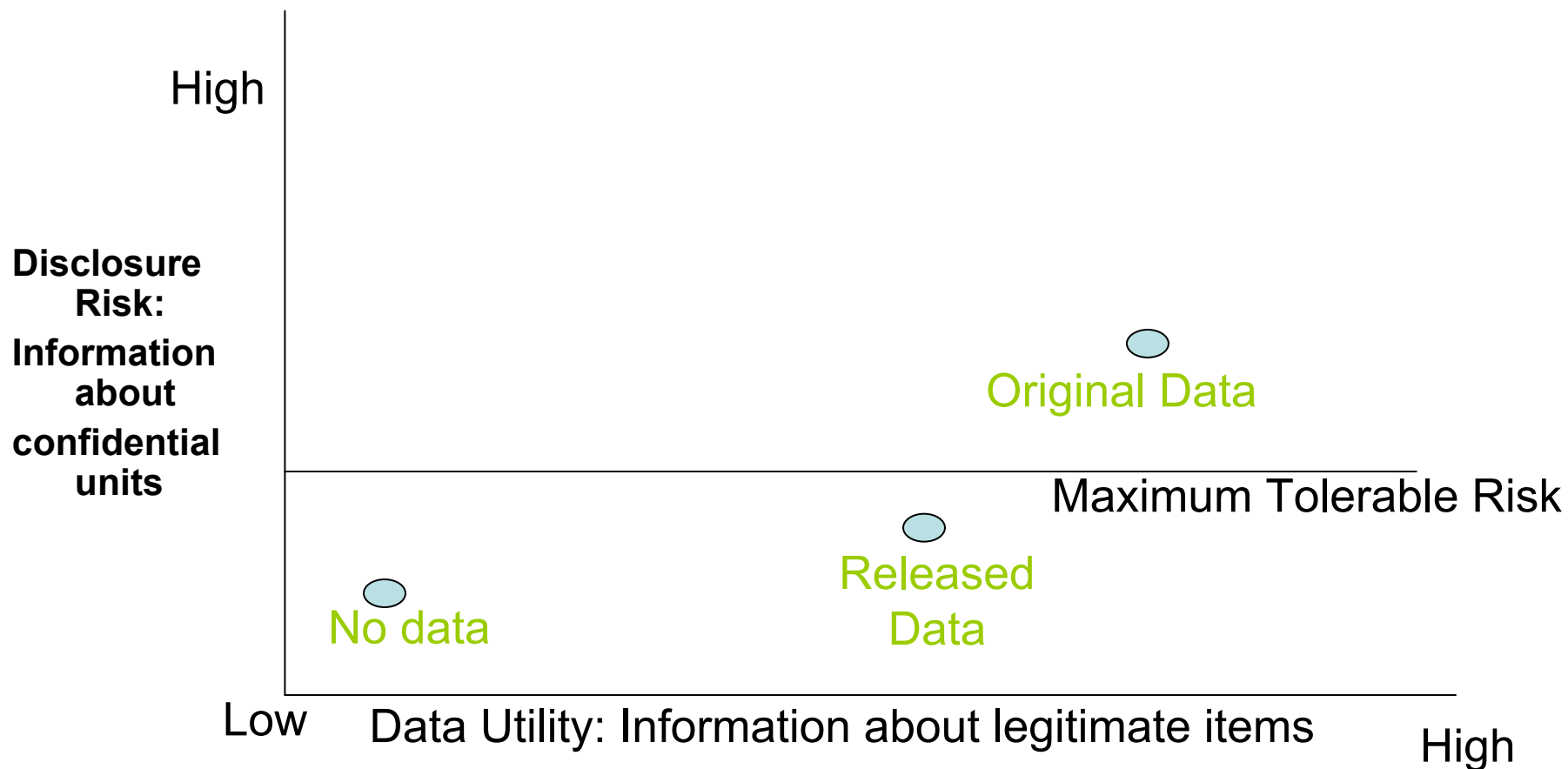
- **There is a disclosure risk when information is published that could allow an intruder to indicate the identity or particulars of:**
 - an individual
 - a household or family
 - a business
 - or another statistical unit

Statistical Disclosure Control



- **Statistical Disclosure Control (SDC) involves**
- **either:**
 - introducing sufficient ambiguity / damage into, or reducing level of detail of published statistics so that the risk of disclosing confidential information is reduced to an acceptable level
- **and / or:**
 - controlling access to data

