

'HOW TO' | January 2022

Finding earnings data and calculating the earnings gap

In this explainer, we'll show you how to find data from the Annual Survey of Hours and Earnings (ASHE). There is a lot of information in this dataset, so we'll just look at one small part.

An index of the data that is available in the entire dataset can be on the Office for National Statistics website (ons.gov.uk)

You can find more analysis of earnings on the Women's Budget Group website: Womens Budget Group (wbg.org.uk)

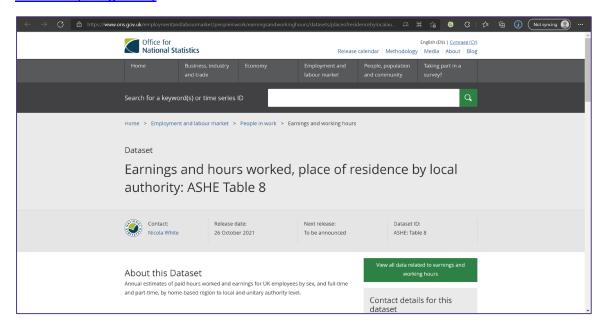
What to expect

We'll find data at the national, regional and local level as this means you can make comparisons across geographies. First we'll find the data for local authorities in Great Britain. If you'd like to skip straight to the data for Northern Ireland, click here.

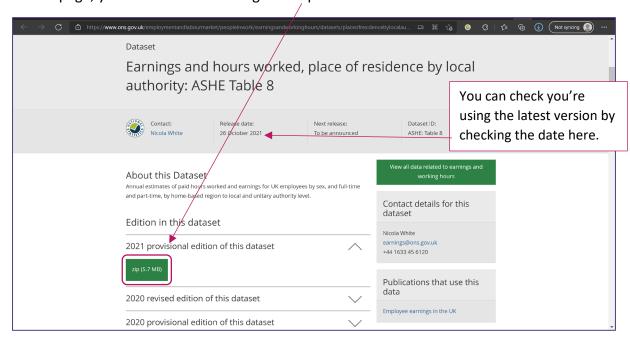
We'll also show you how to calculate the difference between women and men's annual earnings. If you'd like to skip straight to that section, click here.



In this explainer, we're going to find the **earnings** data based on **where people live**, and we're using **local authority** as the local area. The data can be found here: <u>Earnings and hours worked</u>, place of residence by local authority: ASHE Table 8 - Office for National Statistics (ons.gov.uk) ²



On the page, you need to click in the green 'zip' button to download the data.

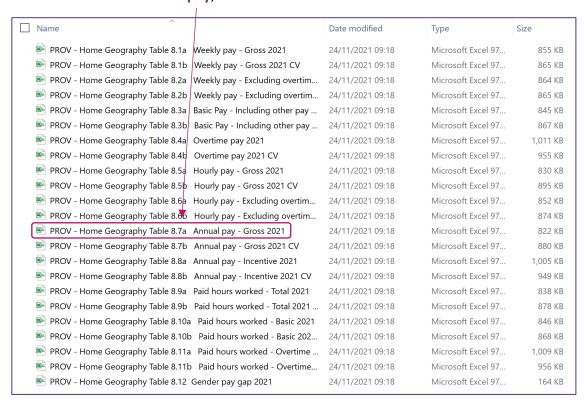


¹ Although the data for Northern Ireland comes from same survey, we need to go to a different website to download the local data. You can find that information at the end of this document.

² If you want to work with data at parliamentary constituency level so that you can contact your MP, earnings data for parliamentary constituency is here: <u>Earnings and hours worked</u>, <u>place of residence by Parliamentary constituency</u>: <u>ASHE Table 10 - Office for National Statistics</u>. The process of finding the data is the same.



