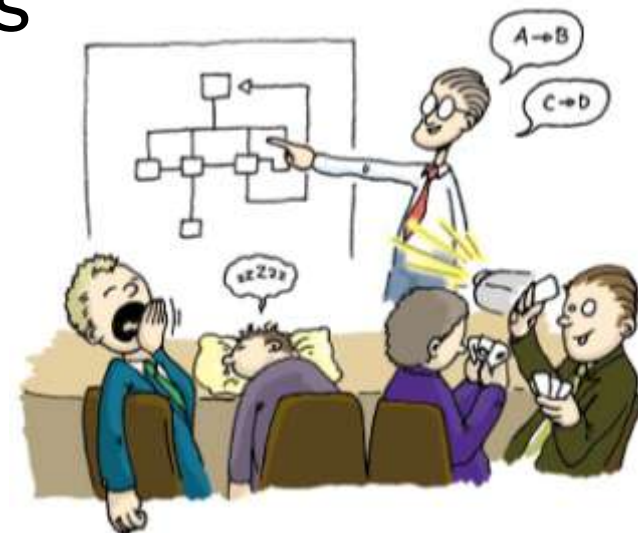


Exploiting the potential for GeoStatistics in the Republic of Ireland

Friday 26 October 2012 – European Forum of GeoStatistics

Dermot Corcoran- Statistician
Census Geography and Data Processing

- Census 2011 in Ireland
- Confidentiality and statistics
 - ▶ Statistics Act 1993
 - ▶ Research microdata files
- Developments in Geostatistics
 - ▶ Census 2011 grid dataset
 - ▶ Census 2011 POWSCAR



Census 2011 in Ireland

- Sunday, 10 April 2011
- Traditional Delivery and Collection
- 4,866 Enumerators, 490 Supervisors
- All dwellings and households coded to x,y
- Data on Housing stock, Households, Present and absent persons
- Processing completed in December 2011
- Publication schedule March-December 2012
- Total Cost €53M
- Population 4.58 million (67 persons/km²)



An Poblánúcháil Stáisiún
Central Statistics Office

Daonáireamh na hÉireann
Census of Population of Ireland

Sunday 10 April 2011

Address: _____ For office use only

County Code	Parish/Area Code	Small Area Code	St. No.	Number of persons P10 (2007)	HOUSEHOLD PERSONS
				Home	Total

Census 2011
The 2011 Census will take place on Sunday 10 April and will count all the people and households in the country on that night. It is the twenty-fourth census to be held since 1841. The census results will give a comprehensive picture of the social and living conditions of our people and will assist in planning for the future.

Who should complete the Census Form?
The household or any adult member of the household present on the night of Sunday 10 April should complete the form. A separate Household Form should be completed for every household.

A household is:

- one person living alone, or
- a group of related or unrelated people living at the same address with ordinary household arrangements, meaning they share at least one meal a day or share a living or sleeping room.

Do you need additional forms?
If there is more than one household at the address, ask your Enumerator for another Household Form.
If there are more than 10 persons in your household on Sunday 10 April, ask your Enumerator for a 10 Individual Form for each additional person.

How to complete your Census Form

1. Use a black or blue pen.
2. Mark boxes like this:
3. If you write a number, do this:

Where you are required to write in an answer please use BLOCK CAPITALS, LETTERS and leave one space between each word. Continue on to a new line if a word will not fit. Be accurate!

Hotel Receptionist

Have your forms ready for collection
Your Enumerator will return between Monday 11 April and Monday 9 May to collect your completed form.
If your form has not been collected by 9 May, please return it fully completed to Central Business Office, 400 St. Stephen's Green, Dublin 2, Ireland.

Feadar leagan Béarla nó Gaeilge éinn fhoirm seo a chomhlánáil.

