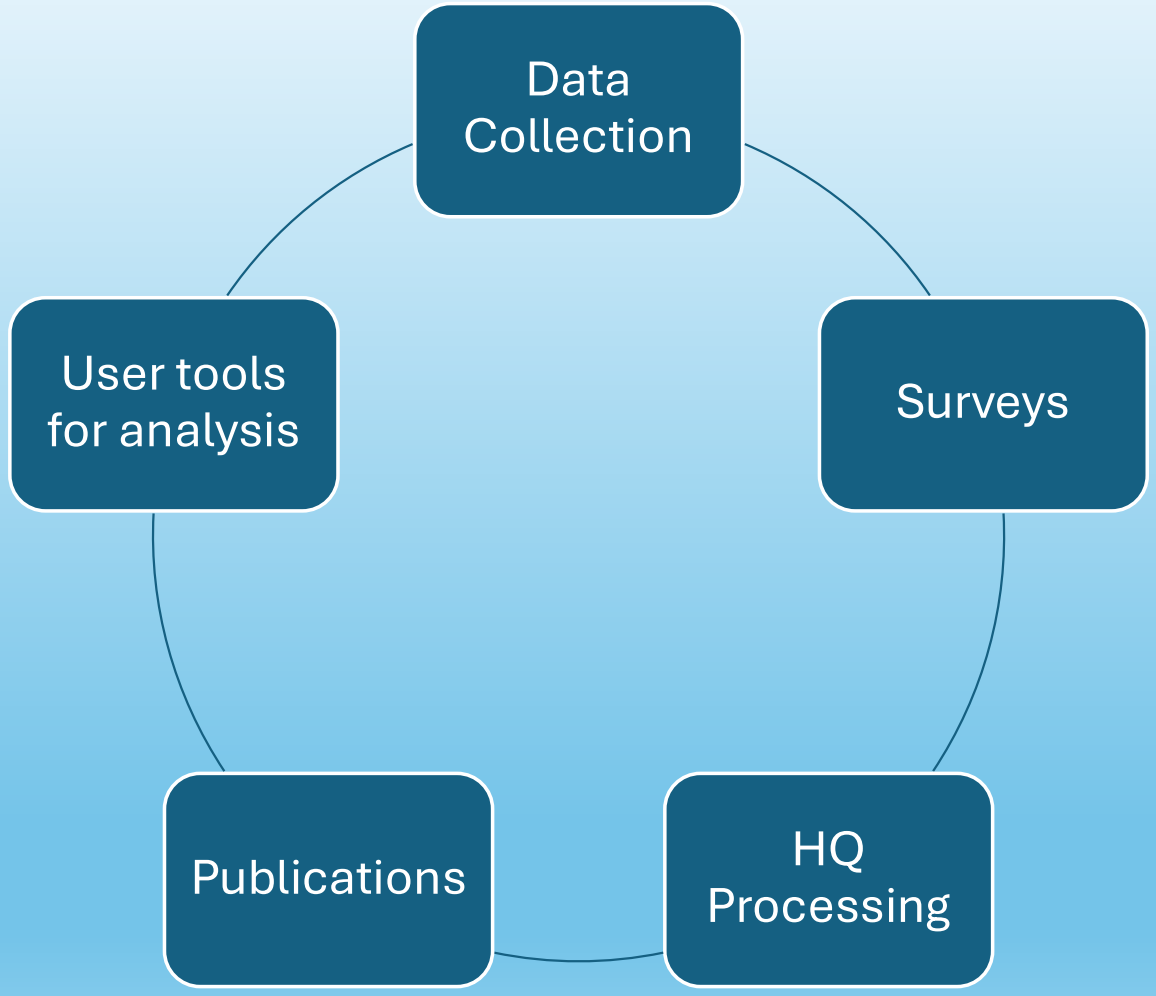
ONS Discussion

3rd April 2024

Based on public information available at:
https://www.ons.gov.uk/

What we might discuss



About ONS

- We are the UK’s largest independent producer of official statistics and its recognised national statistical institute.
- We are responsible for collecting and publishing statistics related to the economy, population and society at national, regional and local levels.
- We also conduct the census in England and Wales every 10 years.

About ONS Statistics

Our range of economic, social and population statistics are published in over 600 releases a year.