Risk – Utility balance



UK Census - Context - 2001



- **(Pre-tabular) random record swapping throughout UK**
- **Additional (post-tabular) Small Cell Adjustment (SCA) applied in E&W and NI, but not in Scotland**
- **Lack of harmonisation and late changes**
- **SCA protected individual tables, but some remaining risk through differencing**
- **Utility at low geographies and in creating bespoke geographies**

UK Census - Context - 2011



- **RsG agreement November 2006**
 - Small cell counts as long as ‘sufficient uncertainty’
 - Main risk attribute disclosure – finding out something new about an individual.....
- **Use ‘visible’ variables to identify an individual/group and then find out something new about them**
- **Record swapping strategy**
 - Households swapped
 - Targeted to ‘risky’ records
 - Construct risk score for every individual; combine to household score
 - Imputation considered as part protection
 - Households swapped only as far as their risk is considered ‘high’

So who is swapped?



- **Households**
 - Risk score on uniqueness/rarity on small number of key variables at different geographies
- **Probability**
 - inversely related to area imputation rate (high rate of imputation, provides 'safety', so less need to swap for protection)
 - positively related to household risk score (targeted swapping)
- **Matching**
 - look for matches only as far as is necessary
 - Match on household size, and other variables if possible

- **Let's demonstrate with an example.**
- **The process is not quite the same as what follows, but hopefully the main principles will be clear.....**

So Let's play

SWAP OR NO SWAP?

SWAP OR NO SWAP?



NO SWAP

NO SWAP

NO SWAP

SWAP (OA in ward)

SWAP (ward in LGD)

SWAP (between LGD)

SWAP OR NO SWAP?



NO SWAP

NO SWAP

NO SWAP

Household live in area that has high response rate, low imputation –

So area has higher than average swapping rate

SWAP (OA in ward)

SWAP (ward in LGD)

SWAP (between LGD)

SWAP OR NO SWAP?



NO SWAP

NO SWAP

Household live in area that has high response rate, low imputation –

So area has higher than average swapping rate

SWAP (OA in ward)

SWAP (ward in LGD)

SWAP (between LGD)

SWAP OR NO SWAP?



NO SWAP

NO SWAP

Household has unusual characteristics. It has one cat and one dog.

It is unique at OA level but there are many others at ward level.

SWAP (OA in ward)

SWAP (ward in LGD)

SWAP (between LGD)

SWAP OR NO SWAP?



NO SWAP

NO SWAP

Household has unusual characteristics. It has one cat and one dog.

It is unique at OA level but there are many others at ward level.

SWAP (OA in ward)

SWAP (ward in LGD)

SWAP OR NO SWAP?



NO SWAP

NO SWAP

Household has unusual characteristics. It has one cat and one dog.

It is unique at OA level but there are many others at ward level.

SWAP (OA in ward)

Only need to swap between OAs within an ward.

SWAP OR NO SWAP?



Household selected in the list for possible sampling.

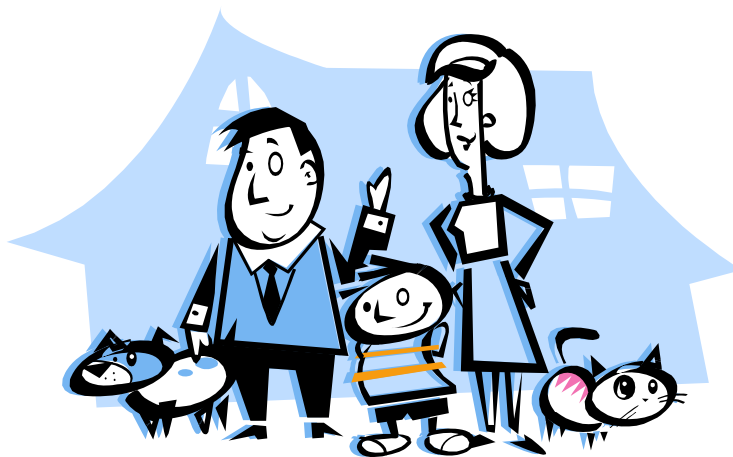
SWAP (OA in ward)

NO SWAP

NO SWAP

Random element to whether selected in the sample.

SWAP OR NO SWAP?



Scenario 1.

Household is not
selected for swapping.

NO SWAP

SWAP OR NO SWAP?



Scenario 2. Household is selected for swapping. Only swapped between OAs in the same ward (since not 'high risk' at ward).

Households are matched on:

Adults = 2

Children = 1

Pets = 2

SWAP (OA in ward)

SWAP OR NO SWAP?



