



# Graduate outcomes by University and subject (LEO data) – Scotland

(Experimental Statistics: data being developed)

## Advanced Learning and Skills Analysis

This experimental statistics release presents employment and earnings outcomes for graduates of higher education one, three and five years after graduation. This publication is the first of its kind, in Scotland, to use the Longitudinal Education Outcomes (LEO) dataset to track higher education graduates as they move from higher education into the workplace.

This publication is being released in conjunction with the third in a series of higher education data releases from the Department for Education's (DfE) new Longitudinal Education Outcomes dataset. The DfE release can be accessed via: <https://www.gov.uk/government/statistics>

### **Experimental Statistics: data being developed**

Experimental Statistics are new official statistics that are undergoing evaluation. These statistics are being published as experimental statistics in order to involve users and stakeholders in their development and as a means to further improve the use of the data in future.

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## Background

The Small Business, Employment and Enterprise Act 2015 enabled the UK government, for the first time, to link higher education and tax data together to chart the transition of graduates from higher education into the workplace. The Department for Education (DfE) commissioned the Department for Work and Pensions (DWP) to link Higher Education Statistics Agency (HESA) records for the whole of the UK to the tax and benefits records.

This experimental statistics release presents employment and earnings outcomes for leavers of higher education five years after graduation. This publication is the first release in Scotland, to use the Longitudinal Education Outcomes (LEO) dataset to track higher education graduates as they move from higher education into the workplace.

Further information on graduate destinations and earnings is available in the HESA publication, 'Destinations of Leavers from Higher Education (DLHE)' which covers the period 6 months after graduation and is published annually and the biennial 'Destinations of Leavers from Higher Education Longitudinal' publication which covers the period 3 years after graduation.

This publication looks at those who graduated with a first degree qualification from UK higher education institutions (HEIs), concentrating on those classified as UK domiciled prior to entry to higher education. Figures are presented for all first degree graduates and have not been split by full-time or part-time modes of study. On average, matching of over 95 per cent of each graduate cohort to tax and/or benefit data have been achieved.

The employment data covers those with records submitted through the Pay As You Earn (PAYE) system. The core purpose of PAYE is to collect tax and its coverage reflects this. Up until April 2013, employers were not required to supply information to HMRC for individuals who earned below the Lower Earnings Limit (LEL) for National Insurance contributions, although for large employers these individuals were thought to be included due to the methods of data transfer. Since then, employers have been required to provide earnings information for all employees if even one employee of the company is paid above the LEL threshold.

The PAYE system does not collect information on the number of hours worked; therefore, whether an individual is working full-time or part-time cannot be ascertained.

All figures are based on UK tax, benefit and student records only: activity of those who move abroad to work or study after graduating is not reflected in the employment or further study figures. Instead, these individuals are categorised as 'activity not captured'.

## Years after graduation

The time periods<sup>1</sup> used in this publication are five years after graduation. This refers to the first full tax year after graduation. So, for the 2008/09 graduation cohort the figures five year after graduation refer to employment/earnings outcomes in the 2014/15 tax year. This time period was picked as using the tax year which overlaps with the graduation date would mean that graduates are unlikely to have been engaged in economic activity for the whole tax year. This is displayed graphically in figure 1 below.

**Figure 1: Relationship between academic year, tax year, and definitions of 'years after graduation' used in this publication**

		Tax Year				
		2010/11	2011/12	2012/13	2013/14	2014/15
Academic year of graduation	2008/09	1 year		3 years		<b>5 years</b>
	2009/10		1 year		3 years	
	2010/11			1 year		<b>3 years</b>
	2011/12				1 year	
	2012/13					<b>1 year</b>

Cohorts in **bold** are covered in this publication

<sup>1</sup> For time periods one and three years after graduation please see tables published by the Department for Education.

