



Department
for Work &
Pensions

Registration And Population Interaction Database (RAPID)

Population Interactions with
Employment, benefits and pensions - UK

Customer Journeys

Number of Employments

2010/11 to 2023/24

Employment

Monthly data

Annual summary

Self-Employment

Earnings

Children

100%

RAPID

Pensions

Demographics

Inactivity

Benefits

Care responsibilities

Benefit Relationships

Medical Conditions

Residency

Income

Benefit take-up

Migration

Poverty measures

Income sources

LSOA/MSOA

Population

Census Output Areas

NINO Registrations

United Kingdom



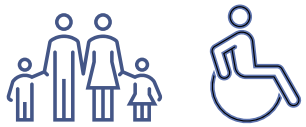
An overview of RAPID



- RAPID has been developed to provide a longitudinal activity based population dataset that enables analyses of interactions with employment, education, benefits and pensions over time.



- RAPID brings together all people with a National Insurance Number (NINO), (including children). Each tax year has between 79 and 89 million records.



- It provides an overview of someone's interactions throughout the year, and the income generated from those interactions;
- It provides durations of each activity and the months that the activity happened in;
- It enables analysis of interdependencies, overlaps and transitions between activities;
- It provides some household linkages for some people on benefits.



- 100% data enables small area and small population analyses.
- Data treatment to avoid re-identification.



RAPID coverage

Population



Covered:

- UK Coverage
- Geography (to LA)
- Children
- Adults
- Some household links
- 2010/11 onwards
- Resident/active measure

Not covered:

- All household links
- Special populations (prisoners, foreign forces etc)

Demographics



Covered:

- Birth tax year
- Age @ 30 June
- Sex
- Death tax year
- State Pension tax year
- Alive post 05/04/2010
- Nationality at NINO Registration (UK, EU, RoW)

Not covered:

- Ethnicity
- Current Nationality
- Marital /relationship Status
- Gender

Activities



Covered:

- Durations
- EOM & DTM Indicators
- Benefits by type
- Employment
- Self Employment
- Occupational & personal pensions
- Benefit relationships

Not covered:

- Individual employment detail
- Hours worked
- Qualifications

Income



Covered:

- Benefit income
- Employment income
- Self employment profit
- Pensions in payment (State Pension & Private)

Not covered:

- Investment income
- Savings
- Maintenance pymts
- Winter Fuel
- Outgoings, debt & housing costs

Disability & Care



Covered:

- Disability condition
- Component combinations
- Care relationship
- Mobility /Daily Living elements
- Universal Credit Health Journey

Not covered:

- Medical Condition for Scottish benefits
- Disabled but not on benefit



Benefits of RAPID



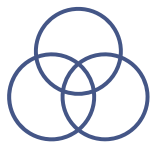
- United Kingdom coverage;
- 100% coverage of all people with a NINO and an overview of their activities in the year;



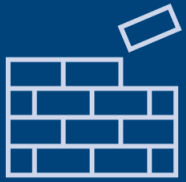
- Enables small area & small population analyses;
- Potential for partial income estimates;



- Longitudinal element to assess trends and transitions over time;
- Easily analysable and simple to understand – Flat file format - 1 row per person per tax year, with columns for each variable;
- Analysis ready – Clean data with no additional linking needed;

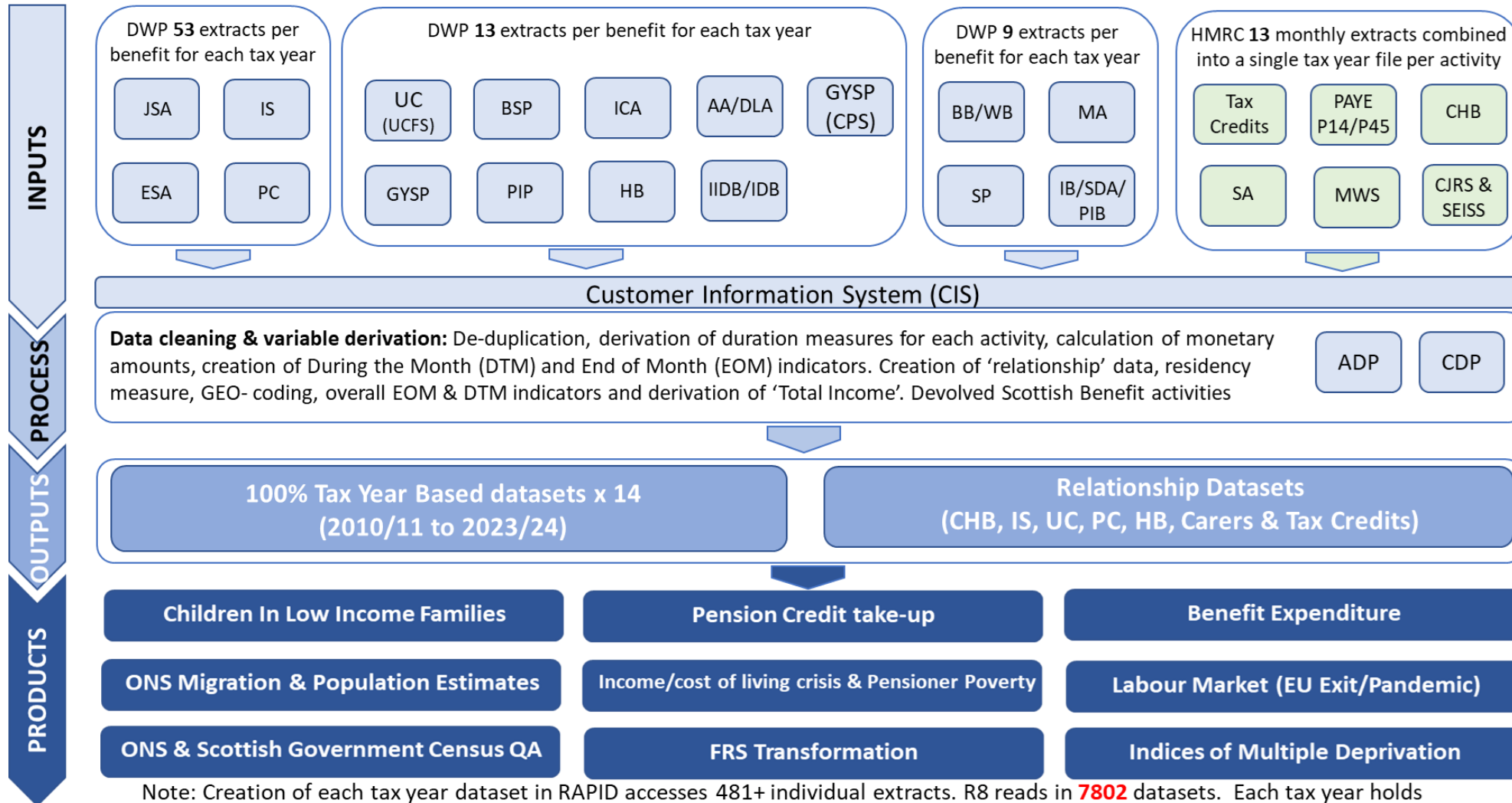


- Enables point in time analyses;
- Enables transitions between activities month on month;
- Enables analysis at a household level (for some groups);



Building RAPID

RAPID Release 8 SRS PROCESS FLOW

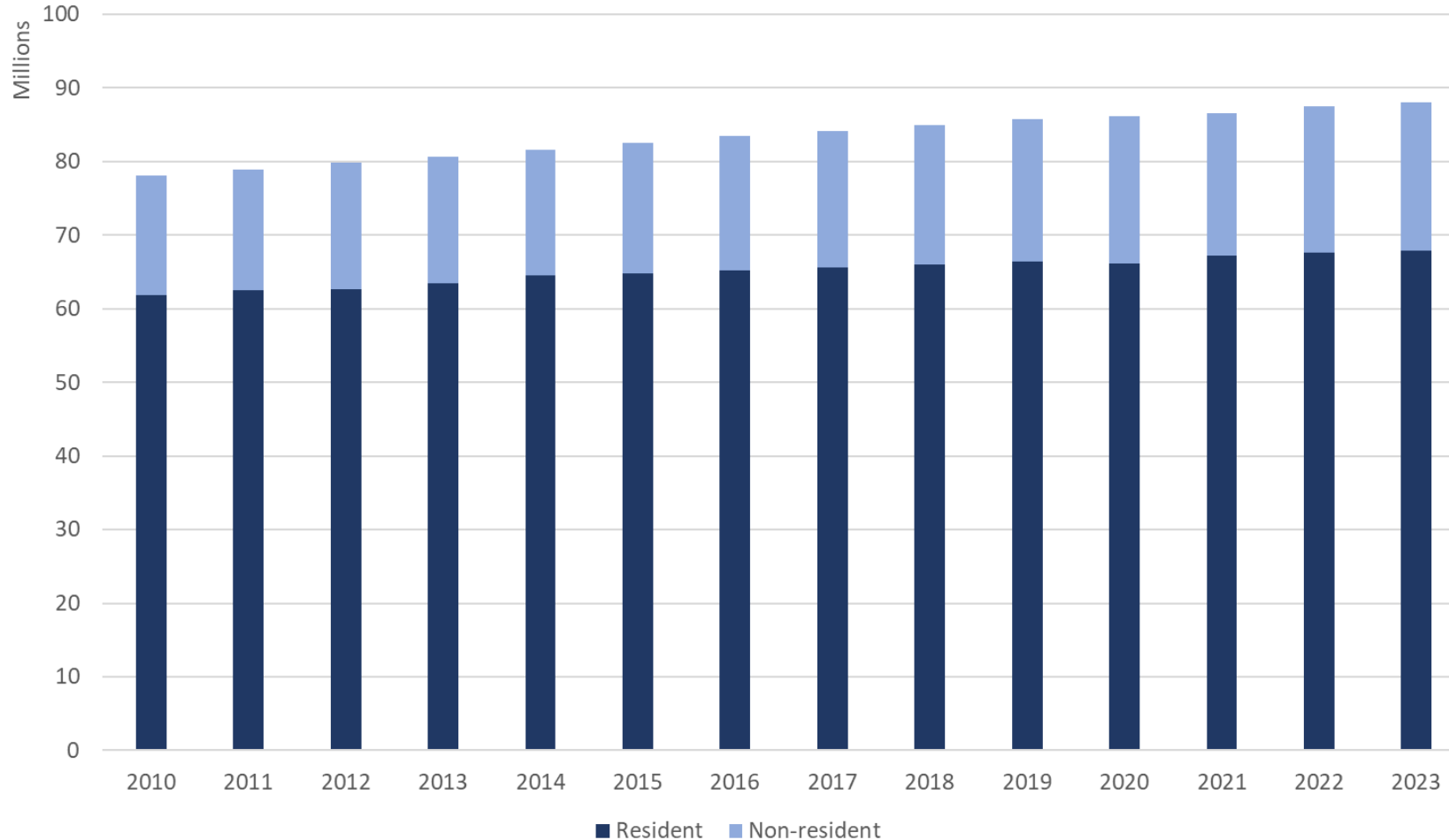


Note: Creation of each tax year dataset in RAPID accesses 481+ individual extracts. R8 reads in **7802** datasets. Each tax year holds between **79 and 89 million records**.