Household Form Page 1

2011 Census Publication Schedule

Reports

Published

Preliminary Report	30 June 2011
This is Ireland, highlights from Census 2011 Part 1	29 Mar 2012
Profile 1 Town and Country - Population distribution and Movements	26 Apr 2012
Profile 2 Older But Younger - An Age Profile of Ireland	24 May 2012
This is Ireland, Highlights from Census 2011 Part 2	28 June 2012
Profile 3 At Work - Employment, Occupations & Industry in Ireland	26 July 2012
Profile 4 The Roof Over Our Heads - Housing in Ireland	30 Aug 2012
Profile 5 Households and Families - Living Arrangements in Ireland	20 Sept 2012
Profile 6 Migration & Diversity in Ireland - A profile of diversity in Ireland	04 Oct 2012
Profile 7 Irish Travellers, Ethnicity and Religion – Ethnic & Cultural Background in Ireland	18 Oct 2012
Profile 8 Our Bill of Health – Health, Disability & Carers in Ireland	01 Nov 2012
Profile 9 What we know - A Study of Education & Skills in Ireland	22 Nov 2012
Profile 10 Door to Door – Commuting in Ireland	13 Dec 2012
*Small Area Population Statistics (SAPS) – All Variables (Small Area Population Statistics (SAPS) will be made available as interactive tables, free of charge on the CSO website)	31 July 2012

Statistics Act 1993

- Statistics Act 1993 provides basis for access to microdata files under strict conditions ensuring it can't be directly or indirectly related to an identifiable person or undertaking.

Use of non-identifiable information for statistical analysis.

34.—The Office may provide, for statistical purposes only, information obtained in any way under this Act or the repealed enactments, in such form that it cannot be directly or indirectly related to an identifiable person or undertaking, to such persons and subject to such charges, conditions and restrictions as the Director General may determine.

- However the act also allows the Director General to appoint an Officer of Statistics to perform a specified particular analysis which may necessitate access to data collected under the Act.

Officers of Statistics

Officers of statistics.

20.—Each of the following persons—

(c) any other person authorised in writing by the Director General to perform for a specified period particular statistical analysis which may necessitate access to data collected under this Act,

shall, for the purposes of this Act, be and is in this Act referred to as an officer of statistics.