Please note:

No animals were harmed during the previous example

In fact, we do not collect information on or from pets, nor do we use them for matching purposes.

Effect on outputs:

Numbers of persons in OA: Unchanged

Numbers of households in OA: Unchanged

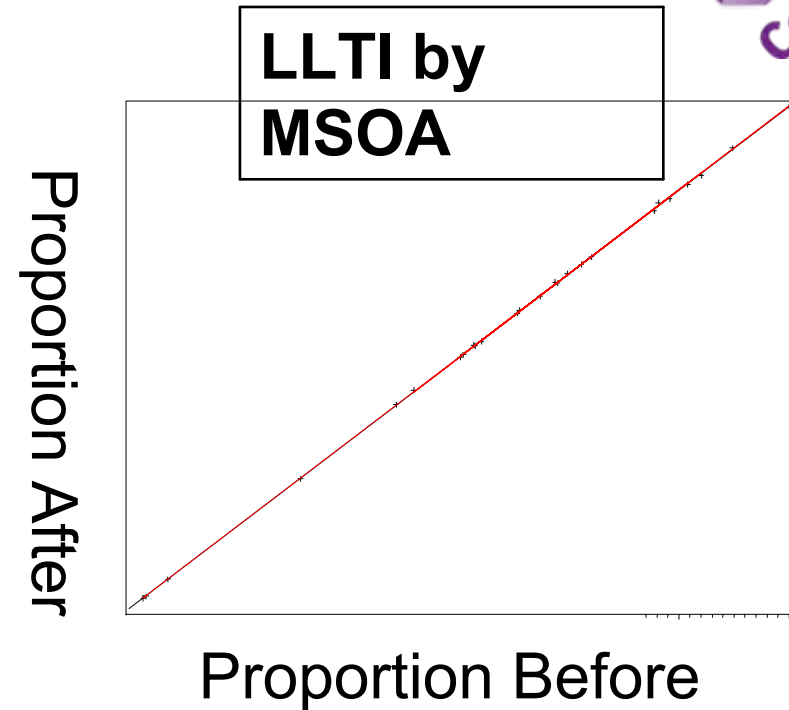
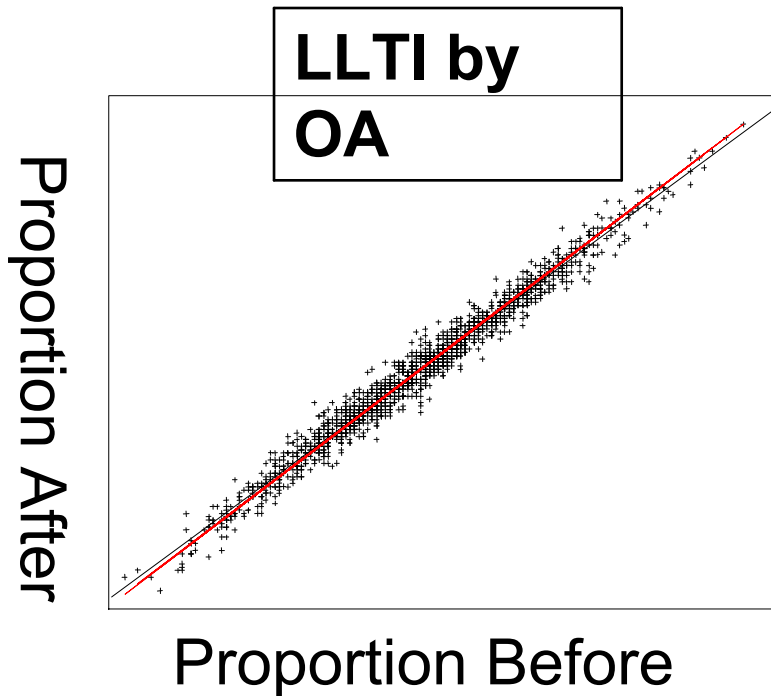
Breakdowns of persons/households by other variables may be affected – but swapping & matching designed to have as little effect as possible while protecting risk

Swapping & Sufficient uncertainty



- **Level of swapping in an area determined by level of non-response / imputation**
- **Swapping lower where more imputed records**
- **Sufficient uncertainty has been assessed by two factors:**
 - Percentage of real attribute disclosures protected by swapping & imputation
 - Percentage of apparent attribute disclosures (in the outputs) that are not actually real

