Office for National Statistics

Statistical bulletin

Human capital stocks estimates in the UK: 2004 to 2024

National estimates of human capital stock in the UK from 2004 to 2024. Includes full and employed human capital estimates for each year.

Contact:
Skills and Human Development team
economic.wellbeing@ons.gov.uk
+44 1633 456265

Release date:
24 April 2026

Next release:
To be announced

Table of contents

1 . Main points

- In 2024, the real value of the UK’s human capital stock, defined as the present value of projected lifetime earnings reflecting the skills and knowledge of the workingage population, was £28.59 trillion, a 0.1% decline from £28.61 trillion in 2023.
- Lifetime earnings declined in 2024 following a 1.7% increase between 2022 and 2023; this was the strongest real annual growth since 2005 and was largely caused by a 10.6% increase in the number of people whose highest qualification was a master’s degree or PhD, rising from 5.4 million people in 2022 to 5.9 million people in 2023.
- The difference in per person lifetime earnings between groups with different types of qualifications has narrowed over time; in real terms, the additional lifetime earnings associated with holding an undergraduate degree, compared with GCSEs as the highest qualification, decreased from £245,000 in 2019 to £232,000 in 2024.
- In 2024, the gender gap in lifetime earnings was at its lowest level across the time series, with women's per person lifetime earnings estimated to be 31.9% lower than men's, compared with 36.3% in 2004 when measurements began.
- In 2024, women aged 56 to 65 years had the largest per person lifetime earnings gap relative to men, with earnings estimated to be 44.5% lower than men, although this group also experienced the largest narrowing of this gap from 54.3% in 2004.

2 . Data on Human capital stocks

Human capital estimates: supplementary tables
Dataset | Released 24 April 2026
Human capital stock and per head values, equating to lifetime labour earnings, at national level, supplementary to human capital stock publications.

3 . Data sources and quality

Methodology

This bulletin presents estimates of the UK's human capital stock, which measure the value of future labour income generated by the workingage population. Human capital is measured using an incomebased approach, in line with international guidance from the United Nations Economic Commission for Europe (UNECE) and is defined as lifetime labour income based on an individual's highest qualification, earnings, age, and sex. Individuals are assumed to participate in the labour market up to the age of 65 years.

The estimates are primarily derived from the Annual Population Survey (APS), alongside the longitudinal Labour Force Survey (LFS) and mortality data. Earnings are used as an indicator of human capital as they reflect differences in qualifications, skills, and experience. To enable comparisons over time, changes in real human capital are measured using a Törnqvist index, which accounts for changes in population composition by age, sex, and highest qualification, as well as changes in earnings.

Changes to existing methodology: age band aggregation and interpolation

Recent challenges with APS response rates and weighting, particularly in 2023 and 2024, have reduced sample sizes for detailed breakdowns by single year of age, sex, and highest qualification, increasing volatility in granular lifetime labour income estimates. To address this, an interpolation-based approach using age band aggregation has been introduced. Under this approach, weighted population counts are aggregated into multi-year age bands and interpolated to produce smooth single year age population estimates for people aged 16 to 65 years. These population estimates are applied to employment and earnings at respondent level to ensure consistency across the dataset and are used to estimate lifetime labour income and human capital stocks.

Interpolation is applied selectively at the individual age, sex, and highest qualification level, and only where unweighted sample sizes fall below predefined acceptability thresholds. Where sample sizes remain sufficient, original single-year estimates are retained, preserving continuity and comparability of estimates over time.

At the aggregate UK level, the impact of interpolation is small. Total nominal full human capital stocks differed by 0.3% in 2023 and 0.01% in 2024 between interpolated and non-interpolated systems, indicating that the method improves stability without introducing material breaks in the time series. Estimates up to 2022 remain based on the pre-existing, non-interpolated system.

While this approach improves stability relative to raw APS single-year data, it does not remove all data limitations associated with reduced sample sizes. Estimates disaggregated beyond single dimensions of age, sex, or highest qualification therefore remain more uncertain, with combinations of age group with sex or highest qualification, and sex with highest qualification, being more sensitive to adjustment and should be interpreted with caution.

In terms of sample coverage, the youngest (aged 16 to 25 years) and oldest (aged 56 to 65 years) working age groups show the largest shortfalls relative to expected levels and are therefore more affected by interpolation. Lifetime labour income estimates for women have also been more susceptible to adjustment than those for men, reflecting differences in sample composition. No comparable pattern was observed for breakdowns by highest qualification. Users are therefore advised to place greater weight on broader age patterns, aggregated estimates and overall trends rather than small differences at individual ages.

Highest qualification coding improvements

From 2022, improvements to the Annual Population Survey qualification variable (HIQUAL22) enhanced the classification of apprenticeship levels. A coding error affecting the default "Trade apprenticeship" category was identified and corrected, and these corrections have been applied to the APS microdata used in this release; however, they are not yet reflected in the reweighted fivequarter LFS datasets. While the impact on headline human capital stocks is minimal, estimates may be revised once reweighted LFS data are published to ensure full consistency.

Quality

An important strength of this approach is that it produces a single, coherent measure of lifetime labour income while accounting for changes in population structure by age, sex, and highest qualification. The use of a Törnqvist index allows real changes in human capital to be distinguished from changes caused by prices or population growth alone. The methodology also produces distinct human capital values for different population groups, enabling analysis of how demographic and educational factors contribute to overall changes in human capital.

The estimates are subject to a number of assumptions. In particular, future earnings, employment patterns and mortality are projected from currentyear data, and may change in response to economic, social or policy conditions. As a result, the lifetime labour income estimates should be interpreted as representing prevailing circumstances in the reference year, rather than as forecasts of longterm individual outcomes.

Some uncertainty remains in periods or population sub-groups where survey sample sizes are lower and estimates for finely disaggregated breakdowns should therefore be interpreted with greater caution. This is particularly relevant when analysing small differences at detailed combinations of age, sex and qualification.

These statistics are most appropriate for analysing broad patterns and changes in the UK's human capital stock over time and across population groups. They are not designed to predict individual earnings outcomes or labourmarket behaviour.

Further methodological development will respond to user needs and data availability. Planned areas for development include incorporating health into the human capital framework, given its influence on educational attainment, employment and mortality, and exploring the potential use of administrative data to provide greater granularity and improved statistical quality.

More quality and methodology information on strengths, limitations, appropriate uses and data creation is available in our Measuring the UK's Human Capital Stock methodology guidance (PDF, 208KB).

4 . Related links

Human capital stocks estimates in the UK: 2004 to 2022
Bulletin | Released 19 March 2024
National and regional estimates of human capital stock in the UK from 2004 to 2022. Includes full and employed human capital estimates for each year.

Methodology the UK's Human Capital Stock methodology guidance (PDF, 208KB)
Methodology | Released December 2013
Document detailing the recommended method for calculating human capital stock estimates, taking into account academic literature.

5 . Cite this statistical bulletin

Office for National Statistics (ONS), released 24 April 2026, ONS website, statistical bulletin, Human capital stocks estimates in the UK: 2004 to 2024