Our wide range of statistics include:

- the UK's National Accounts (such as gross domestic product (GDP), national income and expenditure)
- population, demography and migration statistics
- economic, societal and personal well-being statistics
- government output and activity
- prices statistics (such as consumer prices and producer prices)
- the labour market (such as employment, unemployment and earnings)
- vital events statistics (such as births, marriages and deaths)
- social statistics (for example, about neighbourhoods and families)

Data Collection

- Field Surveys
- Business Surveys
- “Admin Data” sources
  - Births, deaths
  - Gov’t departments DWP, HMRC
- Non-Gov’t sources
- Summary Spreadsheet here

Field Collection

- Surveys
- Sampling
- Longitudinal cycles
- PAF v Address-Based
- Clustered v Unclustered

Established Surveys

Living Costs & Food (50+ yrs)

Family Resource (Since 1992)

Standard of Living Conditions

Household Assets

Labour Force Survey (Since end WW2 ?)

New-ish Surveys

Child Mental Health (CMH)

Scottish Health Survey (SHeS)

National Survey for Wales (NSW)

Family Resources Survey in consortium with the National Centre for Social Research.

A number of high-profile surveys were undertaken during the recent pandemic, the largest being the Covid Infection Survey ((CIS)

Sampling

The sampling process
The sampling process comprises several stages:
• Defining the study population
• Specifying a sampling frame
• Selecting a sample design
• Determining the sample size
• Drawing a random sample.

Sampling frames
The most straightforward type of frame is a list of units in the population (preferably the entire population) with appropriate contact information. The sample can then be drawn directly from this sampling frame. The ONS typically uses the PAF.

The Postal Address File (PAF)
The PAF contains UK addresses and is leased to ONS from the Royal Mail. The ‘Small Users File’ is used by the ONS to draw household survey samples. This file consists of residential addresses and covers approximately 95% of the population.

AddressBase Premium
ONS will AddressBase sampling system. This enables public sector organisations to identify any type of property with a unique property reference number (UPRN) and to be able to locate it on a map with precision. This will enable us to draw more effective samples, taking out ineligible properties before visiting them, for example shops.

AddressBase Premium -– This address database is owned by Ordnance Survey, comprised of local authority data, Royal Mail data and Ordnance Survey data, and is available to the Office for National Statistics under the Public Sector Mapping Agreement. The TLFS currently uses AddressBase as its sampling frame.

Sampling Frames

Examples of other sampling frames

An ad hoc survey may result in a number of ineligible households if it used a general population sample. For example, investigating how mothers feed their infants would result in many households that did not have children in the correct age range for the study if the sample was drawn from a general population sample. For a survey of this type a sample would be drawn from recent birth registrations.

Examples of specialised sampling frames:

- Birth certificates
- Schools
- Institutions e.g., prisons

Other sampling frames sometimes used by ONS include:

- **The Electoral Register** - a list of the names and addresses of people registered to vote in UK local and national elections.
- **The Inter Departmental Business Register (IDBR)** - a list of all businesses operating in the UK. It is constructed from VAT registration and PAYE data (supplied by HM Revenue and Customs) and company details supplied by Companies House. The IDBR is the main sampling frame used for ONS business surveys, such as the Annual Business Inquiry
- **Census data** - can provide a sampling frame such as a list of communal establishments or particular age groups for example.

Clustered v Unclustered Sampling

Clustered sample design

In a clustered sample there are two selection stages. First a sample of postcode sectors is selected, and then a sample of households from within each of the postcode sectors is drawn. The postcode sectors are selected randomly from a list which is sorted by selected geographic and census variables. The probability of postcode sectors being selected is proportional to size, i.e. larger sectors have a greater chance of being selected. These two features ensure the selected postcode sectors are providing a representative selection of the population.

Surveys that currently use this survey design include SLC, LCF, OPN, HAS and FRS.

Unclustered sample design

An un-clustered sample design means that addresses are sampled directly from the entire PAF. As a result, addresses in any one quota may be more dispersed than those on another survey which uses a clustered sample design. The dispersion of addresses will depend upon the population density in each region. For example, a city centre is likely to be more densely populated; therefore, the quota is likely to cover a smaller geographic area than a rural area which is likely to have a lower population density.

An un-clustered sample helps to produce more precise results without increasing the sample size. This is because people with the same characteristics are often geographically clustered. Therefore, by increasing the ‘spread’ of addresses sampled, this clustering effect is reduced. Surveys that use an un-clustered sample design include LFS.