Records in RAPID – resident /non-resident estimates

RAPID R8

Total records in each tax year, by derived residency status



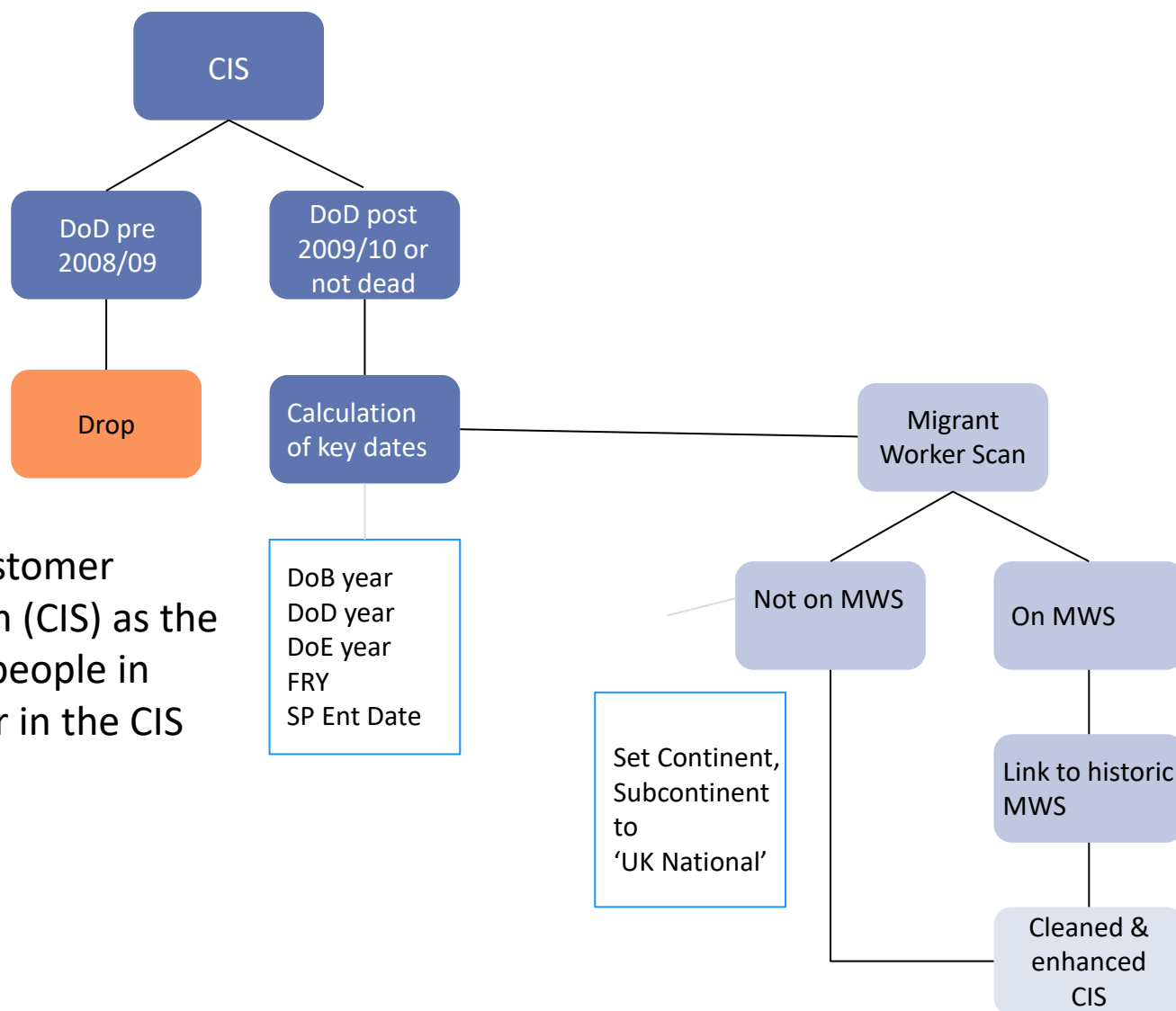
RAPID brings all people who are alive at some point during the year into the creation process.

Some people may no longer be resident in the UK but their NINO record is maintained as they may have accrued entitlement to pensions at retirement age.

RAPID uses the presence of 'activity' in the year to create an estimate of the resident population.

Some People may remain in the data after death if the death has not been notified.

Processing information about the 'Person'



RAPID uses the Customer Information System (CIS) as the person 'spine'. All people in RAPID must appear in the CIS data.

Records are linked to the Migrant Worker Scan (MWS) to capture details of nationality at the point of NINO registration. This is rarely updated after registration.

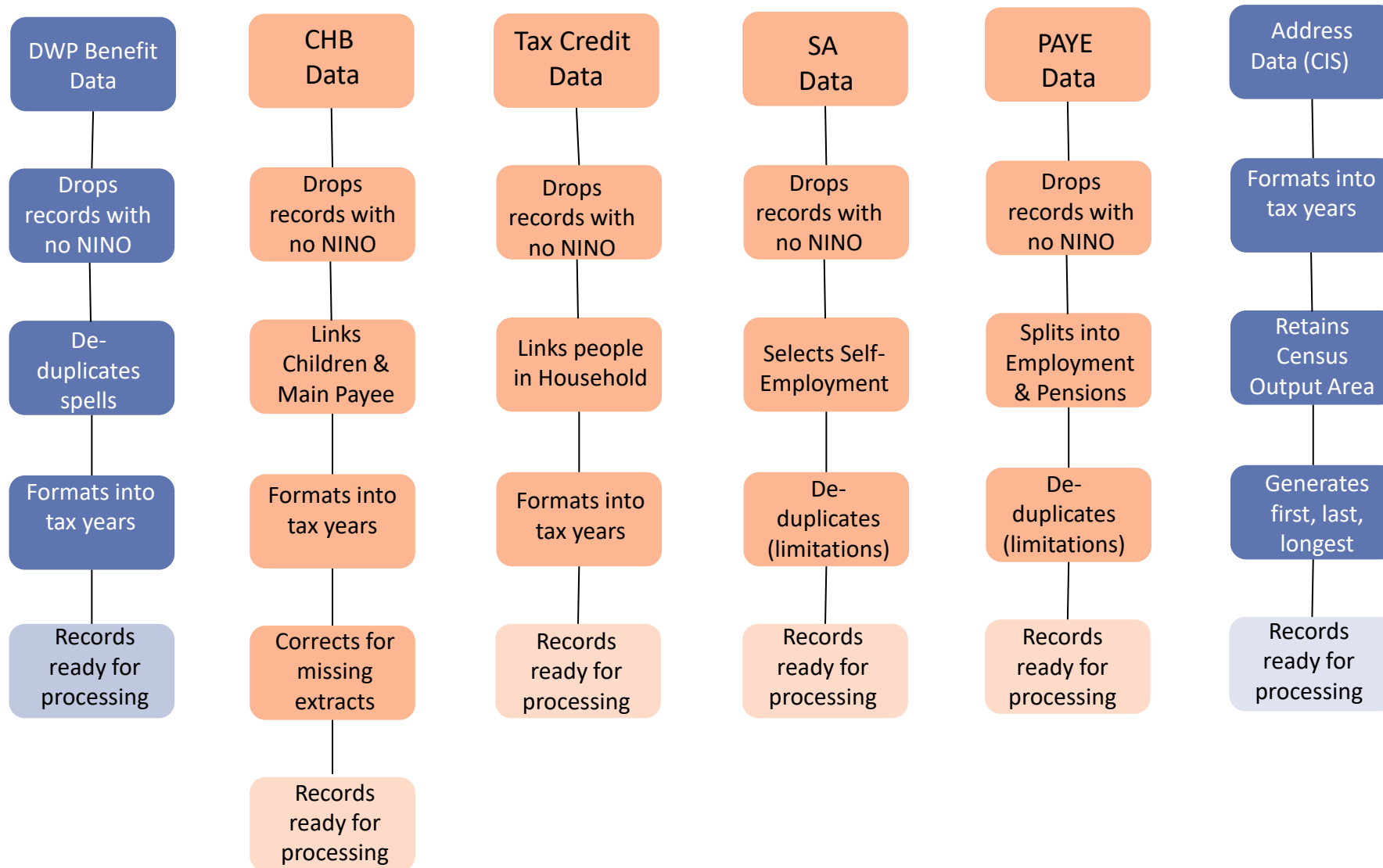
Anyone registering before 1975 is classed as a UK National.

MWS only captures adult registrations.

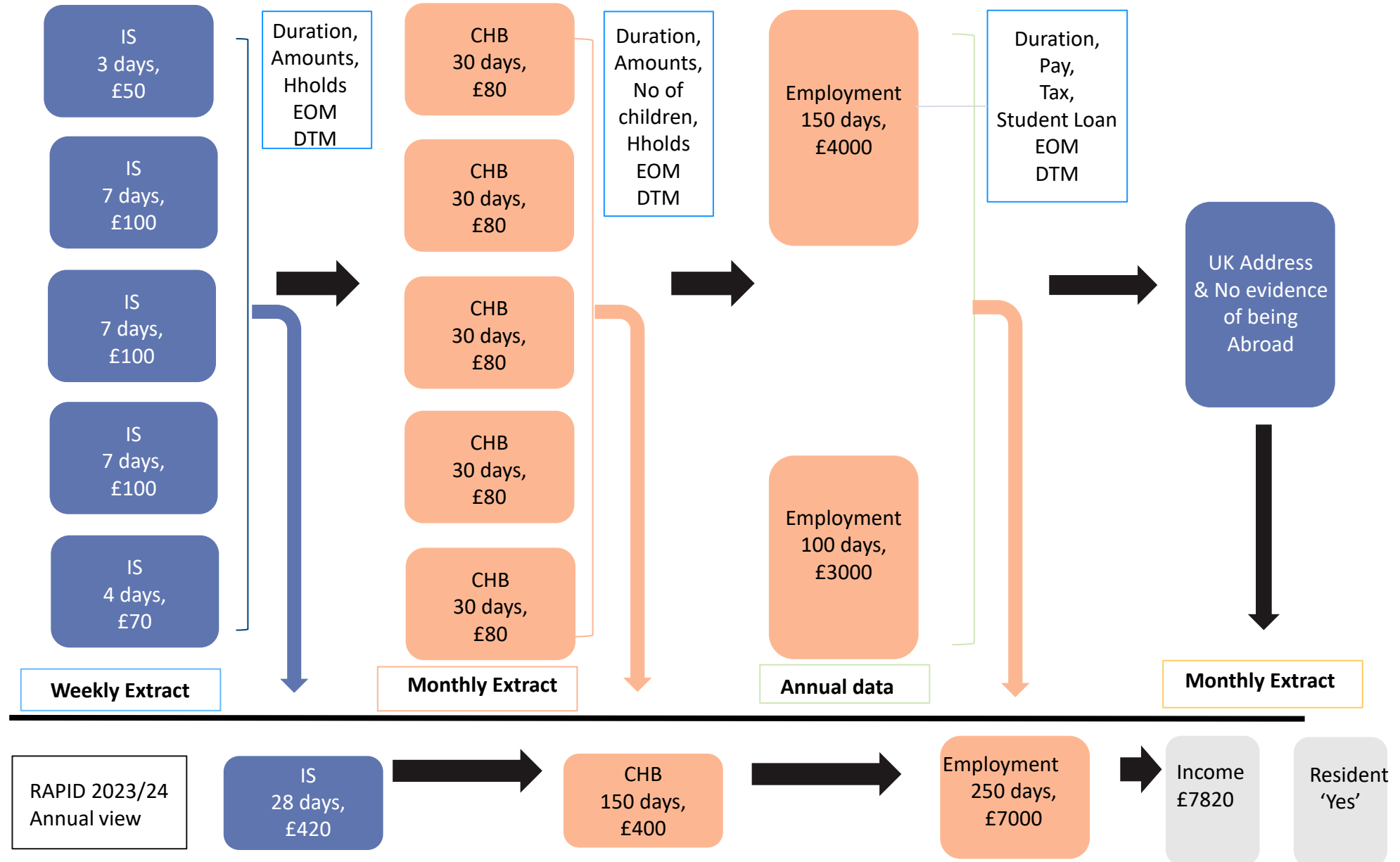
Set Continent, Subcontinent to 'UK National'

Derive Continent, Subcontinent, Country, Reg Year, Arrival year, DoE Year

Data cleaning & preparation of activity data



Generating the activities by tax year.....



