

# UK Official Statistics and the Royal Statistical Society: Working together to meet user needs

Jagdev Singh Virdee

Vice Chair, SCORUS

Fellow of the Royal Statistical Society and  
Advisor on Official Statistics



# Presentation will cover:

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- Organisation of UK Official Statistics System
- Drivers for Analysis – meeting user needs
- Building Capacity - UK Data Science Campus
- Role of RSS in respect of Official Statistics



# UK Official Statistics organisation

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## UK Statistics Authority

- Office for Statistics Regulation – regulatory arm of UKSA

## National Statistician

- Head of the GSS & Executive Member of UKSA Board

## Government Statistics Service

- Statisticians in ONS and other government departments

## Office for National Statistics – major producer

- Also supports GSS on guidance, standards, training



# Mission and Vision

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*“Better Statistics, Better Decisions  
Strategy 2015-2020”*

The collective mission of the UK official statistics system is to produce:

*“High quality statistics, analysis and advice  
to help Britain make better decisions.”*



# Code of Practice for Statistics

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- New Code published 22<sup>nd</sup> February 2018
- Principles: Underpinned by Trustworthiness, Quality and Value
- Consistent with UN Fundamental Principles of Official Statistics and European Statistics Code of Practice
- John Pullinger, National Statistician:
  - *“For the GSS, it is our professionalism which earns us trust. We have no axe to grind in any debate save that it is well informed. We cherish our values of honesty, integrity, objectivity and impartiality”.*



# ONS Public Policy Analysis Directorate

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*“Through statistics and analytical services we inform the public about social, economic and environmental matters, assist in the development and evaluation of public policy and promote the quality of statistics.”*



# Staffing for Analysis

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## Public Policy Analysis Directorate:

- About 350 in total
- About 100 mainly on analysis
- About 200 with mixed roles
- 15-20 dedicated to responsive, cross-cutting work and coordination across ONS and wider

Other ONS – some analysis also conducted in other areas, eg Labour Market, Economy



# Types of Analysis Conducted

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- Descriptive analysis
- Cross cutting eg gender gap in unpaid care provision, impact on health and incomes
- Responsive to policy needs
- Demographic projections





# Drivers for Analysis

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- Self initiated, pre-emptive, pro-active
- Policy requests – reactive to government needs
- Requests and demands from other users
- Most analysis published, default position, unless quality issues or not fit for purpose



# ONS Response to UK Devolution

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UK policy has moved towards increased devolution.

- Scotland, Northern Ireland, Wales
- English City Regions.

ONS has responded via:

- A devolution project to improve local statistics.
- Increased stakeholder engagement.
- New analytical outputs and support to users.



# Devolution Programme

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A programme to improve ONS regional and local statistics.

- Regional Balanced GVA
- Regional & Sub-Regional Household Final Consumption Expenditure
- Regional Short Term Indicators
- Country and Regional Public Sector Finances
- Exports of Services Data
- Productivity
- Small Area Data
- Flexible Geographies
- Investigating Uses of Administrative Data
- Regional Prices
- Stakeholder Engagement



# Stakeholder Engagement

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New quarterly user groups bringing together ONS staff and stakeholders.  
Devolved Economic Statistics Co-Ordination Group.

- for Scotland, Wales, Northern Ireland,

Combined Authorities User Group.