After Data Collection

- Cleaning / Editing
  - Validating checks, QA checks,
  - Cleaning, gaps imputed

- Weighting
  - Weights adjust the raw survey data collected to represent the sample from which it was drawn.
  - Weights used on survey data make the sample proportions similar to the population proportions

- Analysis & Reporting
  - Analysis of survey data is conducted both internally and externally of ONS. LCF datasets are released to the Department for Environment, Food and Rural Affairs (Defra) who produce an annual report called Family Food.
  - ONS Prices Division use the information collected to determine the nature and content of the shopping basket used to monitor inflation through the RPI and CPI.
  - LFS data is used in the monthly Labour Market release which includes the latest unemployment figures.
  - Many datasets are also delivered to Eurostat (the statistical agency of the European Union)
  - The Survey of Living Conditions (SLC) supports decision making on poverty and any factors which may influence poverty and social exclusion.
  - Survey data from a range of our social surveys is also used in the ONS flagship publication, “Social Trends”.

Sources Of Current Data (See spreadsheet)

1. Administrative and commercial data sources

The Office for National Statistics (ONS) is committed to being open and transparent about the data we hold. The Excel spreadsheet containing personal data (as defined by data protection legislation) that have been collected from external data sources sets out all of the data we have obtained from external sources to help us fulfil our statutory functions to produce statistics for the public good.

It also shows where that data has come from and gives the main uses of that data. The spreadsheet does not contain datasets without personal data or those that the ONS has created itself (for example, through one of our surveys).

2.Health data sources

ONS uses a range of health data in our statistics. Health data are classed as "special category data" and can often include sensitive personal information. The ONS takes protecting confidentiality of such data very seriously and this section provides additional transparency on the health data we hold and how we protect it. We have a health data policy, and we provide information on how we treat NHS National Data Opt-outs.

Data Principles

Integrated Data Services (IDS)

Bringing together ready-to-use data to enable faster and wider collaborative analysis for the public good.

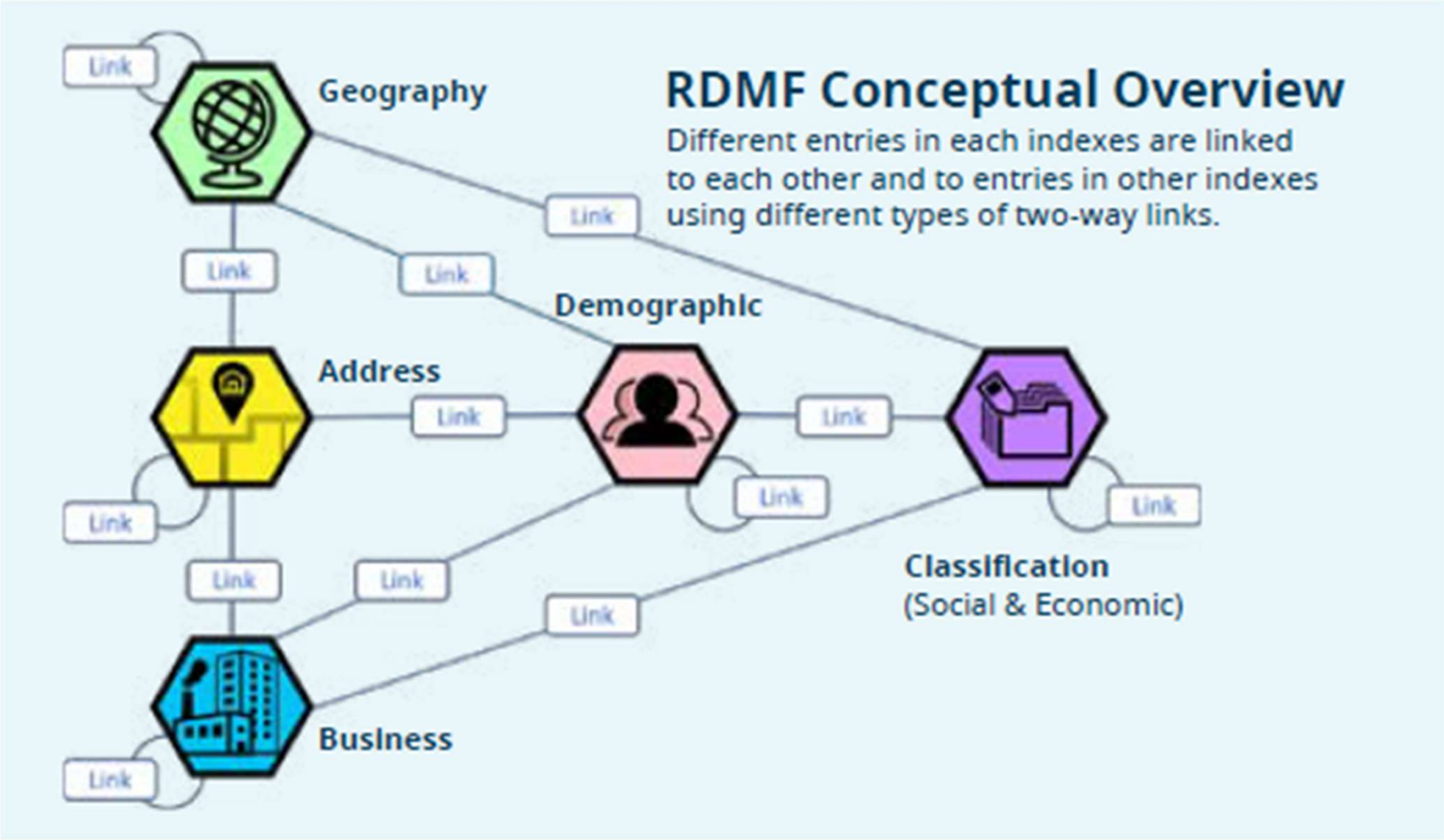
Our vision for the Integrated Data Service (IDS) is to enable the better use of data to improve the policy and decision-making that affects people's lives.