During the Month (DTM) and End of the Month (EOM) Indicators

- RAPID uses the start and end dates of each activity in RAPID, in combination with the data extract dates to generate During the Month (DTM) and End of Month (EOM) indicators.
- The indicators are created for every activity and every relationship in RAPID, enabling analysis of the months within the year the activity or relationship was current.
- The EOM and DTM variables can be binary or hold values giving even more insight.

Employed	1 Feb 2020 to 6 June 2020							1 Nov 2020 to (ongoing)				
	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
Employment_DTM	1	1	1	0	0	0	0	1	1	1	1	1
Employment_EOM	1	1	0	0	0	0	0	1	1	1	1	1

Employment_DTM = 111000011111

Employment_EOM = 110000011111

Universal Credit (UC) EOM & DTM values

Example: 2 awards of UC in the year, 1/2/20 to 6/6/20 & 1/11/20 ongoing (0 or A-Z values)

UC Claims	1 Feb 2020 to 6 June 2020							1 Nov 2020 to (ongoing)				
	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
UC_DTM	A	A	B	0	0	0	0	E	A	A	B	B
UC_EOM	A	A	0	0	0	0	0	E	A	A	B	B

UC_DTM = AAB0000EAABB

UC_EOM = AA00000EAABB

'A'='Searching for work'

'B'='Working - with requirements'

'C'='No work requirements'

'D'='Working - no requirements'

'E'='Preparing for work'

'F'='Planning for work'

'N'='Not Applicable'

'Z'='Not known'

In the is example the EOM and DTM values have been re-purposed to show the conditionality of the Universal Credit award.

This enables analysis of the people on UC and their changes in conditionality over time

Personal Independence Payments (PIP) EOM & DTM values

Example: 2 awards of PIP in the year, 1/2/20 to 6/6/20 & 1/11/20 ongoing (0 or A-Z values)

PIP Claim	1 Feb 2020 to 6 June 2020							1 Nov 2020 to (ongoing)				
	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
PIP DTM	A	A	B	0	0	0	0	E	A	A	B	B
PIP EOM	A	A	0	0	0	0	0	E	A	A	B	B

PIP_DTM = AAB0000EAABB

PIP_EOM = AA00000EAABB

'A'="Daily living Enhanced only"

'B'="Daily Living Enhanced and Mobility Enhanced"

'C'="Daily Living Enhanced and Mobility Standard"

'D'="Daily Living standard and Mobility Enhanced"

'E'="Daily Living standard and Mobility Standard"

'F'="Mobility Enhanced only"

'G'="Mobility Standard only"

'H'="Daily living Standard only"

'N'="pip extract amount > 0 but no component allocated"

'X'="Miscellaneous"

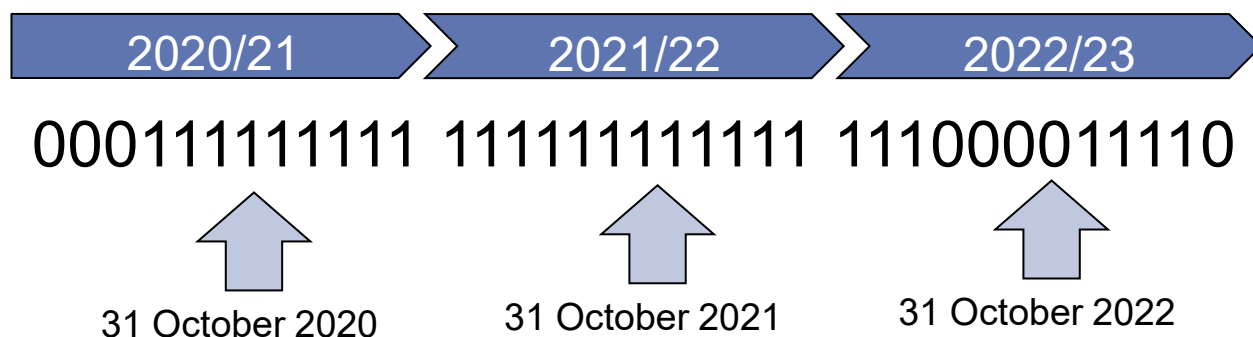
'Z'="Zero Payment Cases"

In the is example the EOM and DTM values have been re-purposed to show the component combinations and rates of the PIP award.

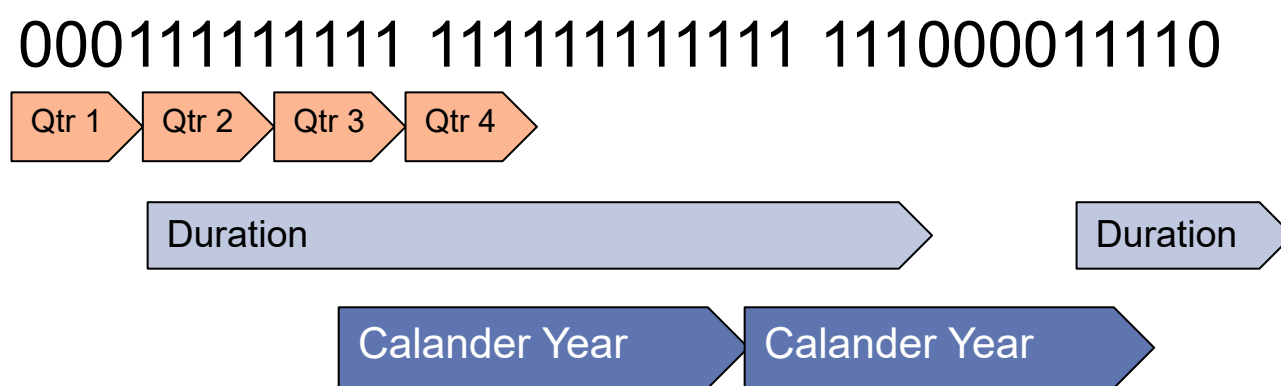
RAPID Layout and Combining EOM/DTM across years

RAPID Data example												
NINO	DOB	DOD	TAXYEAR	EMPLOYMENT_DTM_IND	EMPLOYMENT_EOM_IND	EMPLOYMENT_TOT_WKS	EMPLOYMENT_ANN_AMT	UC_EOM_IND	UC_DTM_IND	UC_TOT_WKS	UC_TOT_P_AMT	RESIDENT
A1	18/12/1965	.	2024	111111111111	111111111110	50	35000	.	.	.	.	YES
B2	01/01/1945	02/02/2023	2024	.	.	.	.	.	.	.	.	NO
C3	10/10/1972	.	2024	000001111110	000001111100	28	22000	000000000011	000000000011	7	2345	YES
D4	30/06/2008	.	2024	.	.	.	.	.	.	.	.	NO

EOM
(Point in time)



DTM
(Spells & Durations)

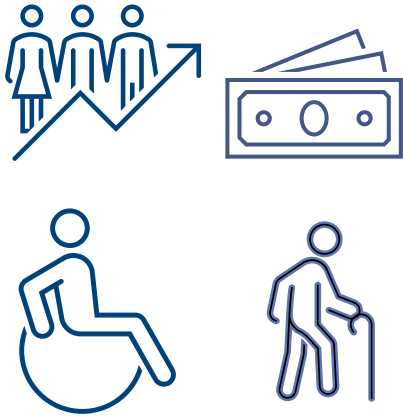


The RAPID data is created in flat file format, like an EXCEL spreadsheet, with 1 row per person per tax year, and columns for each activity.

The EOM and DTM indicators can be combined across years to generate new measures, e.g. point in time, quarterly analyses, duration analyses or Calander year analyses.



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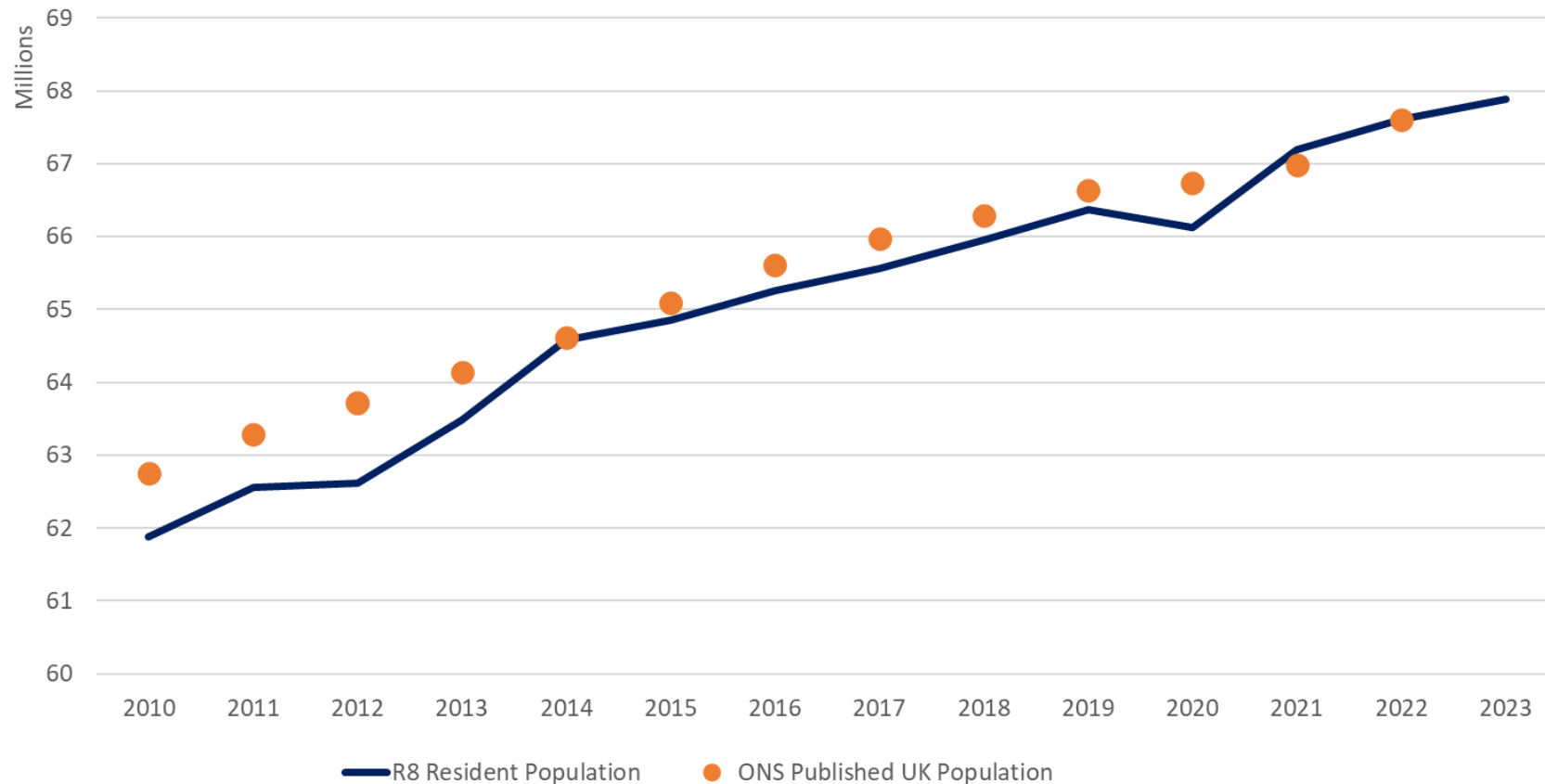


RAPID: Analysis examples

RAPID Activity based population (UK) compared to ONS Mid-year estimates

RAPID activity based resident UK population v ONS Published

Notes: Pre 2014 excludes the majority of self employment records. 2021 onwards includes Child Benefit High Income Cap families



RAPID population is not defined and derived in the same way as ONS estimates.