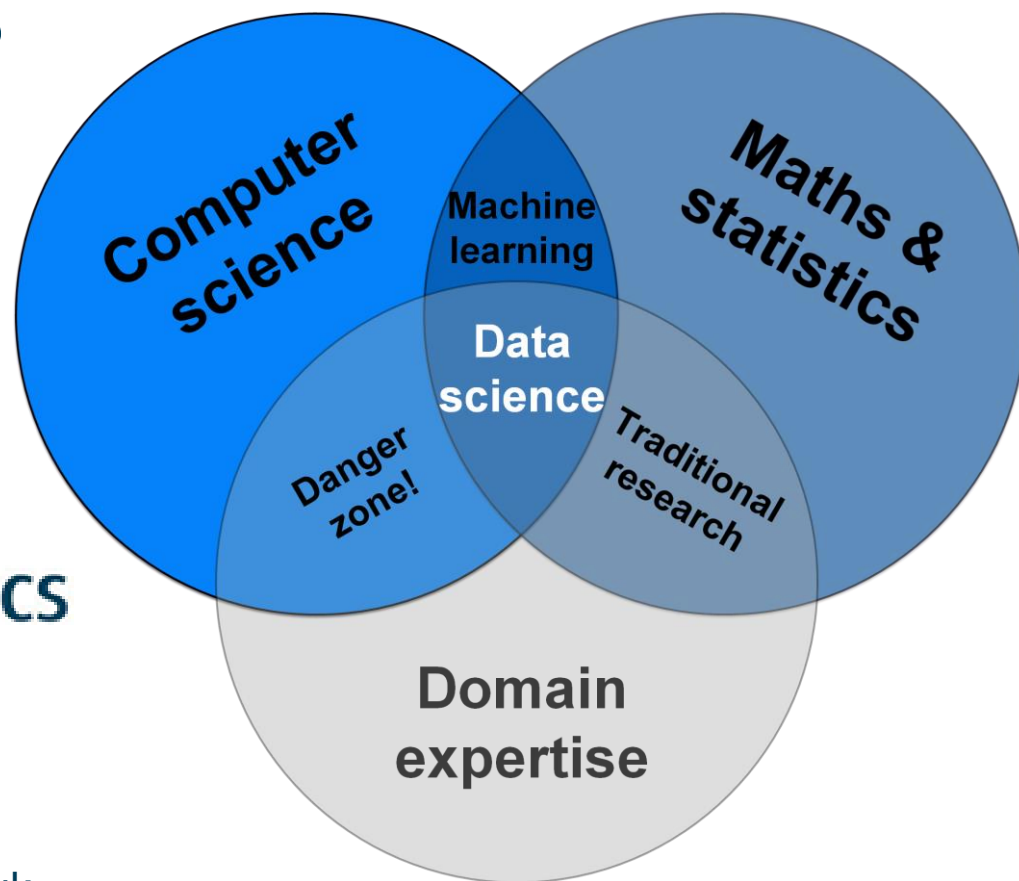
- for English City Regions.

ONS teams to work on cities and other regional/local public policy analysis.

- Stakeholder Engagement
- Feeding back into ONS outputs.
- Providing data tables and analytical support.
- Producing new outputs and analytical work.



# BUILDING CAPABILITY – THE DATA SCIENCE CAMPUS



Office for  
National Statistics



Data Science  
Campus

web: [datasciencecampus.ons.gov.uk](https://datasciencecampus.ons.gov.uk)  
email: [datasciencecampus@ons.gov.uk](mailto:datasciencecampus@ons.gov.uk)  
twitter: @DataSciCampus

# The Data Science Campus purpose

“Although better use of [data] has the potential to transform the provision of economic statistics, ONS will need to build up its capability to handle such data.

This will take some time and will require not only recruitment of a cadre of data scientists but also active learning and experimentation.

That can be facilitated through collaboration with relevant partners – in academia, the private and public sectors, and internationally.”

***Independent Review of Economic Statistics***


***Professor Sir Charles Bean, 2016, p.11***

FINANCIAL TIMES

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## ONS ‘unicorn’ campus reimagines how to measure Britain

Statisticians experiment with using Google Street View, shipping data and VAT returns



The Data Science Campus in Newport © Gareth Iwan Jones/FT

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AUGUST 3, 2017 by Chris Giles in Newport, Wales

The inflatable rainbow unicorns near the entrance of its new £17m Data Science Campus are a jokey nod to the ambitions of Britain’s statistics office.

Here in Newport, South Wales, in a wing designed to look like the office of a Silicon Valley company, the Office for National Statistics is trying to imagine the future of measuring Britain.