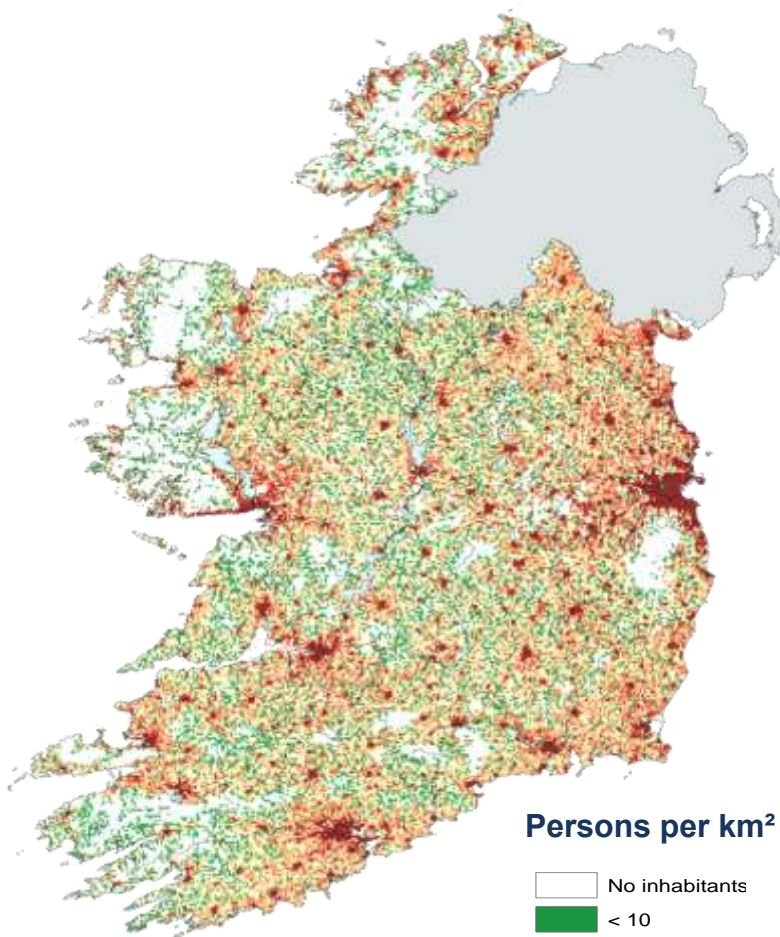
Research Microdata files

- Data can be released to bona fide researchers at an individual entity/person level with direct identifiers removed
 - ▶ Strictly controlled access- Needs to be approved by the Director General of CSO
- Conditions
 - ▶ Access - Written detailed research proposal
 - ▶ No linkage to other files
 - ▶ All researchers signed up to be Officers of Statistics, and can only be the users of the data
 - ▶ Results may be copied, provided they do not contain identifiable data
 - ▶ CSO staff on request may examine/veto the results

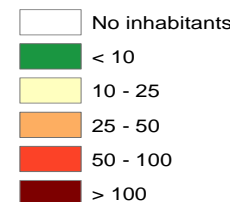


Grid dataset

- Population density of Ireland mapped using grids in first Census 2011 publication
- Users became interested!
- Consultation phase initiated
 - Internal (what could be released)
 - External (who's interested)



Persons per km²



Grid dataset

- Office agreed to release 1 Km² grid dataset (~73,000 grid cells) containing usual resident population only as a Research Microdata File
- Any grid cell with three persons or less has been suppressed i.e. grid cells with a value of 1 or 2 has been substituted with a value of 3
 - ▶ 0.1% of population suppressed affecting 6% of grid cells
- Available both in the Irish Transverse Mercator (or ITM, EPSG Code 2157) and ETRS89 Lambert Azimuthal Equal-Area (EPSG Code 3035)
- Dataset available from October 2012, announced at GIS in Ireland conference
- <http://www.cso.ie/en/census/census2011griddataset/>

POWSCAR dataset

- Place of work, school or college census of anonymised records, first released after 2006 Census



34 What is the FULL NAME and ADDRESS of your place of work, school or college?

Full name

Address

1 Work mainly at or from home 2 No fixed place of work

- All persons at work or students at school or college required to complete Q 34 of 2011 Census form
- Name and address captured in processing stage and geocoded to Irish address database(called GeoDirectory) by operators
- So now have X,Y of usual residence (origin) and X,Y of place of work (destination)= more opportunities to measure commuting patterns

POWSCAR dataset – contents

- File released in July 2012 as a Research Microdata File
- Origin geography on POWSCAR dataset
 - ▶ 8 NUTS3
 - ▶ 34 LAU1
 - ▶ 3409 LAU2
 - ▶ 824 Towns with minimum of 50 occupied buildings
 - ▶ 18,488 Census output areas
- Destination geography on POWSCAR dataset
 - ▶ Same as origin geography.....
 - ▶but also the co-ordinates of the centre of 250x250 metre grid

POWSCAR dataset –contents

- 32 variables
- Household variables effecting travel choice No. of Cars, Usual residents and resident workers, Family type, Type of accommodation, Year built Owner/Renting, Sewerage type proxy for single one off houses
- Person characteristics – Age, Sex, Marital Status, Education, Socio Economic Group, Industry Group
- Journey Characteristics – Means of Travel, departure time, KM and minutes journey time