People in RAPID who do not interact will be classed as non-resident in the year. This will include some students, some prisoners and some people who survive on partner income.

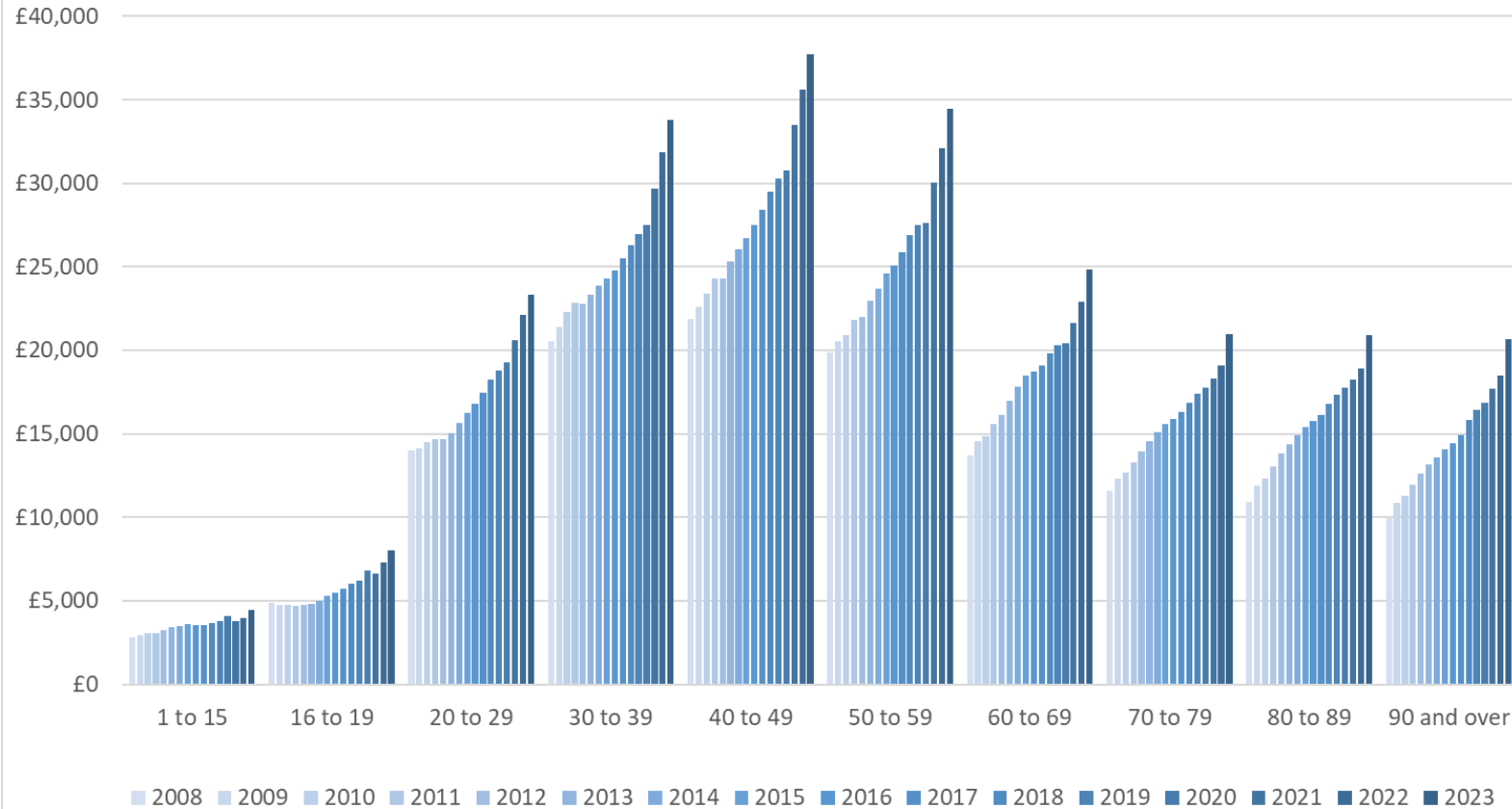
Includes some people that are excluded from ONS estimates, e.g. short-term residents who have registered for a NINO and worked in the year

RAPID Income measure

RAPID R8

Average annual income by age and tax year

Note: Excludes income from investment, stocks, shares and dividends



RAPID income is not defined and derived in the same way as ONS estimates.

RAPID excludes income from the following sources:

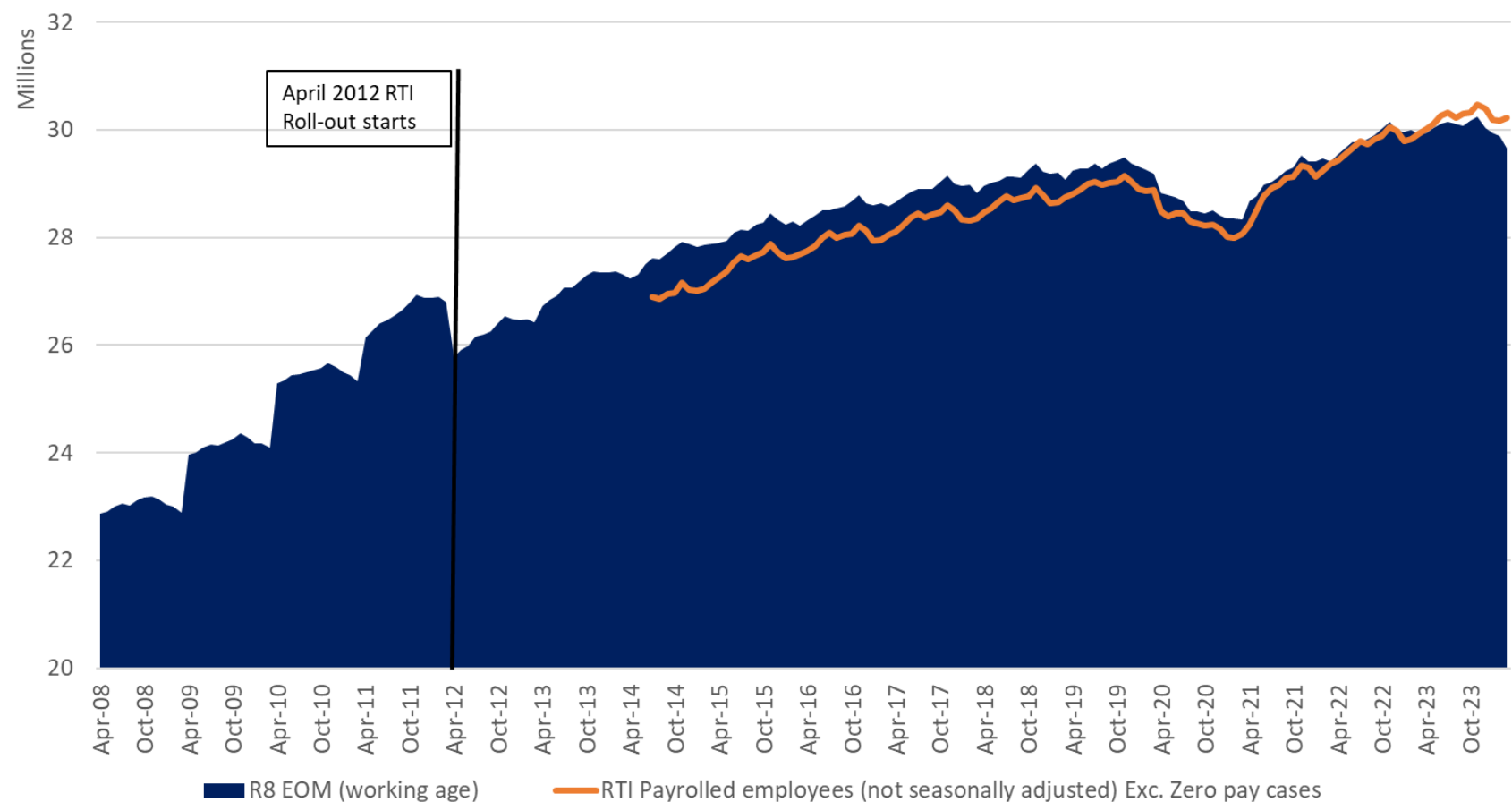
- Child Maintenance income
- Cold weather & Winter Fuel payments
- Investment return
- Dividends, Stocks & Shares
- Insurance & compensation payments
- Self Invested Private Pension income not declared as Self Employment
- Additional benefits paid by devolved governments, e.g. Scottish Child Payment
- Non-declared income

RAPID - Employees at end of month (April 2008 to March 2025)

RAPID 8 Employment

People employed at the end of the month

(Working age employees. Includes people with no pay in the month) &
RTI Employees (excludes zero pay records)



RAPID employment measure is calculated using the End of Month indicators. This is the most comparable measure when comparing to published HMRC's Real Time Information (RTI) estimates.

The RTI estimates are based on monthly returns from employers, where there has been pay in the month.