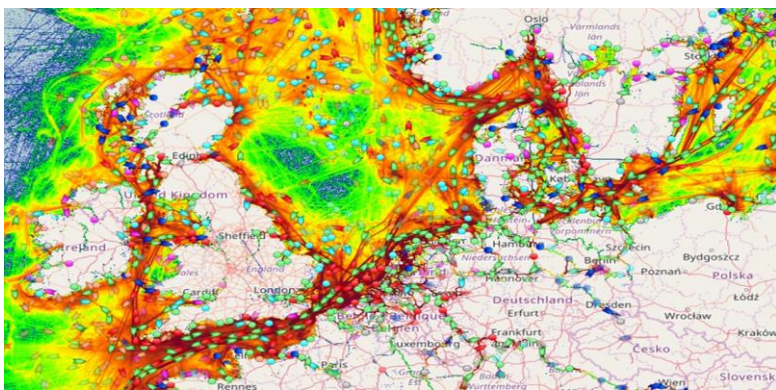
# Building the Campus



- Funding approved in Mar 2016
- Start-up team in place in Jul 2016
- Temporary Campus open Aug 2016
- Research commenced in Sep 2016
- 1st Apprentices in Nov 2016
- 1st research output in Dec 2016
- Managing Director joined in Jan 2017
- Headcount reached 26 in Feb 2017
- Formal launch 27 March 2017
- Move to bespoke Campus May 2017
- 35 FTE as of December 2017
- Headcount 50 - April 2018

# What we do – delivery and capability

## Data science projects



New data sources, eg satellite images, text, big data, Internet of Things, social media

New techniques – machine learning, neural networks, network, text & image analysis, big data processing etc.

Short, exploratory research – innovation and risk

## Building capability



Cross-govt training & train-the-trainers

Apprenticeships in Data Analytics

MSc Data Analytics for Government

Continuous Professional Development

Data Science Accelerator and ONS Data Science Academy mentoring

STEM Ambassadors

Co-funded & co-supervised PhD placements and programmes



# How we work – in partnership



Collaborations with national, international and local government

Agreements with multiple external partners including universities, research institutes and international statistical institutions

Working with / talking to NSIs: Netherlands, Rwanda, Canada, New Zealand & Norway

PhD programmes, Centres for Doctoral Training & PhD co-funding with partners

Projects for MSc students in Data Science

Commercial businesses – market engagement with Barclaycard, PwC ...

# Data science projects delivered and in-progress

Project	Description	Partners
<b>Business growth and SMEs (DECA project)</b>	Predict potential high-growth SMEs based on business data, to target intensive support and subsequent evaluation. The Campus is assessing the value of predictive datasets from non-government sources	BEIS, HMRC
<b>Regional GDP Estimates</b>	Collaborative project with Barclaycard, using Barclays payments data to produce faster more granular regional indicators of the economy to inform economic policy makers in the UK.	ONS Economic Statistics, Barclaycard
<b>Superfast GDP indicator from VAT turnover data</b>	Develop an early estimate of the direction of economic growth using company-level VAT returns to develop a real-time indicator for GDP	ONS, Bank of England, HM Treasury
<b>Understanding the UK shipping network</b>	Analyse data on ships and goods to inform trade, transport and environmental policy in the UK. Explore the relationship between shipping and UK trade, focusing on: national, continental and international port links; movement of waste and hazardous materials and the identification and prediction of delays at ports	DIT, HMRC, ONS, Stats Netherlands, Stats NZ, UN Global Pulse
<b>Sustainable Development Goals visualisation tool</b>	Develop an open source, re-usable interactive tool to monitor performance against Sustainable Development Goals (SDGs). Published alongside a full SDG release by ONS, and reused by international partners	ONS SDG team, DfID, international partners
<b>Social &amp; economic indicators from satellite images</b>	Create insight from satellite images to support policy decisions. Produce social and economic indicators for urban areas by developing a satellite image classification, object detection and segmentation pipeline	ONS Economic Statistics & Public Policy, DEFRA
<b>Measuring the urban forest</b>	Assess the contribution of greenery in towns and cities to the UK's Natural Capital by creating a local level national dataset from classifying local street images and using image analysis and deep learning	DEFRA, ONS Natural Capital team
<b>Automatic classification of financial sector companies</b>	Improve the quality, coverage and granularity of UK's financial statistics by applying machine learning and text analysis to classify the financial sector	Bank of England, ONS Flow of Funds
<b>Employment prospects visualisation tool</b>	Produce an interactive tool to enable government analysts and policymakers to explore data on employment prospects for English Local Authority areas	Cabinet Office Policy Lab
<b>Explaining tourism and migration statistics</b>	Provide new insights into detailed migration and tourism patterns in the UK to complement the International Passenger Survey (IPS), by applying machine learning techniques to geo-tagged Flickr photo data	DCMS, ONS social surveys
<b>Economic and social impact of the fishing industry</b>	Publish an on-line, interactive tool for policy makers, using ONS data to produce local-level economic indicators and data visualisations for a single industry (fishing) that do not disclose private data	DEFRA, Scottish Government
<b>Improving calorie intake estimates</b>	Support public health policies by improving our understanding of how much the UK is eating. Assess the discrepancy between the self-reported calorie intake data and actual UK obesity levels and evaluate the use of this estimate to re-calibrate official statistics	Cabinet Office, DEFRA, ONS Health Analysis
<b>Identifying emerging technologies from patents</b>	Identify ground-breaking products and technologies by applying machine learning to patents and data on emerging technologies to explore relationships between specific features and groups of new products	IPO, BEIS
<b>Understanding the People Survey</b>	Support better management of the civil service by gaining insights, initially from ONS HR, finance, performance and People Survey data, through analysis and visualisation tools for effective communication	Civil Service HR teams
<b>Building a survey question bank</b>	Reduce the form-filling burden on businesses and the public, and improve compatibility of survey results, by converting ONS business surveys to machine readable formats + harmonise questions using text analytics	ONS Data Collection teams
<b>Characteristics of private landlords</b>	Inform housing policy through better understanding of the private landlords' sector. Create and analyse data-based	Cabinet Office Policy Lab