Spearheaded by the Integrated Data Programme (IDP), the IDS will have:

- Data virtualisation with access to more data with more integrated data outputs and content
- Secure and scalable multi-cloud technology, keeping up with tech advancements
- Proactive and streamlined data creation/access with fewer manual processes for accreditation
- Single gateway for data analysis with a standard set of policies for users to apply and common tools to utilise
- Innovative applications and interactive tools with common API connectivity, updated as future needs change

- IDS Data Sources
- https://integrateddataservice.gov.uk/data

Reference Data Management Framework (RDMF)



Publications

Economic

Economic output and productivity
Manufacturing, production and services indices (measuring total economic output) and productivity (measuring efficiency).

Environmental accounts
How the environment contributes to the economy, the impact that the economy has on the environment, and how society responds to environmental issues. This page also hosts the development of
...

Government, public sector and taxes
How the relationship between UK public sector income and expenditure leads to changes in deficit and debt.

Gross Domestic Product (GDP)
Gross domestic product (GDP) estimates as the main measure of UK economic growth based on the value of goods and services produced during a given period. Preliminary, secondary and final
...

Gross Value Added (GVA)
Estimates of regional gross value added (GVA), which is the value generated by any unit engaged in the production of goods and services. Figures available for local authorities and NUTS regions.

Inflation and price indices
The rate of inflation is the change in prices for goods and services over time. Measures of inflation and prices include consumer price inflation, producer price inflation and the House Price Index.

Investments, pensions and trusts
Net flows of investment into the UK, the number of people who hold pensions of different types, and investments made by various types of trusts.

National accounts
The national accounts framework brings units and transactions together to provide a simple and understandable description of production, income, consumption, accumulation, and wealth.

Regional accounts
Accounts for regions, sub-regions and local areas of the UK, allowing comparisons between regions and against a UK average. Including regional gross value added (GVA) and regional
...

Business & Trade

Business
UK businesses registered for VAT and PAYE with regional breakdowns, including data on size (employment and turnover) and activity (type of industry), research and development, and business services.

Changes to business
UK business growth, survival and change over time. These figures are an informal indicator of confidence in the UK economy.

Construction industry
Construction of new buildings and repairs or alterations to existing properties in Great Britain measured by the amount charged for the work, including work by civil engineering
...

International trade
Trade in goods and services across the UK's international borders, including total imports and exports, the types of goods and services traded and general trends in international trade.

IT and internet industry
Internet sales by businesses in the UK (total value and as a percentage of all retail sales) and the percentage of businesses that have a website and broadband connection. These figures
...