Utility



Using Durham – with ‘typical’ swapping rate

Utility better at MSOA than at OA

(ONS data for Durham. MSOA broadly equivalent to ward)

Utility



- **Effect will be greater on small cell counts**
- **But as geography gets larger – that effect dissipates**
- **Will use minimum average cell size to consider level of detail allowed in tables**
- **All univariate residence based tables at OA fine (and univariate workplace based tables at WPZ)**
- **There will be apparent small cells and apparent attribute disclosures in tables but an intruder cannot find out something about an individual case with a “high degree of confidence”**

Sensitive variables



- **Data Protection Act 1998 identifies topics that should be treated as “sensitive personal data”**
 - Racial or ethnic origin
 - Religious beliefs
 - Physical or mental health or condition
 - Sexual life
- **We need to treat those variables with particular care**
- **Sexual life (derived from marital status and relationship) - consider level of detail to be made available at low geography**

SDC: 2001 vs 2011



	2001	2011
Record Swapping	Random	Targeted to risky records
Post-tabular	Small Cell Adj. in E, W, NI	None
Additivity	Not in Theme Tables	Yes
Consistency	No	Yes
SDC Harmonisation	No	Yes – though parameters may differ
Effect on small counts	Large	Some

Communal Establishments (CEs)



- **Swap individuals between CEs**
- **Client / Staff distinction**

Factor influencing chance of being swapped	Staff	Residents / Clients
Numbers of CE Type in an MSOA [ward]	<input type="checkbox"/>	<input type="checkbox"/>
High/low impact of disclosure	<input type="checkbox"/>	<input type="checkbox"/>
Number of Clients		<input type="checkbox"/>
Number of Staff	<input type="checkbox"/>	
Client Turnover		<input type="checkbox"/>

SDC for 2011 UK Census – further work



- **Origin-destination tables**

- Can build on more general work on tables
- Origin will be Output Areas (OAs) and Destination Workplace Zones (WPZs) – both constrained within MSOAs
- All flows (e.g. 5 persons live in OA1 and work in WPZ1) definitely ok
- Design of WPZ should allow breakdown by almost any one variable

- **Microdata**

- **Hypercubes and Flexibility**

- “Big” tables?

Summary



- **Need for SDC; RsG statement – can have small cells**
- **Sufficient uncertainty in attribute disclosures**
- **Swapping households targeted on risky records**
- **Imputation part of protection**
- **Swapping only as far as is necessary**
- **SDC solution developed on from 2001 feedback**
- **Swapping persons between CEs**
- **Work still continuing.....**



Questions



Session 6



Dissemination

Cathryn McBurney

NINIS



- Northern Ireland Neighbourhood Information Service
- Web-based dissemination system for small area statistics



- www.ninis.nisra.gov.uk



Northern Ireland Neighbourhood Information Service (NINIS)



NINIS provides free access to statistical and locational information relating to small areas across Northern Ireland. Information is available across a range of themes including Population, Social and Welfare, Agriculture & Education. Users will be able to obtain an area profile by entering a postcode or by selecting an area to view.

Statistics for your Neighbourhood
 To view statistics on your local area please enter full postcode or street:



NINIS

To access local statistics click on the NINIS button to the left or enter a postcode in the box above. The information ranges from the 2001 Census to Social Security, Health, Education and Crime.

Deprivation 2010

Click here for Northern Ireland Multiple Deprivation Measures 2010 results.

Towns and Villages

Click here for information on Towns and Villages. Information is based on key statistics from the 2001 Census for towns and villages with population size greater than 500.

Neighbourhood Renewal

Click here for information on Neighbourhood Renewal Areas - Department for Social Development Urban Regeneration.

Investing for Health

Click here for information on Investing for Health - Health & Wellbeing Indicators.

Latest News

Follow **NINIS** on **twitter**

Follow NINIS on Twitter for updates on newly released statistics at:
<http://twitter.com/NISRANINIS>.