# Data science projects with impact

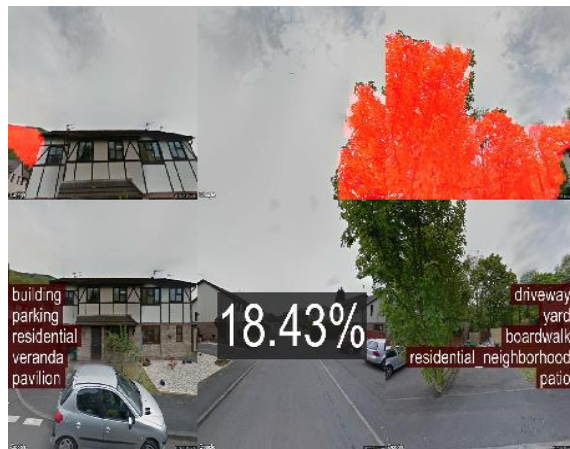
## Measuring the urban forest

Using images to improve data on local environment

£1Bn value trees in urban areas (air pollution, health, wellbeing)

But poor data at local level on tree & urban greenery

DEFRA, ONS Natural Capital team, UN Global Pulse

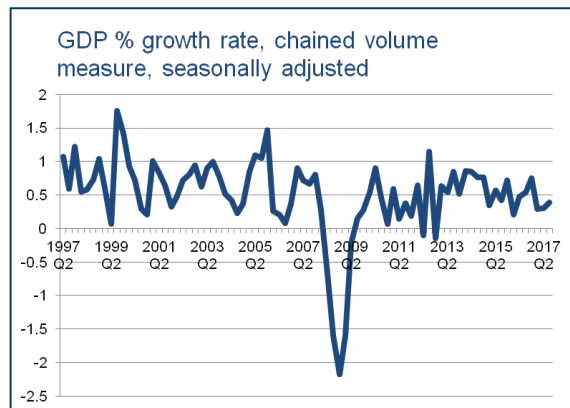


## Superfast GDP indicator from VAT turnover

Early indicator of economic growth, using company-level VAT returns

Rapid identification of GDP growth changes can inform responsive economic policy

ONS National Accounts, Bank of England, HM Treasury



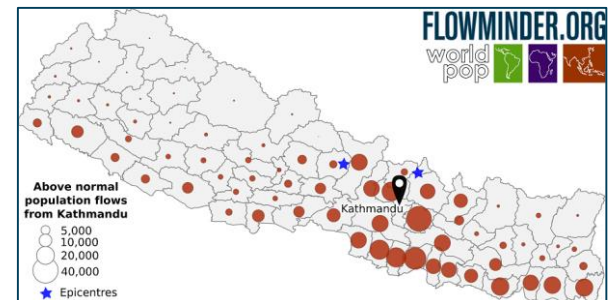
## Mobile phone data for commuter flows (Big Data)

Commuter flow estimates from Vodafone mobile phone data (residence to workplace)