Manufacturing and production industry
UK manufacturing and other production industries (such as mining and quarrying, energy supply, water supply and waste management), including total UK production output, and UK manufactures'
...

Retail industry
Sales by retailers in Great Britain directly to end consumers, including spending on goods (in store and online) (Retail Sales Index) and spending on services (Index of Services). The industry as a whole is used
...

Tourism industry
Tourism and travel (including accommodation services, food and beverage services, passenger transport services, vehicle hire, travel agencies and sports, recreational and conference
...

Get facts and figures for an area
Includes population, identity, housing,
...

People, Population & Community

Armed forces community
Information about the armed forces community, including those who have previously served in the armed forces (veterans) and their families, to help support the Armed Forces Covenant.

Births, deaths and marriages
Life events in the UK including fertility rates, live and stillbirths, family composition, life expectancy and deaths.

Crime and justice
Crime levels and trends based primarily on the Crime Survey for England and Wales (CSEW) and police recorded crime data.

Cultural identity
How people in the UK identify in terms of ethnicity, sexual identity, religion and language, and how this has changed over time using a diverse range of data sources.

Education and childcare
Early years' childcare, school and college education, higher education and adult learning, including data and analysis on qualifications, personnel, and safety and well-being.

Elections
Analysis of the number of people registered to vote, including comparisons over time and between the UK constituent countries.

Health and social care
Life expectancy, health inequalities, disability and addiction as well as access to and expenditure on private and public healthcare systems.

Household characteristics
The composition of households, including those who live alone, overcrowding and under-occupation, as well as internet and social media usage.

Housing
Property price, private rent and household statistics.

Leisure and tourism
Tourism to the UK, and UK residents travelling abroad, reasons for travel and money spent. The statistics on UK residents travelling abroad are an informal indicator of living standards.

Personal and household finances
Income and earnings, spending and saving, and wealth and debt. These statistics help build a picture of how living standards and inequality have changed.

Population and migration
Size, age, sex and geographic distribution of the UK population, including data on international migration, migration within the UK, changes in the population and the factors driving these changes.

Well-being
Societal and personal well-being in the UK looking at areas such as health, relationships, education and skills, what we do, where we live, our finances and the environment.

Get facts and figures for an area
Includes population, identity, housing,
...

Employment & Labour Market

People in work
Employment data covering employment rates, hours of work and earnings.

People not in work
Unemployed and economically inactive people in the UK including claimants of out-of-work benefits and the number of redundancies.

Population & Migration Statistics Transformation

The importance of population and migration statistics

Population and migration statistics support decisions and policies right across our society and economy at national and local levels and for different communities. For example, they are crucial in determining:

•the amount of housing we need
•the numbers of education places
•other infrastructure requirements

The statistics we produce at the Office for National Statistics (ONS) are a trusted source of official population and migration data. They are used by government departments, local authorities, businesses, charities and many more to inform decisions that affect everyone.

Why we are transforming population and migration statistics

For over 200 years, the census has been the main way of collecting data for population statistics, and they provide an accurate picture of our society at a national and local level. However, it only happens every 10 years. Census data are updated each year with survey and administrative data. However, these statistics become less accurate over the decade and local detail on important topics is not available between census years.

Policy users and decision makers have often told us they would benefit from more frequent and timely statistics. Greater use of administrative data will help us meet these needs.

Using a range of sources from across government and the public sector, we can produce more timely and frequent local area statistics about the size and structure of the population and its characteristics. For more information on the dynamics of population change, please see our Dynamic population model for England and Wales: July 2022 article.

The proposed transformed statistical system is responsive to changing user needs and will provide users with more frequent population statistics with consistently high quality every year.

Watch our animated video to find out more about why we are transforming the way we produce statistics.

Administrative data

Administrative data are data that we have primarily collected for administrative or operational purposes. They are made up of information that we all provide when we access public services like the tax, benefits, health and education systems. For example, we use the numbers of registered births and deaths along with health and census data to create statistics on health inequalities in different social classes, based on a person's occupation.