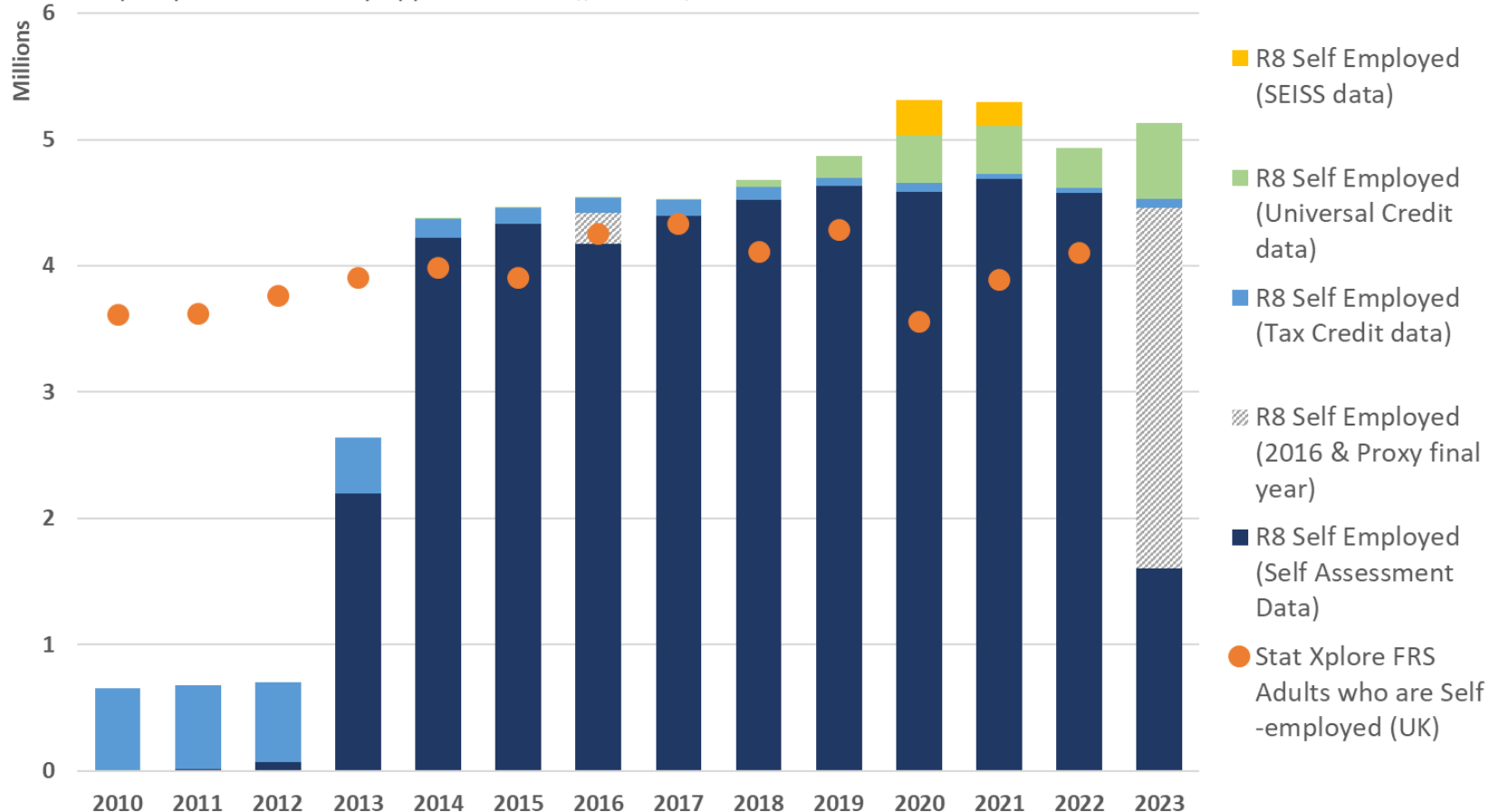
The RAPID data uses annual data, derived from RTI. The RAPID measures are based on contractual start and end dates of employment, which may include periods within the year that have no pay, e.g. zero hour contract workers.

RAPID – Self Employment by data source

Self-Employment by Source UK

RAPID R8 (during the year) v FRS (point in time)

Note: self assessment data incomplete prior to 2013. 2016 is incomplete and 2023 is provisional so both use proxy rules. Hierarchy applies to 1st SA,, 2nd UC, 3rd TC and 4th SE



The self employment measures in RAPID are deficient before 2014/15. The Self Assessment data from HMRC was only supplied from 2013/14 onwards and only became complete from 2014/15.

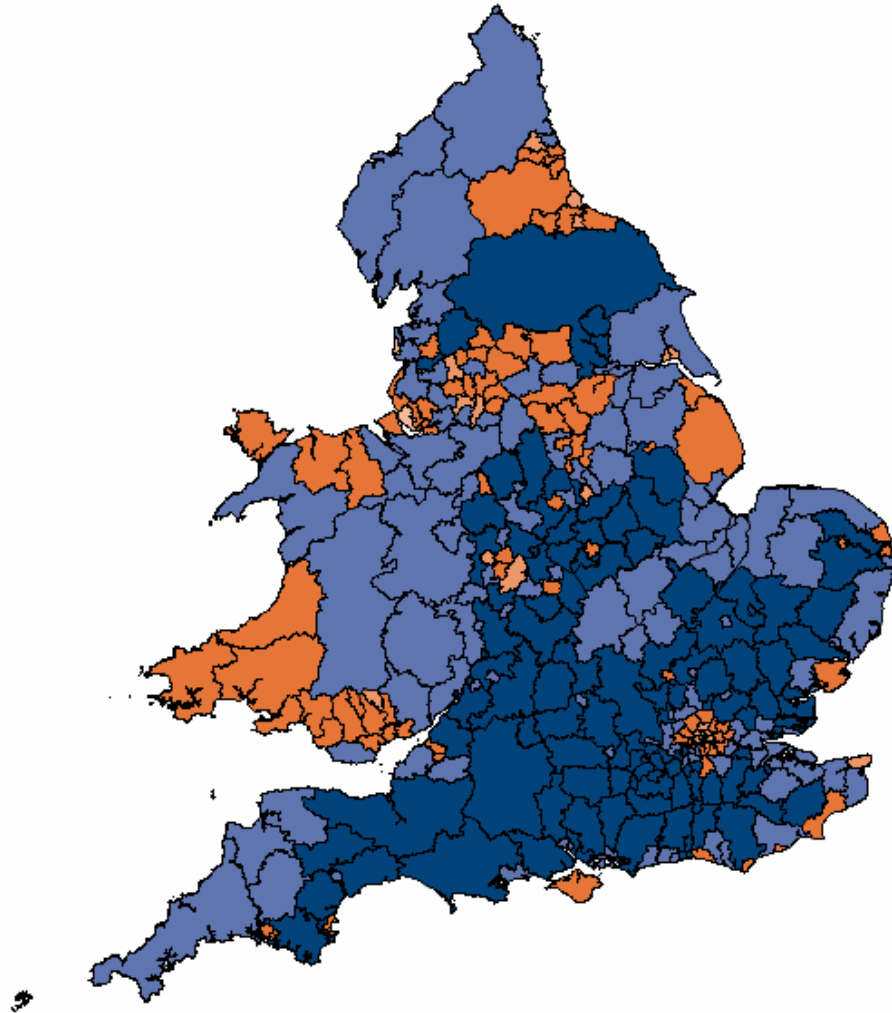
This impacts both the residency and income measures in RAPID. People who's only activity was self employment may not be classified as resident as they would have no observable activity. Anyone with self employment income pre-2014 will have this element excluded from the total income measures.

The latest tax year uses proxy rules to fill the self employment activity gap.

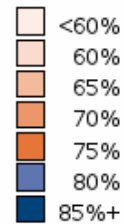


All employment rate (PAYE employees and Self Employment) by LA MEN. Aged 18-59, England & Wales and London (2014/15 to 2023/24) (Rate Scale <60% to 85%+)

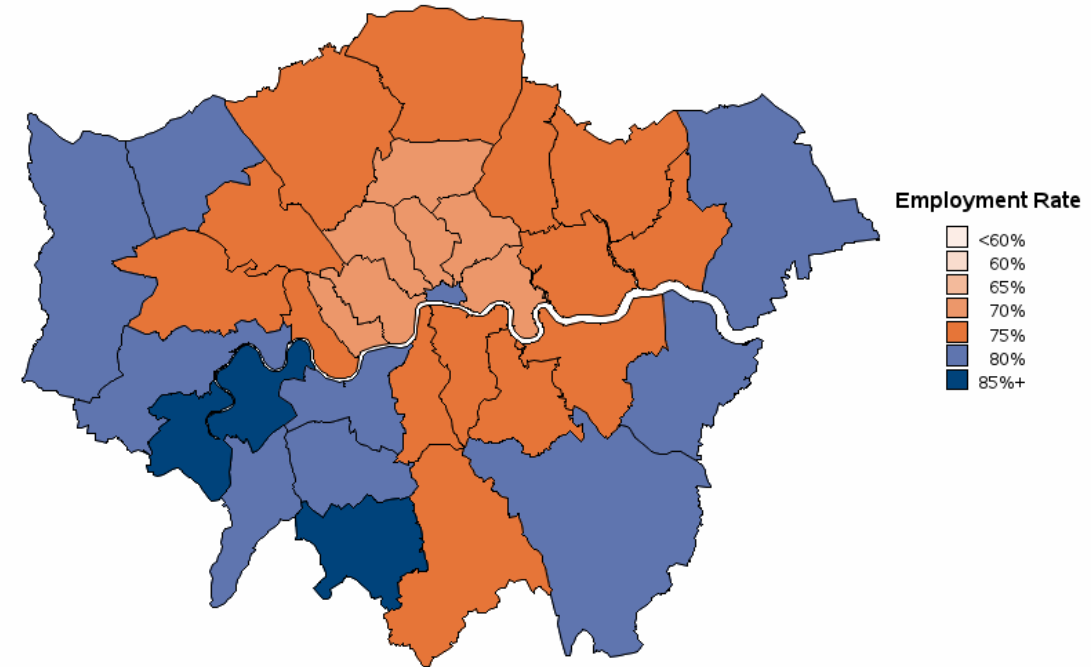
Tax Year 2014 - Employment Rate - Men aged 18-59 by LA



Employment Rate



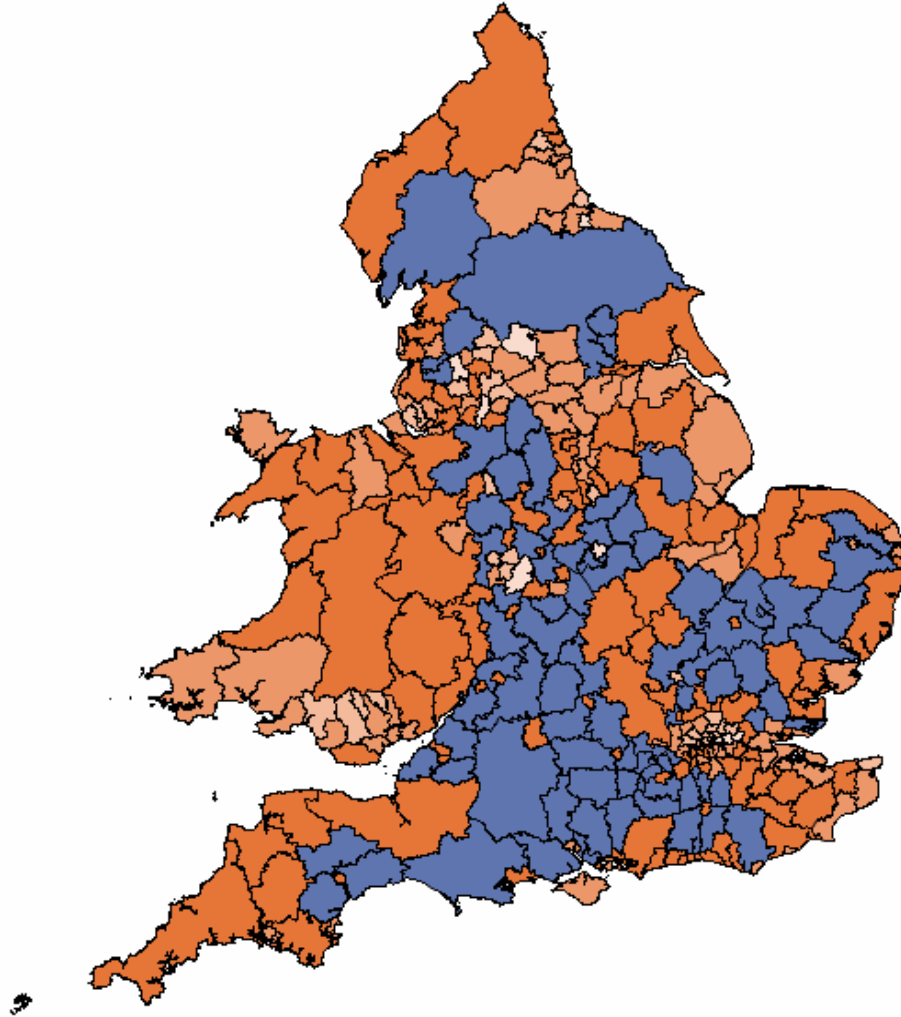
Tax Year 2014 - Employment Rate - Men aged 18-59 by LA