2011 Census Countdown to 2011 Census

5	14	11
Days	Hours	Mins

Range of Data



Over 1200 datasets including:

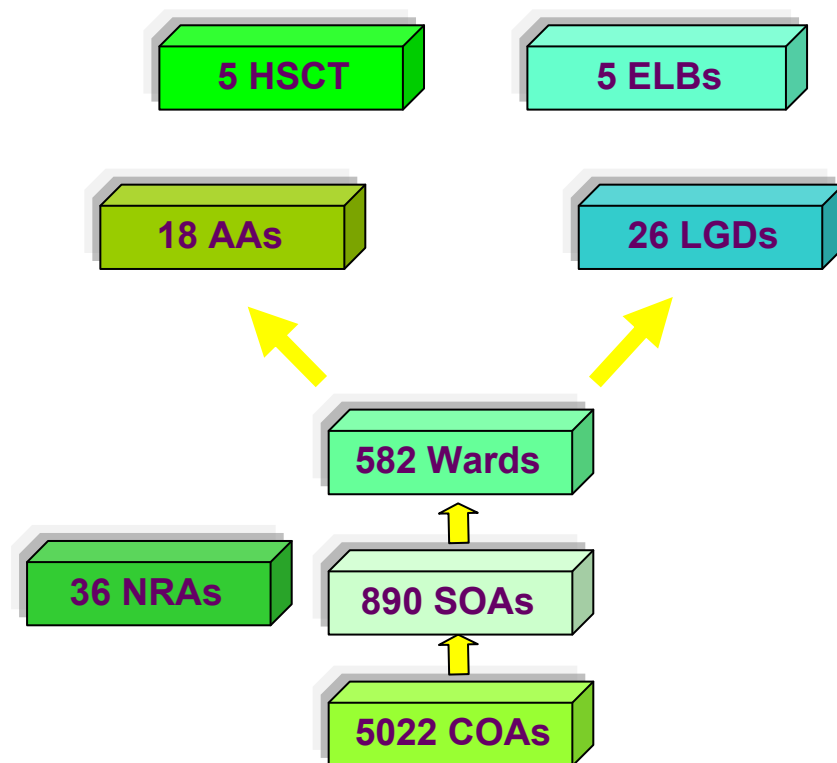
- **National Statistics Themes**
 - Agriculture
 - Crime & Justice
 - Education / Employment / Economic Activity
 - Environment (Natural and Built)
 - Health & Care / Housing & Transport
 - Population & Migration
 - Social & Welfare
- **Census 2001**
- **Deprivation Measures**
- **Locational information**
- **Investing for Health Goals/Themes/Objectives**
- **Neighbourhood Renewal Targets**

Range of Geographies



Range of geographical levels available:

- Census Output Areas
- Neighbourhood Renewal Areas
- Super Output Areas
- Electoral Wards
- Local Government Districts
- Assembly Areas
- Health and Social Care Boards
- Health and Social Care Trusts
- Policing Areas
- Education and Library Boards



Wide User Base



- **Users:**
 - Policy-makers
 - Service-planners
 - Community & voluntary sector
 - Researchers
 - Schools, Universities
 - General public
 - Average 15,000 visits per month
- **Customer support**
 - Customer helpline / Email account
 - Training;
 - Information Seminars (IT-based)
 - Ad-hoc, customised training

Dissemination Methods



- **Data Tables**
- **Area Profile Reports**
- **Interactive Maps**

NINIS Redevelopment



- **NINIS online 2003**
 - **Redeveloped to host the Census 2011 results:**
 - Improved user interface
 - New features:
 - Table Preview
 - Calculation function
 - Mapping function
 - Graphing function
- Table View
- Build Your Own Table
 - Custom Area Profile Reports
 - Improved Search and Filter functions



Table View

- **Range of Administrative Data**
- **Census Tables**

- **Table Preview**
- **Filter functions**
- **Calculation**
- **Map/Graph/Metadata views**

Advanced/Custom Functions



- **Build your own table**
 - selection of data from different years, themes, specific geographies
- **Custom Area Profiles**
 - ready made report for your area of choice

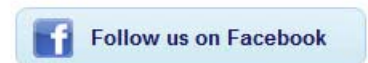
Customer Support



- **NINIS Training Workshops**
- **Online Help Guides**
- **Customer Support via telephone and email**



- **Updating users through NINIS E-Zine**
- **Twitter**
- **Facebook**



NINIS contact details



- **Web:** www.ninis.nisra.gov.uk
- **Email:** ninis.nisra@dfpni.gov.uk
- **Phone:** 02890 348 111

- **Twitter:** @NISRANINIS
- **Facebook:** Northern Ireland Statistics and Research Agency



Questions



Wrap Up

Robert Beatty

Wrap Up



- **Thank you for attending today and for sharing your views with us**
- **We hope you have found it informative and are happy to take any further comments you may have in writing**
 - These should be sent to Census.Nisra@dfpni.gov.uk
- **Copies of all materials and slides will be available on the NISRA website in due course**
- **One last opportunity for questions?**