Video – transforming the way ONS Collects Data

https://www.youtube.com/watch?v=WoFp3wuyzEY

Short video – 2mins 40 sec

Census 2021, DIY Maps & User-Analysis Tools

https://www.ons.gov.uk/census

https://www.ons.gov.uk/census/maps/

Census map example for Tiverton

https://explore-local-statistics.beta.ons.gov.uk/areas/E07000042-mid-devon/indicators

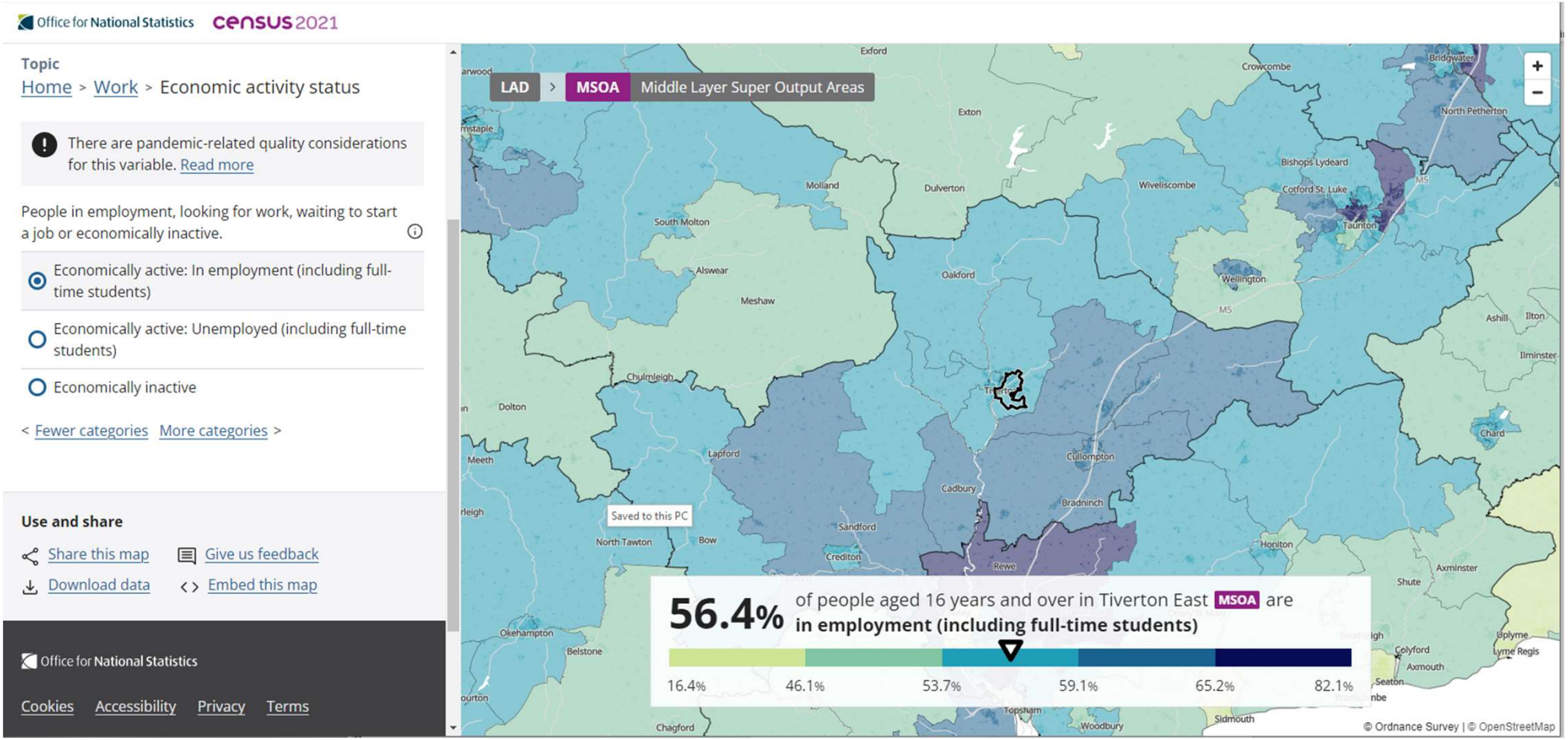
Change Over time Mid-Devon https://www.ons.gov.uk/visualisations/censusareachanges/E07000042/

Custom Profiles - https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/buildacustomareaprofile/2023-01-17