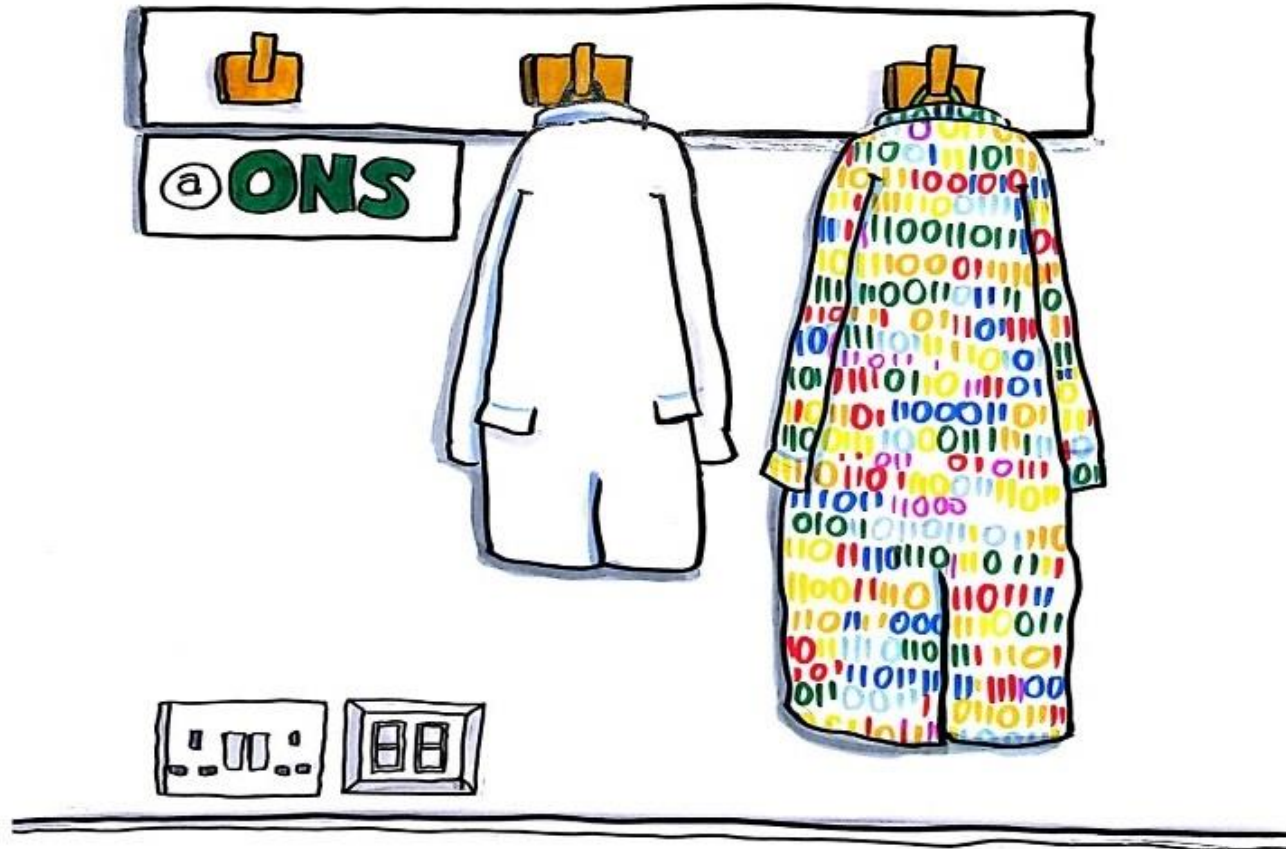
Fine-grained estimates, by time of day, mode of transport

Good match to Census commuting data – potential for improved & timely understanding of economic areas & flows

ONS. Local Authorities. BEIS. DCLG







# Data Science Campus

web: [datasciencecampus.ons.gov.uk](https://datasciencecampus.ons.gov.uk)  
email: [datasciencecampus@ons.gov.uk](mailto:datasciencecampus@ons.gov.uk)  
twitter: [@DataSciCampus](https://twitter.com/DataSciCampus)

# The Royal Statistical Society (RSS)

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- One of the world's leading organisations to promote the importance of statistics and data, founded in 1834.
- A professional body for all statisticians and data analysts – wherever they may live.
- More than 9,000 members in UK and across the world. They are at the core of what we do and make us who we are.
- As a charity, we advocate key role of statistics and data in society, and work to ensure that policy formulation and decision making are informed by evidence for the public good.
- Everything we do is guided by our [Strategic Plan](#), which has six goals at its heart:



# Royal Statistical Society Strategic Goals:

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**Statistics and the public interest.** For statistics to be used effectively in the public interest, so that policy formulation and decision-making are informed by evidence of the good of society.