## Scotland and GB Comparison

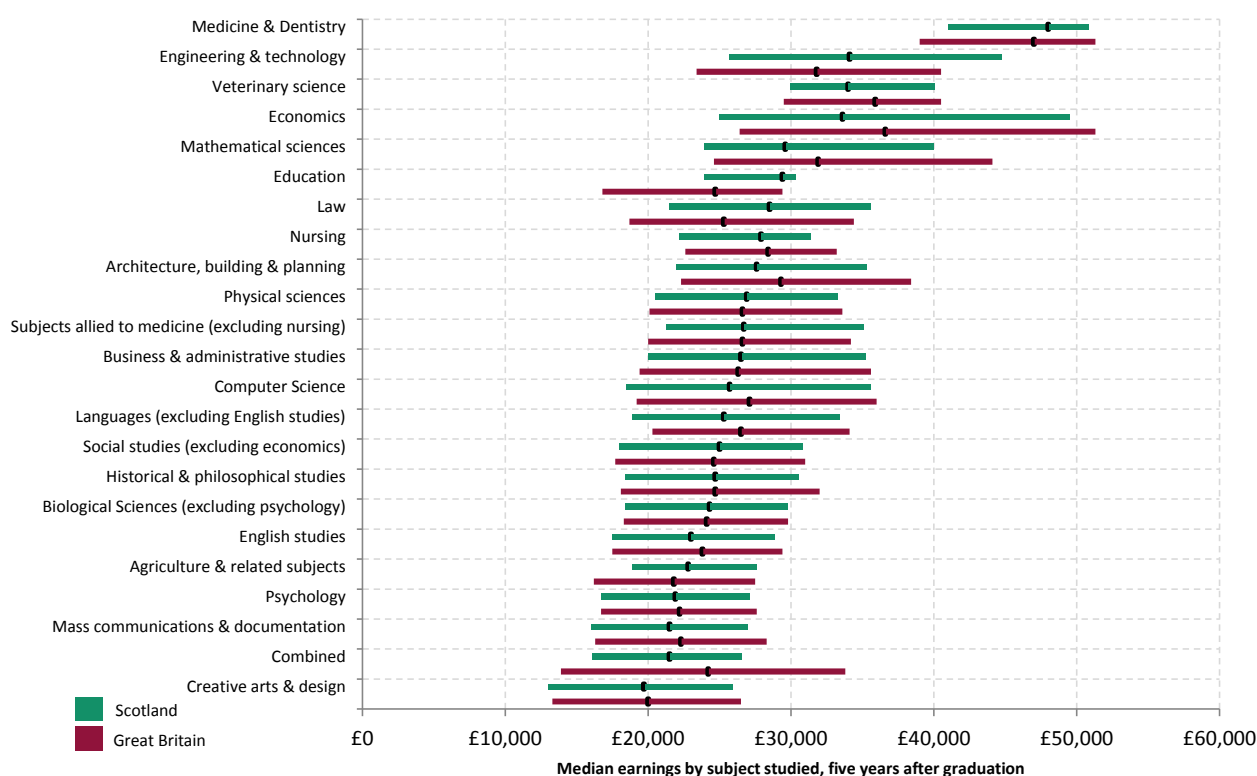
Figure 2 shows a comparison of the distribution of annualised earnings of graduates from 2008/09 for Scottish and all GB HEIs five years after graduation. Of the 23 subject areas, graduates of Scottish HEIs have higher median earnings in 10 of the subject areas compared to the median earnings for all GB HEIs, and have the same median earnings for Historical & philosophical studies.

Earnings of graduates also varied across subjects. For example, those who studied Medicine & Dentistry at Scottish HEIs had median earnings of £48,000 five years after graduation. In contrast, those who studied Creative Arts & Design at Scottish HEIs had median earnings of £19,700 five years after graduation.

Median earnings can vary between subject and institution for various reasons. See 'Data Quality' for some of the issues to consider when looking at this data.

Subjects are ordered from those with the highest median earnings to the lowest median earnings for Scotland. The boxes represent the inter-quartile range – the earnings of the middle 50 per cent of graduates in each subject will fall in the box.

**Figure 2: Comparison of distributions of annualised earnings of graduates\* for each subject area five year after graduation (lower quartile, median and upper quartile), Scotland<sup>2</sup> and GB**