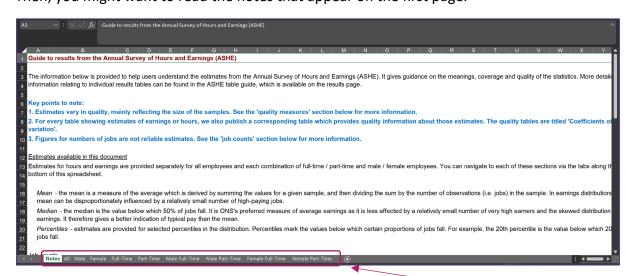
Find the file wherever you keep your downloads. Note: you will need to have software that can read Excel files. When you open the zip file, you will find lots of different options. We will use the data on **annual pay**, so we need **table 8.7a**.



Open table 8.7a, and click on 'Enable Editing' if this appears. This just means that navigating the table will be easier.



Then, you might want to read the notes that appear on the first page.

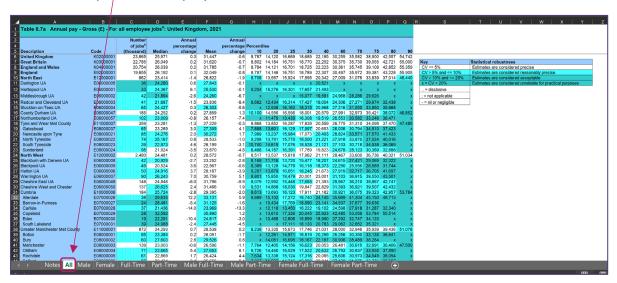


You should also notice that the spreadsheet has lots of different tabs.

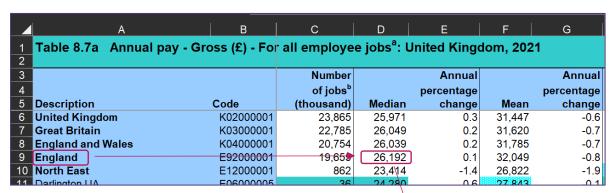


In this explainer, we're just going to use the three tabs that include data on combined earnings for full-time and part-time: 'All', 'Male', Female'.

Let's start with 'All'. This is the combined earnings data for all men and women who are in full-time and part-time employment.



At the top of the table, we can find the data at national level. We only need to work with the first few columns so here is an enlarged image. We'll use the figure for the **median** earnings. Let's use England as the example.



Here's a table we can use to record the data:

	MEDIAN ALL EARNINGS 2021
REGION	ALL (£)
England	26, 192
Region	
Local authority	



Explainer: Median vs mean

Both of these are averages, but the way you work them out is different.

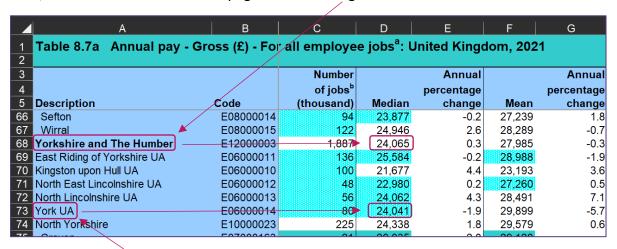
The mean of 1 + 1 + 1 + 2 + 20 = 5. This is what most people think of as the average. Add up all the numbers and divide by however many numbers there are.

The **median** of 1 + 1 + 1 + 2 + 20 = 1. This is when we line up the numbers in order, and then take the middle number as the average.

Why do we use the median rather than mean?

If you have a few big numbers, your average can seem much higher if you use mean. The median tends to provide a more accurate reflection.

Next, we need to scroll down the page to find the region...



...and the local authority. We're using York as our example.

Again, we can add the figures from these places to the table.

	MEDIAN ALL EARNINGS 2021
REGION	ALL (£)
England	26, 192
Yorkshire and The Humber	24,065
York	24,041

Now that we have the figures for 'all' employees, we can start to add the figures for women & men.

The next tab on the spreadsheet is 'male', so we'll start there.





Again, let's start with the figures for England.