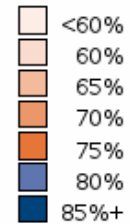


All employment rate (PAYE employees and Self Employment) by LA WOMEN. Aged 18-59, England & Wales and London (2014/15 to 2023/24) (Rate Scale <60% to 85%+)

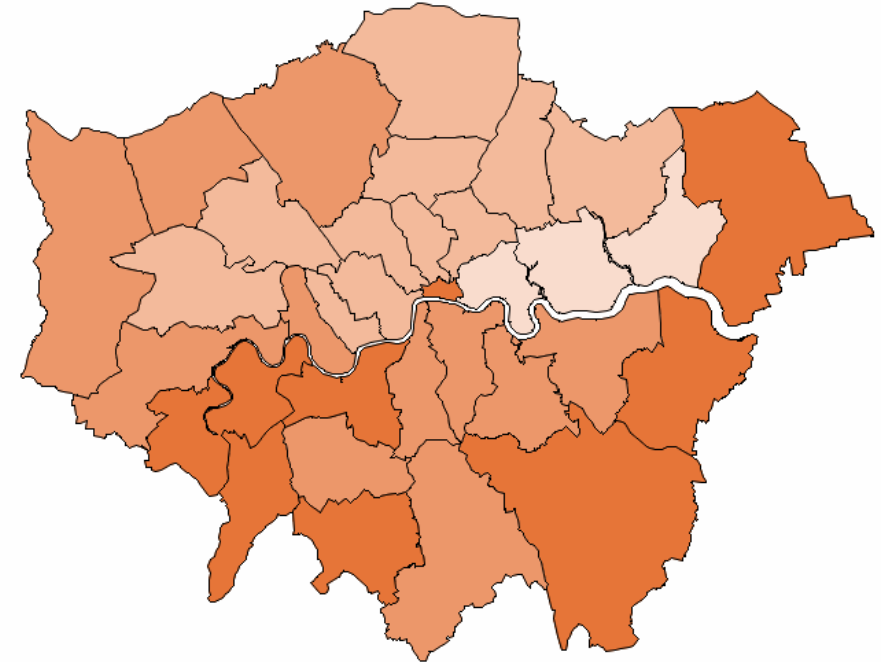
Tax Year 2014 - Employment Rate - Women aged 18-59 by LA



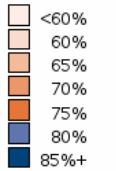
Employment Rate



Tax Year 2014 - Employment Rate - Women aged 18-59 by LA



Employment Rate





Income-Related Benefit rates by LA (2014/15 to 2023/24)

MEN. Aged 18-59, England & Wales and London

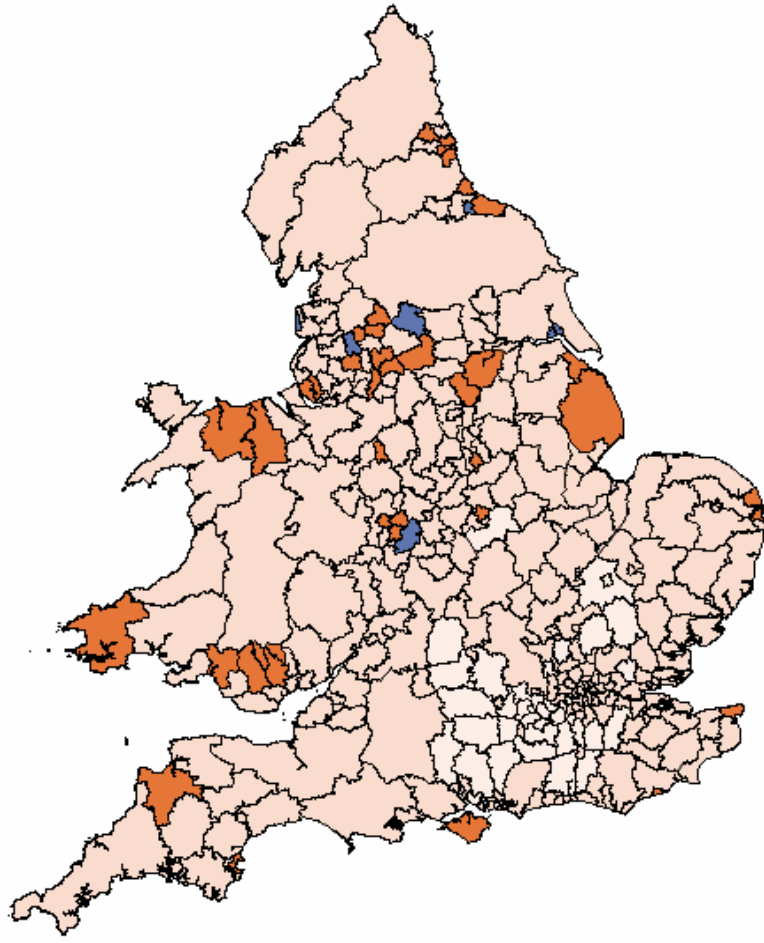
(Rate Scale <5% to 40%+)

Year 2014 - Income-Related Benefit Uptake, Male 18-59

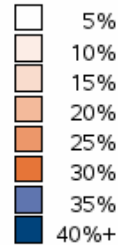
counts the uptake of at least one of JSA(income-based elements), ESA (Income-Based elements), WTC, CTC, HB, UC, IS, P

Year 2014 - Income-Related Benefit Uptake, Male 18-59, LONDON

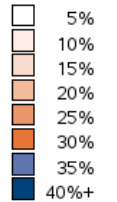
counts the uptake of at least one of JSA(income-based elements), ESA (Income-Based elements), WTC, CTC, HB, UC, IS, PC



Income-Related Benefit Uptake



Income-Related Benefit Uptake





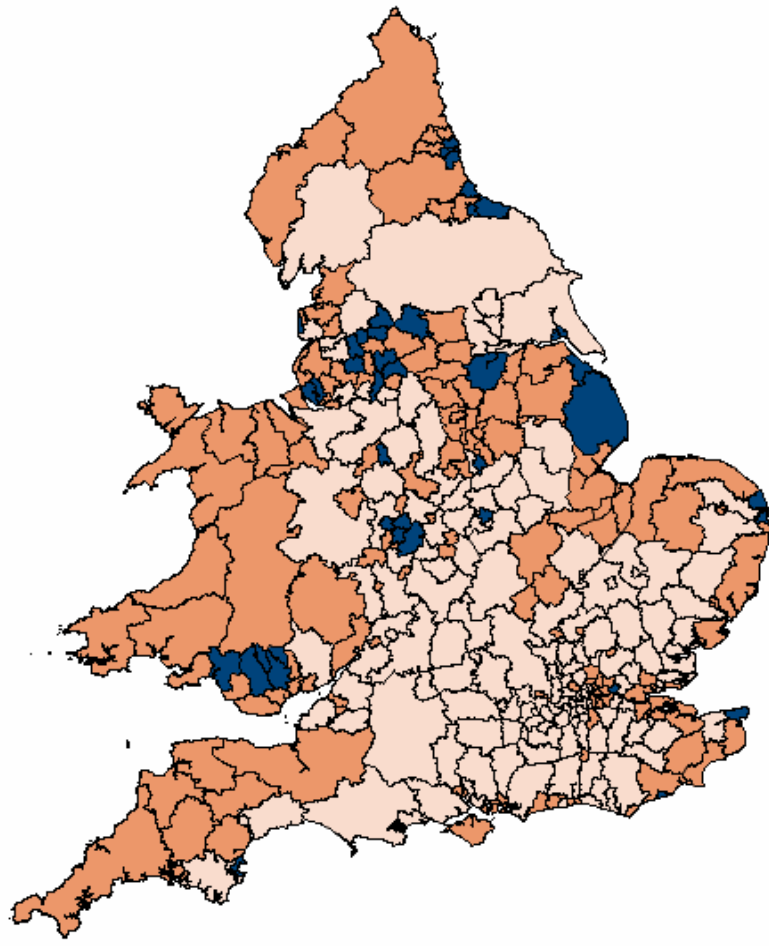
Income-Related Benefit rates by LA (2014/15 to 2023/24) WOMEN. Aged 18-59, England & Wales and London (Rate Scale <5% to 40%+)

Year 2014 - Income-Related Benefit Uptake, Female 18-59

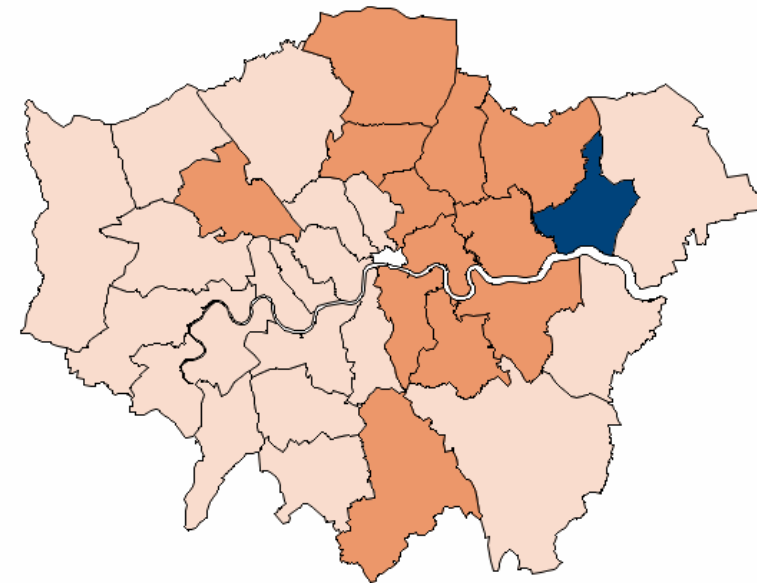
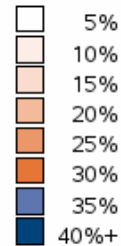
counts the uptake of at least one of JSA(income-based elements), ESA (Income-Based elements), WTC, CTC, HB, UC, IS, P