\* UK domiciled First degree qualifiers 2008/09

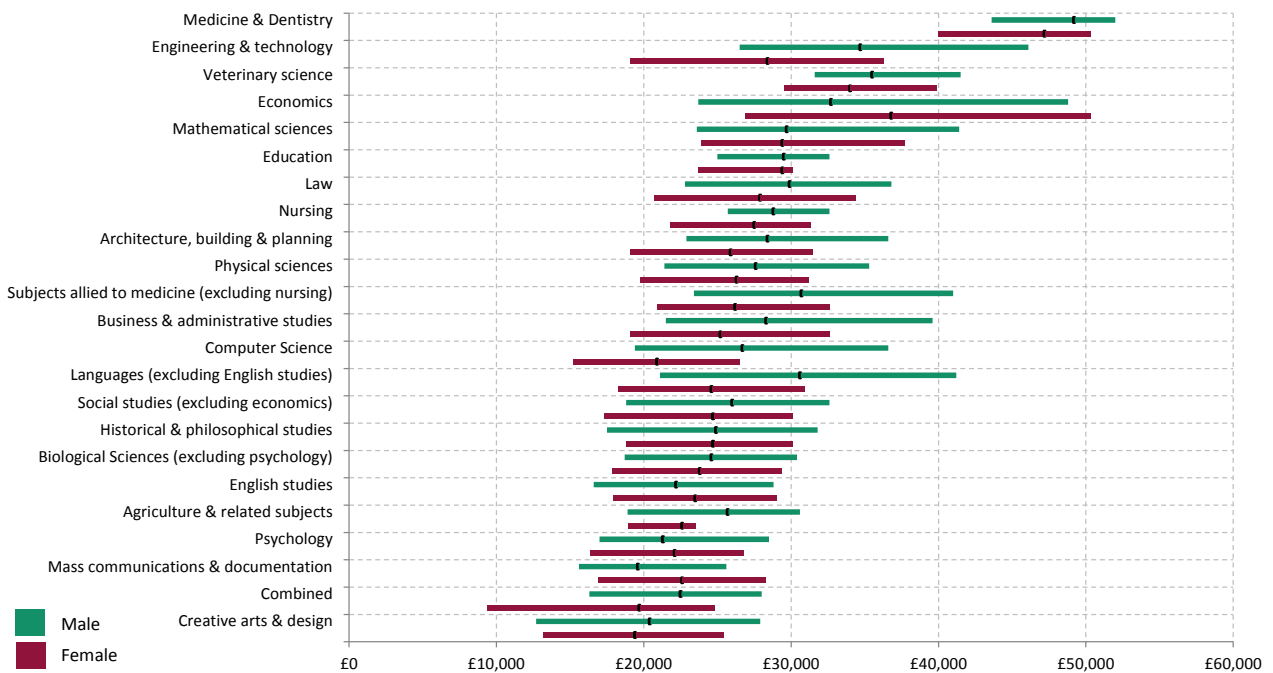
<sup>2</sup> Figure 2 above is not comparable with Figure 1 in the DfE's publication. The above figure is a distribution of the number of graduates in HEI's by earnings. DfE figure 1, is a distribution of the median earnings for each university in the UK.

## Sex

Figure 3 shows the annualised median earnings for each Scottish Institution and subject area five years after graduation split by sex. It shows that in most subjects, males have higher median earnings than females five years after graduation.

Median earnings can vary between subject and sex for various reasons. See 'Data Quality' for some of the issues to consider when looking at this data.

**Figure 3: Comparison of distributions of annualised earnings of graduates\* for each subject area five year after graduation (lower quartile, median and upper quartile), male and female, Scotland**



\* UK domiciled First degree qualifiers 2008/09

**Table 1: Median annualised earnings of graduates\* by subject studied and sex five years after graduation**

Subject	Median earnings of 2008/09 cohort		
	Male	Female	Scotland
Medicine & Dentistry	£49,200	£47,200	£48,000
Engineering & technology	£34,700	£28,400	£34,100
Veterinary science	£35,500	£34,000	£34,000
Economics	£32,700	£36,800	£33,600
Mathematical sciences	£29,700	£29,400	£29,600
Education	£29,500	£29,400	£29,400
Law	£29,900	£27,900	£28,500
Nursing	£28,800	£27,500	£27,900
Architecture, building & planning	£28,400	£25,900	£27,600
Physical sciences	£27,600	£26,300	£26,900
Subjects allied to medicine (excluding nursing)	£30,700	£26,200	£26,700
Business & administrative studies	£28,300	£25,200	£26,500
Computer Science	£26,700	£20,900	£25,700
Languages (excluding English studies)	£30,600	£24,600	£25,300
Social studies (excluding economics)	£26,000	£24,700	£25,000
Historical & philosophical studies	£24,900	£24,700	£24,700
Biological Sciences (excluding psychology)	£24,600	£23,800	£24,300
English studies	£22,200	£23,500	£23,000
Agriculture & related subjects	£25,700	£22,600	£22,800
Psychology	£21,300	£22,100	£21,900
Mass communications & documentation	£19,600	£22,600	£21,500
Combined	£22,500	£19,700	£21,500
Creative arts & design	£20,400	£19,400	£19,700

\*UK domiciled First degree qualifiers 2008/09

## Institution Level

Table 2 shows the annualised median earnings for each Scottish Higher Education Institution and subject area five years after graduation.