	A	В	С	D	Е	F	G
1	Table 8.7a Annual pay - Gr	oss (£) - Fo	male emplo	yee jobs ^a :	United Kir	ngdom, 2	021
2							
3			Number		Annual		Annual
4			of jobs ^b		percentage		percentage
5	Description	Code	(thousand)	Median	change	Mean	change
6	United Kingdom	K02000001	11,942	30,831	-1.8	37,817	-1.6
7	Great Britain	K03000001	11,416	30,990	-1.9	38,061	-1.6
8	England and Wales	K04000001	10,462	30,997	-1.8	38,327	-1.5
9	England	E92000001	9,937	► (31,153)	-1.9	38,658	-1.6
10	North East	E12000001	431	27,500	-2.4	31,187	-4.0
44	Darlington LIA	ENGONONS	10	20.056	5.0	22 201	5.4

And, again, we can add this to the table.

	MEDIAN ALL EARNINGS 2021				
REGION	ALL (£)	MEN (£)			
England	26, 192	31,153			
Yorkshire and The Humber	24,065				
York	24,041				

Then we scroll to find the correct region and local authority.

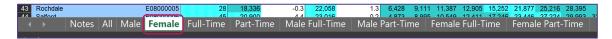
Table 8.7a Annual pay	- Gross (£) - For	male employ	yee jobs ^a	: United Kir	ngdom, 2	021
3 4 5 Description	Code	Number of jobs ^b (thousand)	Median	Annual percentage change	Mean	Annual percentage change
66 Sefton	E08000014	40	28,072	0.6	31.644	0.3
67 Wirral	E08000015	60	29,492	0.3	33,829	-2.8
68 Yorkshire and The Humber	E12000003	962	29,111	0.4	33,632	-0.7
69 East Riding of Yorkshire UA	E06000011	68	32,333	0.5	36,210	0.1
70 Kingston upon Hull UA	E06000010	50	27,242	5.2	27,392	1.3
71 North East Lincolnshire UA	E06000012	25	31,513	-2.5	34,999	0.2
72 North Lincolnshire UA	E06000013	30	30,007	2.3	33,732	4.2
73 York UA	E06000014	41	28.711	0.4	34,710	-8.8
74 North Yorkshire	E10000023	113	29,384	-0.1	35,356	-1.4

	MEDIAN ALL EARNINGS 2021				
REGION	ALL (£)	MEN (£)			
England	26, 192	31,153			
Yorkshire and The Humber	24,065	29,111			
York	24,041	28,711			

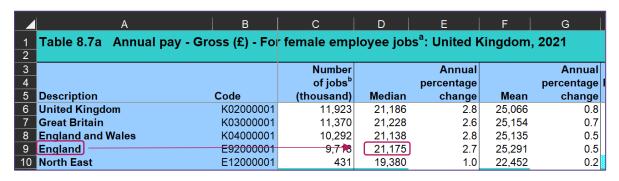


Let's finish completing the table with the figures for women's earnings.

Again, click on the relevant tab...



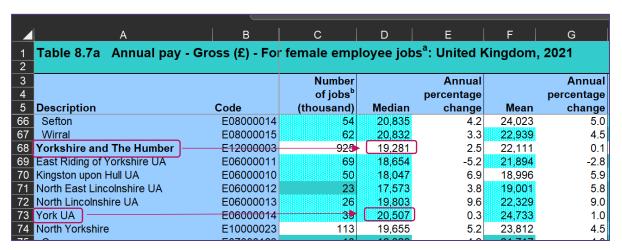
...to find the figure for England.



Now to fill in the last column of earnings.

	MEDIAN ALL EARNINGS 2021			
REGION	ALL (£)	MEN (£)	WOMEN (£)	
England	26, 192	31,153	21,175	
Yorkshire and The Humber	24,065	29,111		
York	24,041	28,711		

And find the regional and local numbers...





	MEDIAN ALL EARNINGS 2021			
REGION	ALL (£)	MEN (£)	WOMEN (£)	
England	26, 192	31,153	21,175	
Yorkshire and The Humber	24,065	29,111	19,281	
York	24,041	28,711	20,507	

Source: ONS (2021) Annual Survey of Hours and Earnings, Table 8.7a

Now that we have a complete table, we can notice how the regional figures are lower than the national figures. We can also see that women's earnings are lower than men's across all three geographical areas. However, while men's earnings are slightly lower in York compared to Yorkshire and the Humber region, the opposite is true for women.