More generally……
https://www.nomisweb.co.uk/sources/census_2021

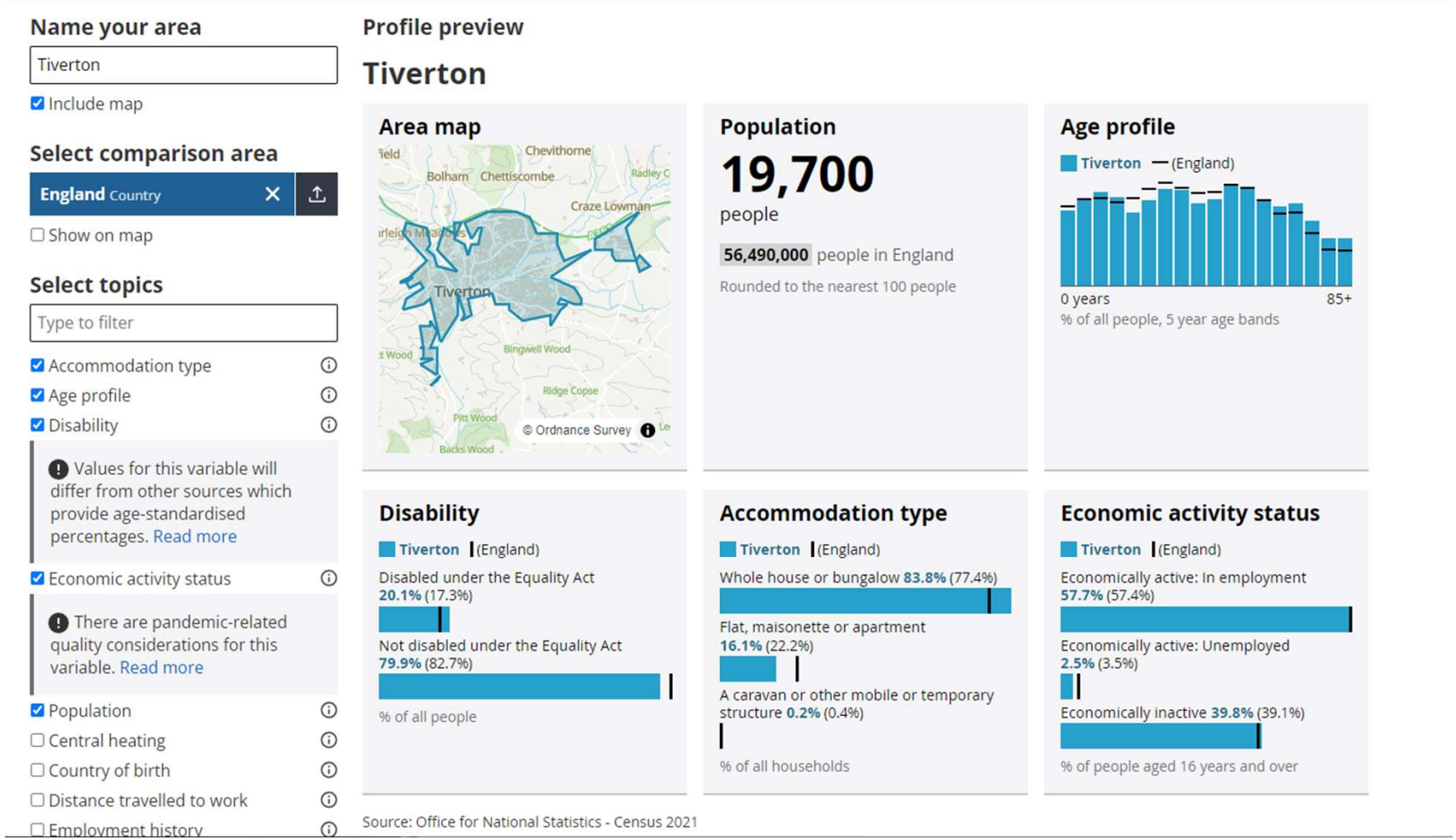
Census Maps

Tiverton Economic Activity example (click to display)



Custom Profiles

Tiverton Built-Up Area Local Profile example (click to display)



Further references

- Statistically Speaking – The ONS Podcast
- Personal Inflation calculator
- External data sources utilised

- UK Statistics Authority website
- The ONS website
- Nomis website
- Office for National Statistics Youtube
- Studies and surveys
- Commissioned tables
- Research collaborations