**Table 2: Median annualised earnings five years after graduation by Scottish Institution and Subject area**

	The University of Aberdeen	University of Abertay Dundee	The University of Dundee	Edinburgh Napier University	The University of Edinburgh	Glasgow Caledonian University	Glasgow School of Art	The University of Glasgow	Heriot-Watt University	Queen Margaret University, Edinburgh	The Robert Gordon University	Royal Conservatoire of Scotland	The University of St Andrews	SRUC	The University of Stirling	The University of Strathclyde	University of the Highlands and Islands	The University of the West of Scotland	Scotland	Great Britain	
Medicine & Dentistry	48,000	.	48,200	.	49,000	.	.	49,200	.	.	.	.	40,300	.	.	.	.	.	.	48,000	47,000
Subjects allied to medicine (excluding nursing)	26,600	x	28,300	x	34,700	27,000	.	26,000	.	24,700	28,000	.	x	.	.	31,800	.	.	35,600	26,700	26,600
Nursing	.	24,700	27,300	27,400	x	29,100	.	30,100	.	29,600	27,700	.	.	.	26,900	.	.	.	27,100	27,900	28,400
Biological Sciences (excluding psychology)	25,100	24,500	22,400	20,700	26,900	24,200	.	24,400	23,200	.	24,900	.	23,200	x	23,300	24,800	.	.	25,600	24,300	24,100
Psychology	25,900	18,400	22,300	21,200	27,400	20,700	.	22,300	25,900	24,100	.	.	22,600	.	20,400	22,300	.	.	19,300	21,900	22,200
Veterinary science	.	.	.	.	34,700	.	.	33,900	.	.	.	.	.	.	.	.	.	.	.	34,000	35,900
Agriculture & related subjects	x	.	.	x	23,500	.	.	x	x	.	.	.	.	26,500	x	.	x	.	22,800	21,800	
Physical sciences	29,800	21,000	25,600	.	30,000	24,400	.	27,600	25,500	.	24,800	.	27,400	23,200	21,900	26,900	x	21,900	26,900	26,600	
Mathematical sciences	x	.	24,200	x	31,200	x	.	27,600	30,400	.	.	.	35,300	.	28,200	28,600	.	x	29,600	31,900	
Computer Science	32,800	24,000	25,900	24,000	42,700	23,700	.	37,800	30,500	.	27,000	.	40,800	.	28,400	35,900	x	20,100	25,700	27,100	
Engineering & technology	49,000	26,100	29,800	32,800	36,700	28,200	.	32,800	35,300	.	44,200	.	.	.	.	34,600	41,900	.	30,500	34,100	31,800
Architecture, building & planning	29,600	.	23,300	25,200	25,600	31,500	25,900	x	27,600	.	33,000	.	.	.	.	27,100	.	.	27,600	29,300	
Social studies (excluding economics)	24,600	22,200	24,700	17,600	29,800	23,600	.	23,900	.	x	30,800	.	29,400	.	22,600	24,600	16,300	21,200	25,000	24,600	
Economics	34,600	.	26,500	x	47,400	.	.	32,300	x	.	x	.	44,100	.	33,600	30,300	.	.	33,600	36,600	
Law	32,500	23,300	27,300	21,000	34,200	23,000	.	31,600	x	.	28,700	.	.	.	23,300	28,300	.	19,700	28,500	25,300	
Business & administrative studies	28,400	23,000	26,300	25,600	34,000	25,900	.	32,900	27,100	21,700	31,400	.	33,700	27,200	25,800	28,100	22,700	21,600	26,500	26,300	
Mass communications & documentation	.	.	x	25,200	.	19,000	.	.	.	21,600	24,600	.	x	.	20,800	x	x	17,500	21,500	22,300	
Languages (excluding English studies)	23,100	.	x	x	30,300	.	.	23,000	27,800	.	.	.	28,300	.	22,800	22,800	x	19,500	25,300	26,500	
English studies	23,000	.	19,400	.	23,300	.	.	23,600	x	.	.	.	26,800	.	23,700	21,900	x	.	23,000	23,800	
Historical & philosophical studies	22,700	.	20,100	.	27,000	.	.	21,600	.	.	.	.	28,000	.	23,600	23,000	x	.	24,700	24,700	
Creative arts & design	19,000	.	17,900	22,300	21,200	23,300	20,200	24,000	18,600	17,900	21,200	16,000	.	.	19,600	19,600	13,300	18,600	19,700	20,000	
Education	29,700	.	28,600	.	29,400	.	.	29,700	x	.	.	29,600	.	.	29,800	27,500	.	29,400	29,400	24,700	
Combined	x	.	.	.	21,400	.	.	.	.	.	.	.	x	.	x	.	.	x	21,500	24,200	