**Education and statistical literacy.** For society to be more statistically literate, so that people's understanding of data, risk and probability can inform their daily decision-making, leading to better outcomes.

**Developing the profession.** For a strong body of professional statisticians to maintain and develop the skills they need so that they can critically apply methodology, interpret results and communicate findings.

**Strengthening the discipline.** For statistics as a discipline to thrive, so that methodology is advanced, applied and made accessible, leading to greater understanding of an increasingly complex world.

**Engaging the membership, staff and partners.** For an engaged and energised membership and staff to work collaboratively with partner organisations and other stakeholders in meeting these goals, so that the Society can maximise its impact.

**Being a well-run organisation.** For the RSS to be a financially sustainable and well-run organisation, with effective governance and use of technology so that it will grow in relevance and exert influence.



# RSS & GSS Working Together: Statistics User Forum (SUF) and StatsUserNet.org



# Statistics User Forum

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- Umbrella body for Official Statistics User Groups
- Wide range of members:
  - Health, Crime, Transport, Prices, Housing, Population, Census, Business, etc
- Regular meetings with producers
  - GSS and SUF executive
- Useful for consultation on new sources and methods





# StatsUserNet.org

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- Interactive website for users of official statistics
- Aim: To strengthen the voice of users of official statistics
- About 3,000 users
- About 30 Communities



# StatsUserNet aims:

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- Enable users to exchange information and share experience
- Enable communication between users and producers of statistics, consultation forum
- Involve users in planning and strategy for official statistics
- Supports wider user activities
- Increase awareness of official statistics and their use



# StatsUserNet membership:

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Membership is diverse:

- Central & Local Government
- Academia
- Business
- Voluntary sector
- Interest/lobby groups
- General public
- etc



# StatsUserNet communities:

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Many communities very active:

- Membership in 100's: Business statistics, Consultations, Health, Labour Market, RPI/CPI, Statistics User Forum, Wellbeing, Beyond 2011
- Many more growing: Classifications, Financial, Economic, Income & Spending, Natural Capital, Sub national, Voluntary sector, Water, Welfare & Benefits, Data Visualisation, Housing, Transport, Crime and Justice



# How to use:

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[www.statsusernet.org.uk](http://www.statsusernet.org.uk)


Register for StatsUserNet

Join communities of interest

Start using:

- Take part in discussions and consultations
- See how others are using statistics
- See and share documents through libraries
- Suggest improvements or new communities
- Be active





**Welcome, admin**  
[Profile](#) | [Communities](#) | [Logout](#)

[Complete your profile](#)

- Communities**
- View Communities
  - All Communities
  - My Communities
  - Join Communities
  - View Libraries
  - View Discussions

## All Communities

[+ Create a New Community](#)

Community Type: **All Community Types**

Community Title/Description

**Search**

42 **All Communities** | all | alphabetical

last person joined: 4 days ago

✓ **2011 Census**

ONS plans to publish the first outputs from the 2011 Census (population estimates by age and sex for England and Wales and local authorities) in July 2012. Further...

**Enter**

 **323**

 **23**

 **536**

last person joined: 4 days ago

✓ **Beyond 2011**

Population and socio-demographic statistics are currently based on a 10-yearly census of the population. There is a clear, ongoing need for high quality statistics...

**Enter**

 **37**

 **42**

 **182**

# Award for Excellence in Official Statistics

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- RSS sponsors annual award for excellence in Official Statistics
- Celebrate good practice in demonstrating innovation, responsiveness, efficiency, etc
- Nominations invited from users, producers, stakeholders
- Diversity in Organising Committee & Judges
- Awards Ceremony and Reception – the “Oscars” of Official Statistics (12<sup>th</sup> July 2018)



# Award for Excellence in Official Statistics

**2017 winners:**  
The Scottish  
Index of  
Multiple  
Deprivation  
2016





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**The End**

**Thank you for listening**

**Enjoy the rest of the conference**