Top Coding
8 or more usual residents in the households = '8+'.
4 or more usually resident workers in the household = '4+'
Household Composition 7 Groups
Nature of occupancy
'1' = Purchaser/Owner Occupied'
'2' = 'Rented incl. free rent'
Sewerage facility
'1' = 'Septic/other system individual to household'
'2' = 'Other/No Sewerage facilities'
5 Year Age Groups and '75+'
Marital Status
'1' = 'Single(Never married)', '2' = 'Ever Married'
Usual Residence one year ago
'0' = 'Different address', '1' = 'Same address'
Education
'1'='Completed secondary or lower',
'2'='Completed third level or higher'
Socio Economic Group
'A' = 'Employers and managers'
'B' = 'Higher professional'
'C' = 'Lower professional'
'D' = 'Non-manual'
'E' = 'Manual skilled'
'F' = 'Semi-skilled'
'G' = 'Unskilled'
'H' = 'Own account workers'
'I' = 'Farmers'
'J' = 'Agricultural workers'
'Z' = 'All others gainfully occupied and unknown'
Industry Sector
'1' = 'Agriculture, forestry and fishing'
'2' = 'Manufacturing industries, mining, quarrying and turf production, electricity, gas and water supply'
'3' = 'Construction'
'4' = 'Commerce'
'5' = 'Transport, storage and communications'
'6' = 'Public administration and defence'
'7' = 'Education, health and social work'
'8' = 'Other'

POWSCAR dataset –users

POWSCAR Applications 2006

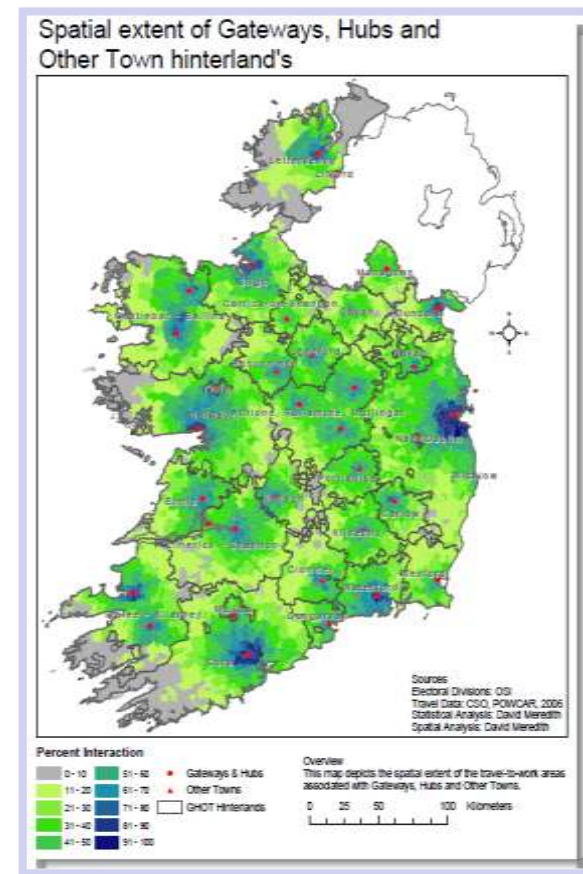
Central Government Departments	2
Regional Authorities	2
Local Authorities	42
Government Agencies	5
Transport Related Government Agencies	6
Academic Researchers	19
Business Associations	2
Research Bodies	2
Economic Consultants	2
United Kingdom applications	3
Refused data on application	1

AECOM
Centre for Health Geoinformatics
Coras Iompair Éireann
Cork City Council
Dublin Institute of Technology
Economic & Social Research Institute (ERSI)
Limerick-Clare Energy Agency
Mott MacDonald Ireland Ltd
MVA Consultancy
National Centre for GeoComputation
National Institute for Regional and Spatial Analysis (NIRSA)
National Transport Authority
National University of Ireland Galway
Railway Procurement Agency
RPS Consulting Engineers
South West Regional Authority
Teagasc
Trinity College Dublin
University of Limerick
Wicklow County Council



Conclusions

- Two datasets with grid dimensions released in 2012 as Research Microdata File
 - ▶ 1 Km² grid dataset (usual resident pop only)
 - ▶ POWSCAR dataset (destination geography 250X250 grid, detailed indicators)
- Strict conditions to preserve confidentiality
 - ▶ Grid dataset suppressed where pop ≤ 3 persons
 - ▶ Personal identifiers removed
 - ▶ Written application
 - ▶ Contract, Onus on users signed up as Officers of Statistics and veto on publications
- Increased awareness of geostatistical data among GIS users in Ireland





Any Questions?

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