\* UK domiciled First degree qualifiers 2008/09



## Technical Annex

### Background methodology

Further detailed information is available in the Department for Education releases:

June 2017 release: <https://www.gov.uk/government/statistics>

December 2016 release: <https://www.gov.uk/government/statistics/graduate-outcomes-by-degree-subject-and-university#content>

August 2016 release: <https://www.gov.uk/government/statistics/graduate-outcomes-longitudinal-education-outcomes-leo-data>

### Suppression and rounding

In line with disclosure control rules, information based on fewer than 11 graduates has been suppressed.

All counts have been rounded to the nearest five, percentages to one decimal place and earnings to the nearest £100.

### Time period

The earliest time period for which employment and earnings data is reported is one year after graduation. This refers to the first full tax year after graduation. So, for the 2012/13 graduation cohort the figures one year after graduation refer to employment and earnings outcomes in the 2014/15 tax year. This time period was picked as using the tax year that overlaps with the graduation date would mean that graduates are unlikely to have been engaged in economic activity for the whole tax year.

### Employment outcomes

Outcomes are presented for graduates that have been successfully matched to the Department for Work and Pensions' Customer Information System (CIS) or if they have been matched to a further study instance on the HESA Student Record. In this publication these individuals are referred to as matched. Graduates that have not been matched to CIS or a further study record are referred to as unmatched.

Graduates that have been matched are then placed in one of five outcomes categories. These are:

**Activity not captured:** graduates that have been successfully matched to CIS but do not have any employment, out-of-work benefits or further study records in the tax year of interest. Reasons for appearing in this category include: moving out of the UK after graduation for either work or study, being self-employed in the relevant tax year; earning below the Lower Earnings Limit, or voluntarily leaving the labour force.

**No sustained destination:** graduates with an employment or out-of-work benefits record in the tax year in question but were not classified as being in 'sustained employment' and do not have a further study record.

**Sustained employment only:** graduates are considered to be in sustained employment if they were employed for at least one day for five out of the six months between October and March of the tax year in question.

**Sustained employment with or without further study:** includes all graduates with a record of sustained employment regardless of whether they also have a record of further study. A graduate is defined as being in further study if they have a valid higher education study record at any UK HEI on the HESA database in the relevant tax year. The further study does not have to be at postgraduate level to be counted.

**Sustained employment, further study or both:** includes all graduates with a record of sustained employment or further study. This category includes all graduates in the 'sustained employment with or without further study' category as well as those with a further study record only.

## **Annualised earnings**

Earnings figures are only reported for those classified as being in sustained employment and where we have valid earnings record from the P14. Those in further study are excluded, as their earnings would be more likely to relate to part-time jobs. Earnings from self-assessment are not included.

For each graduate, the earnings reported for them on the HMRC P14 data for a given tax year are divided by the number of days recorded in employment across that same tax year. This provides an average daily wage that is then multiplied by the number of days in the tax year to calculate their annualised earnings.

This calculation has been used to maintain consistency with figures reported for further education learners after study. It provides students with an indication of the earnings they might receive once in stable and sustained employment.

The annualised earnings calculated are slightly higher than the raw earnings reported in the tax year. This is because the earnings of those who did not work for the entire tax year will be higher when annualised. The difference between the annualised and raw figures decreases as time elapses after graduation. Median annualised earnings one year after graduation are around £1,000 higher than the median raw earnings reported in the P14 data. Five years after graduation, the median annualised earnings are less than £500 higher than the median raw earnings.

All earnings presented are nominal. They represent the cash amount an individual was paid and are not adjusted for inflation (the general increase in the price of goods and services).