Year 2014 - Income-Related Benefit Uptake, Female 18-59, LONDON

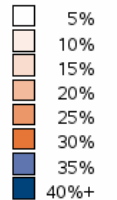
counts the uptake of at least one of JSA(income-based elements), ESA (Income-Based elements), WTC, CTC, HB, UC, IS, PC



Income-Related Benefit Uptake



Income-Related Benefit Uptake





Income-Related Benefit rates by LA (2014/15 to 2023/24)

MEN. Aged 60+, England & Wales and London

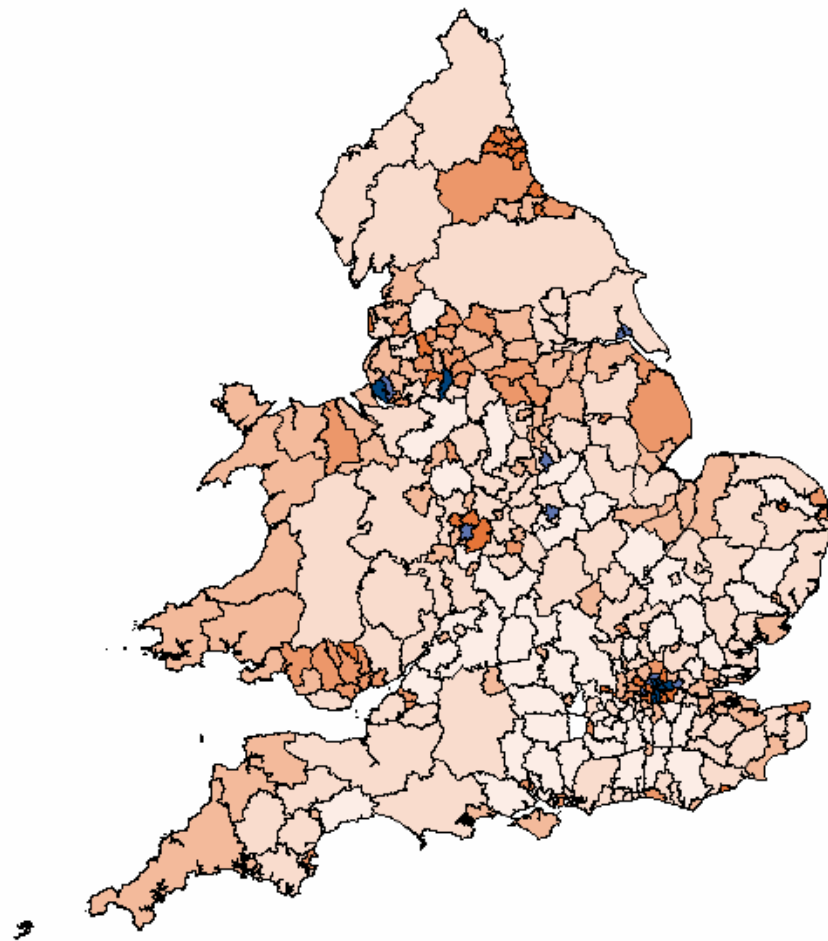
(Rate Scale <5% to 40%+)

Year 2014 - Income-Related Benefit Uptake, MALES AGE 60+

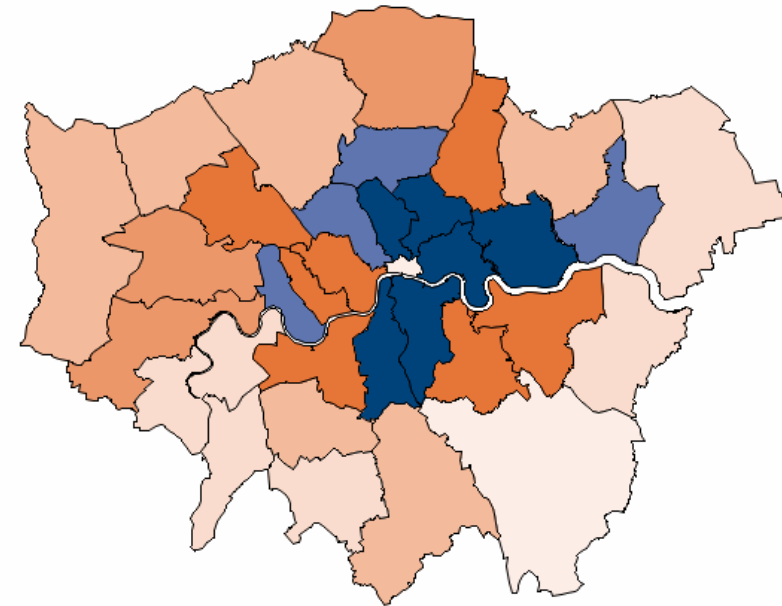
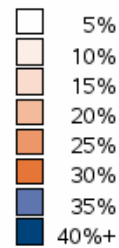
counts the uptake of at least one of JSA(income-based elements), ESA (Income-Based elements), WTC, CTC, HB, UC, IS, PC

Year 2014 - Income-Related Benefit Uptake, MALES AGE 60+, London

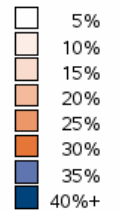
counts the uptake of at least one of JSA(income-based elements), ESA (Income-Based elements), WTC, CTC, HB, UC, IS, PC



Income-Related Benefit Uptake



Income-Related Benefit Uptake





Income-Related Benefit rates by LA (2014/15 to 2023/24)

WOMEN. Aged 60+, England & Wales and London

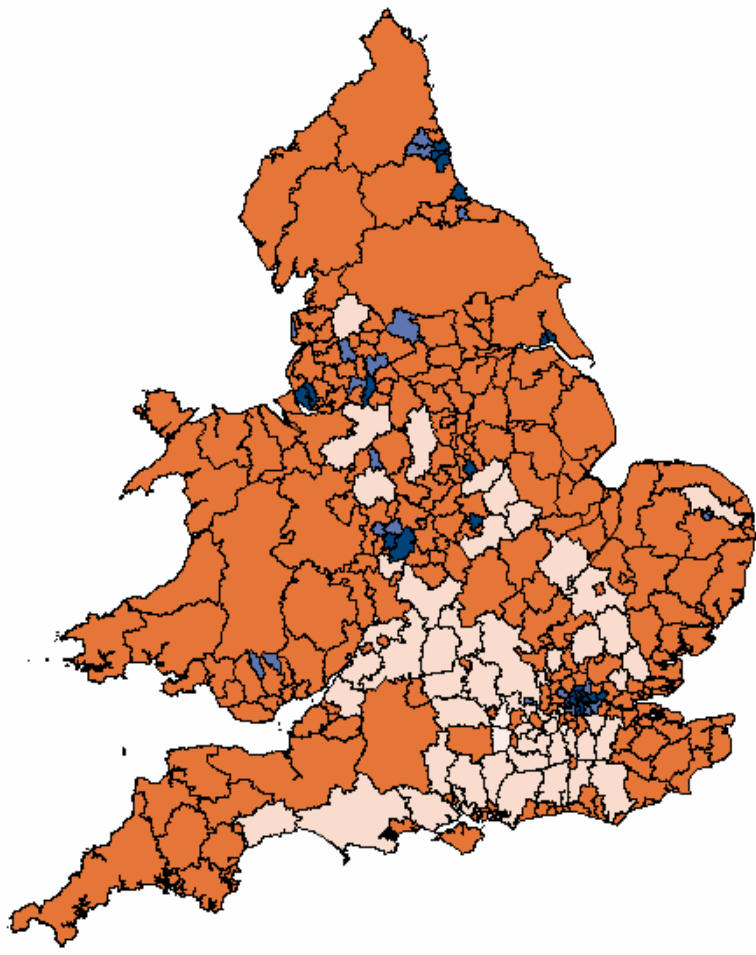
(Rate Scale <5% to 40%+)

Year 2014 - Income-Related Benefit Uptake, FEMALE AGE 60+

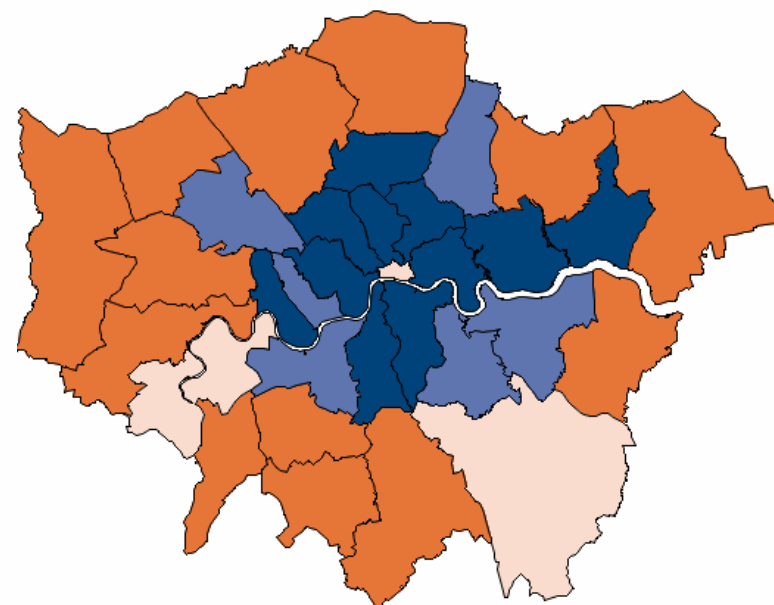
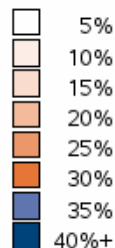
counts the uptake of at least one of JSA(income-based elements), ESA (Income-Based elements), WTC, CTC, HB, UC, IS, PC

Year 2014 - Income-Related Benefit Uptake, FEMALE AGE 60+, London

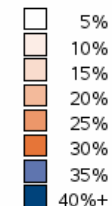
counts the uptake of at least one of JSA(income-based elements), ESA (Income-Based elements), WTC, CTC, HB, UC, IS, PC



Income-Related Benefit Uptake



Income-Related Benefit Uptake

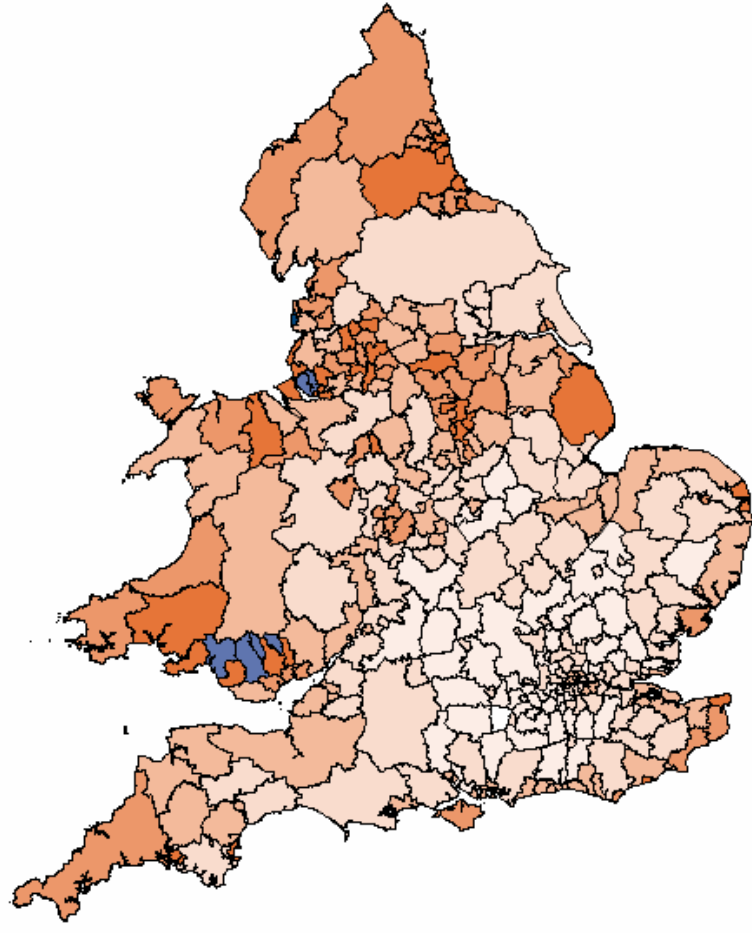




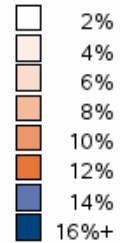
Disability Benefit rates by LA (2014/15 to 2023/24) MEN. Aged 18–59, England & Wales and London (Rate Scale <2% to 16%+)