## Data Quality

As these are experimental data there are some limitations around the data included in this publication;

### Mode:

The employment data largely covers those with records submitted through the Pay As You Earn (PAYE) system. The PAYE system does not collect information on the number of hours worked; therefore, whether an individual is working full-time or part-time cannot be ascertained.

### Employment Status:

Self-assessment data for the 2014/15 tax year has been obtained and the graduate cohorts included in DfE's publication have been selected to make the most use of self-employment data. Currently there is no access to self-assessment earnings, and earnings outcomes in this publication are therefore not fully representative of graduates in self-employment.

### Career Path:

Different subjects will lead to different career paths, with some careers requiring further learning and training after the completion of their first degree. This in turn may distort the median salaries one, three and five years after qualification.

### Subject groupings and intake:

The subject groupings reported can cover a wide range of courses, some of which may yield higher median earnings than others. The selection of courses available at HEIs will vary as will the student intake to each course. As different courses can yield different median earnings, care should be taken when comparing subjects across different HEIs.

### Attainment:

No prior attainment is recorded for Scotland as the National Pupil Database (NPD) only records those who completed A levels at an English school. Coverage at HEIs in Scotland would therefore be limited to graduates who completed their A-levels in England before pursuing higher education in Scotland. The NPD also only covers qualifications obtained since 2002, meaning the majority of mature students are not expected to have an A level record on the NPD. Therefore mature students are not included in prior attainment calculations.

### POLAR:

HESA do not publish POLAR figures for Scotland, as Scotland's relatively high participation rate and the high proportion of higher education students in further education colleges could misrepresent Scottish contributions to widening participation. Following that line of reasoning, this publication does not include POLAR figures for Scottish HEIs either.

Open University:

HESA made changes in the way they records Open University graduates by country of national centre in academic year 2013/14. Since figures in this release date to before this year Open University graduates who registered at any of the four national centres are included in the 'Open University in England'.

## Glossary

**Academic year:** Runs from 1 August to 31 July. For example, the 2012/13 academic year ran from 1 August 2012 to 31 July 2013.

**The Customer Information System (CIS):** A computer system used by the Department for Work and Pensions that contains a record for all individuals that have been issued with a National Insurance (NINO) number. It contains basic identifying information such as name, address, date of birth and NINO.

**First degree qualification:** This covers qualifications commonly known as bachelor's degrees and also includes postgraduate bachelor's degrees at H level. Not all undergraduate courses are included: for example, the Professional Graduate Certificate in Education (PGCE), foundation degrees and Higher National Diplomas (HND) are excluded. Note that it does not necessarily mean that the degree is the first higher education qualification undertaken by the student.

**Further study:** The HESA Student Record is used to identify instances of further study in higher education, Students enrolled on further education courses, on some initial teacher training enhancement, booster and extension courses, or whose study status is dormant or who were on sabbatical are excluded from this indicator. Each tax year spans two academic years; therefore, graduates will be flagged as being in further study if they have a HESA record in one of these two academic years.

**HEI:** Higher Education Institution.

**Higher Education Statistics Agency (HESA):** HESA collect data from universities, higher education colleges and other specialist providers of higher education. In this publication we have used the HESA Student Record to identify our graduate base population and higher education further study instances.

**Joint Academic Coding System (JACS):** A standardised way of classifying academic subjects and modules, maintained by HESA and the Universities and Colleges Admission Service (UCAS). In this publication we group subjects using JACS principal subject groupings.

**Nominal earnings:** Nominal earnings represent the cash amount an individual was paid. They are not adjusted for inflation (the general increase in the price of goods and services).

**PAYE:** HMRC's system to collect Income Tax and National Insurance from employment. The LEO project uses information from the P45 to ascertain employment spell length and from the P14 (P60) to determine annual earnings.

**Self-assessment:** Self-assessment data captures the activity of individuals with income that is not taxed through PAYE, such as income from self-employment, savings and investments, property rental, and shares.

**Sustained annualised earnings:** The calculated average daily wage across the tax year grossed up to the equivalent annual figure.

### **Experimental Statistics: data being developed**

Experimental Statistics are new official statistics that are undergoing evaluation. These statistics are being published as experimental statistics in order to involve users and stakeholders in their development and as a means to further improve the use of the data in the future.

As these are experimental statistics any feedback or comments on presentation and content would be most appreciated. Contact details below;

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