Year 2014 - Disability Benefit Uptake, 18-59, males

Must be on at least one of more of these benefits in a month: ESA, II, IB, DLA, AA, PIP, UC Health, SDA



Disability Benefit Uptake

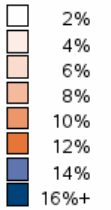


Year 2014 - Disability Benefit Uptake, 18-59, males, London

Must be on at least one of more of these benefits in a month: ESA, II, IB, DLA, AA, PIP, UC Health, SDA



Disability Benefit Uptake





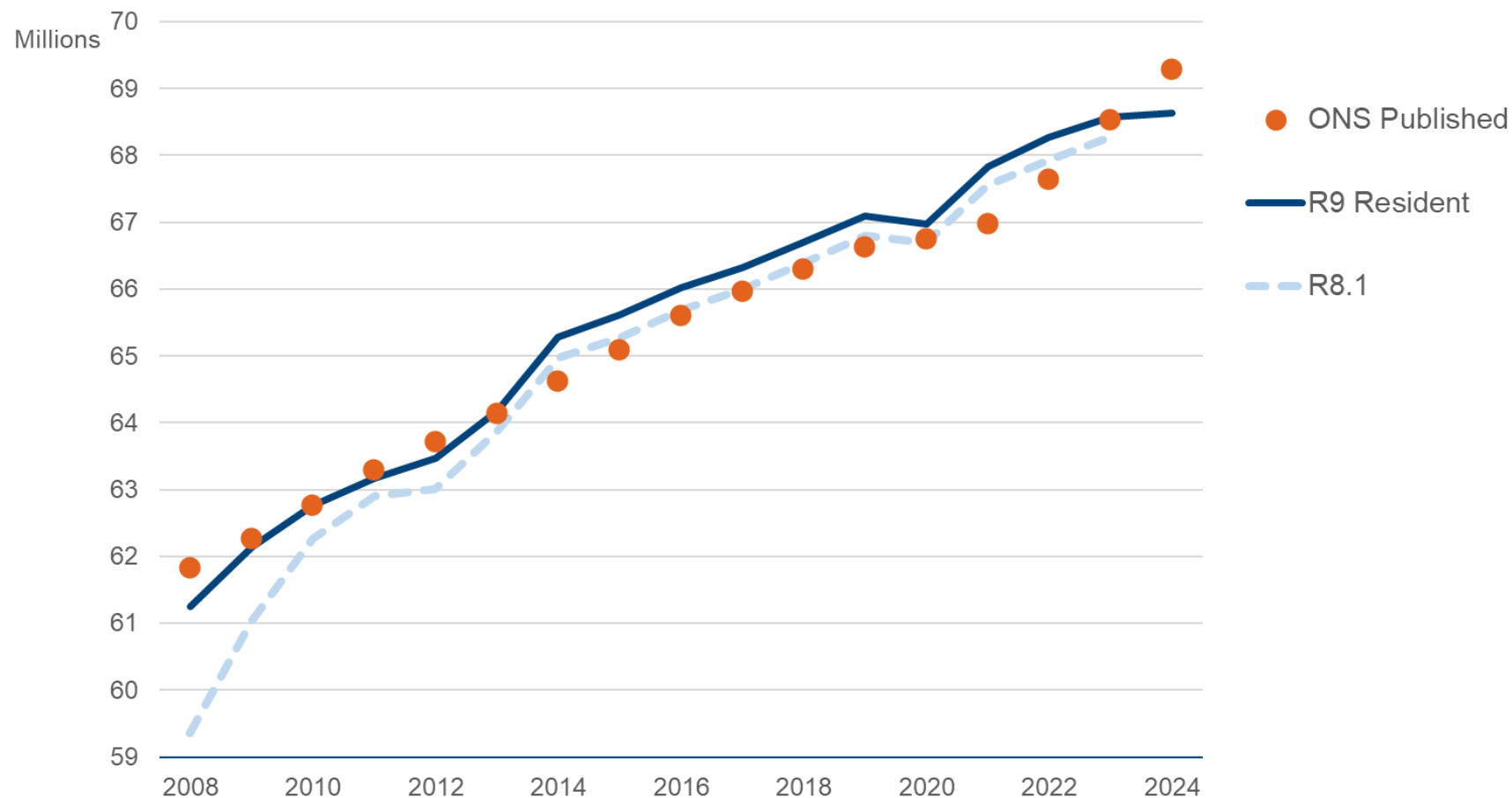
DWP's Commitment to Supporting the Dataset

- DWP is committed to the continued production of RAPID to support its own functions and the functions of other Government Departments;
- DWP is committed to supporting the development of RAPID and making the data available to researchers via the ONS Secure Research Service (SRS);
- DWP is committed to creating the RAPID data annually. Each new release includes additional tax years and usually some additional features and data sources;
- DWP is committed to ensuring that each new release will be considered for inclusion in the SRS;

RAPID Release 9 – Improvements coming next year!

RAPID R9 v R8.1 Activity based UK population & ONS mid-year UK population.

1. Pre-2014 RAPID excludes people whose only activity in the year is self-employment;

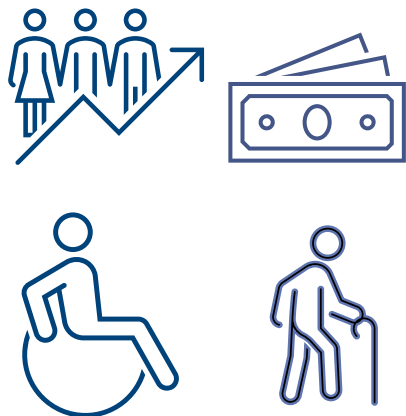


RAPID Release 9 will bring a number of additional data sources and improvements to the SRS:

- Tax years 2008/09 and 2009/10;
- Tax year 2024/25;
- Education activity flag, improving residency measures;
- Inclusion of employment spells that are not supported by 'pay', e.g. careers breaks, long-term sickness, extended maternity leave etc. Pre-2012 includes more records with no tax or National Insurance liability;
- Relationship / partner information for ESA and JSA claims
- Possible linkage to other SRS data



Department
for Work &
Pensions



RAPID: Research interests

- **Goal 1:** Enable People to Get into Work and to Get on at Work, ***Ensuring Employment Opportunity for All***
- **Goal 2:** Tackle Child Poverty and Hardship, ***Ensuring Financial Security for All***
- **Goal 3:** Shape the Pensions System to Serve the Interests of savers and Pensioners, ***Ensuring Decent, Secure Retirement Incomes for All***
- **Goal 4:** Pursue a Just, Equal and Inclusive Society, ***Ensuring Independence and Control for All Disabled People***

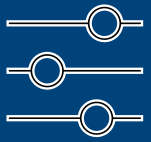
Research Priorities (additional information)

- Detailed research questions relating to DWP goals are set out in [DWP's areas of research interest](#), which are currently under revision.
- DWP has also recently taken over responsibility for skills policy, which is not yet reflected in these goals. Questions relating to skills are set out in the [Department for Education's areas of research interest](#).
- Additionally, research questions from all published areas of research interest (ARI) documents are brought together in the [ARI Database](#).
- Potential areas to explore may also be suggested by the [Get Britain Working White Paper](#) and [Kickstarting Economic Growth](#).

Research Priorities - Examples

Examples of questions which could be investigated using RAPID include:

- What are the dependencies and overlaps between employment and benefit;
- What are the barriers to employment and how much does geography, health/disability and child care play a part in those journeys?
- How do changes in local employment rates since the Covid-19 pandemic relate to patterns of change before the pandemic?
- To what extent are geographic moves associated with increases in earnings? Which areas have the highest rates of movers in and out?
- What are the different patterns of earnings progression observed? What other factors are associated with these?
- What is the relationship between individuals' employment and earnings after reaching the age of 50 and their labour market history prior to that?
- What are the drivers of economic inactivity? What is the role of geography?



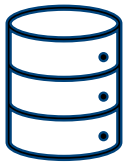
Project Feasibility.... Things to consider



Information: Is the information you need in the data. Is there likely to be any bias, e.g. Education activities are not included, People who 'go quiet' may appear as non-resident, Does the data exclude people (people with no NINO, e.g. some foreign students). Does data 'treatment' impact or restrict what you want to do?;



Derivation: Can you derive your measures accurately. The data doesn't hold exact dates of activities – do you need to derive rules to change the residency status of some people?



Size: RAPID data is huge with 220+ variables and 80+ million people for each tax year. Linking data across years will very quickly get to data that is unmanageable. Think about a data diet – restrict your processing to only what you need.



Tempus Fugit: Can you realistically deliver the project in the time you have. Pace yourself – 'don't bite off more than you can chew'



Gaining Access to RAPID via the ONS Secure Research Service (SRS)

Below are some useful links that provide guidance on becoming an accredited researcher and how to access the RAPID data within the ONS Secure Research Service.

Becoming an accredited researcher:

<https://www.ons.gov.uk/aboutus/whatwedo/statistics/requestingstatistics/secureresearchservice/becomeanaccreditedresearcher>

Applying for an SRS Project:

<https://www.ons.gov.uk/aboutus/whatwedo/statistics/requestingstatistics/secureresearchservice/becomeanaccreditedresearcher>

How to get support:

SRS Customer Support: srs.customer.support@ons.gov.uk



Additional Resources & Applicant Support

Documentation:

Documentation is being finalised to reflect the data treatment to avoid accidental re-identification of the data. A new version will be available in the coming weeks and will replace the existing documentation, which highlights the types of 'treatment' things being considered. Section 4 of the current documentation highlights what is being considered. If you have feedback on current proposals please email ADRcuration@ons.gov.uk

Documentation is available from the ADR UK webpage:

[RAPID: Population interactions with employment, benefits and pensions - UK - ADR UK](#)

Applicant Support:

For ADR Fellowship support email: adrfellowsips@esrc.ukri.org

For SRS Infrastructure support email: srs.customer.support@ons.gov.uk

For Data and Feasibility support email: ADRcuration@ons.gov.uk