Try and find the data for your local area.

Complete the table:

	MEDIAN ALL EARNINGS 2021				
REGION	ALL (£)	MEN (£)	WOMEN (£)		
Country					
Region					
Local authority					

What patterns do you notice?

Now. we'll work through how to do the calculations to find out the gap between men's and women's earnings.



Calculating the gender gap

Using the data from our previous table, let's calculate what the difference is between men's and women's earnings.

We can use an equation to do this:

$$\frac{\text{men's earnings} - \text{women's earnings}}{\text{men's earnings}} \times 100$$

Let's try an example with the data from England.

$$\frac{31153 - 21175}{31153} \times 100$$

Your calculator may do this for you, but just in case, it's important to do it in stages:

1. Do the subtraction: 31153 - 21175 = 9978

2. Do the division: $\frac{9978}{31153} = 0.32029018$

3. Do the multiplication: $0.32029018 \times 100 = 32\%$

Women earn 32% less than men.

Remember to make the number negative!

	MEDIAN ALL EARNINGS 2021					
REGION	ALL (£)	MEN (£)	WOMEN (£)	Difference (W to M)		
England	26,192	31,153	21,175	-32%		
Yorkshire and The Humber	24,065	29,111	19,281	%		
York	24,041	28,711	20,507	%		

Let's do the same for the region and the local authority. You can check your answers on the next page!

Top tip

You can also use an online percentage calculator to do the hard work for you!

Try one like <u>Percentage Calculator</u> and use the increase/decrease option.



Here's the completed table.

	MEDIAN ALL EARNINGS 2021					
REGION	ALL (£)	MEN (£)	WOMEN (£)	Difference (W to M)		
England	26,192	31,153	21,175	-32%		
Yorkshire and The Humber	24,065	29,111	19,281	-34%		
York	24,041	28,711	20,507	-29%		

Calculations based on ONS (2021) Annual Survey of Hours and Earnings, Table 8.7a

Now you can complete the table for your local area. If you don't want all three areas, feel free to adapt the table.

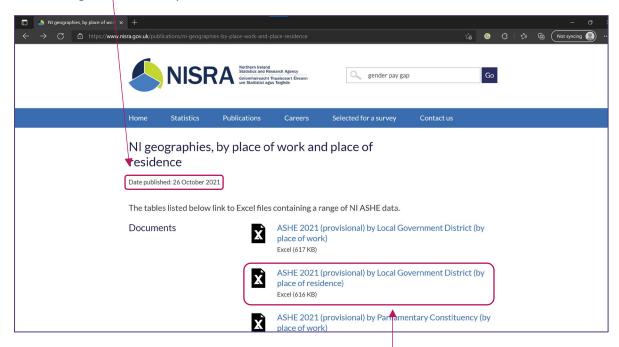
	MEDIAN ALL EARNINGS 2021					
REGION	ALL (£)	MEN (£)	WOMEN (£)	Difference (W to M)		
Country				%		
Region				%		
Local authority				%		

Calculations based on ONS (2021) Annual Survey of Hours and Earnings, Table 8.7a



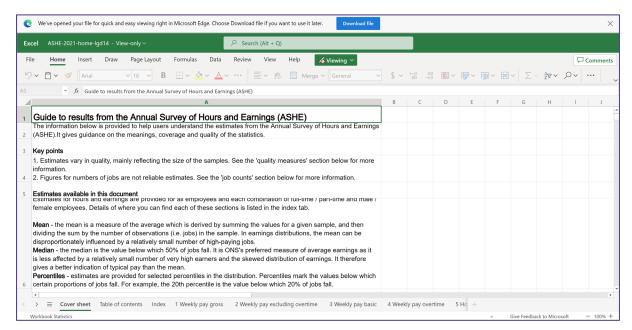
Northern Ireland

To get the earnings data for Northern Ireland, first you'll need to go to the NISRA website here: NI geographies, by place of work and place of residence | Northern Ireland Statistics and Research Agency (nisra.gov.uk). This will take you directly to the page with the results of the Annual Survey of Hours and Earnings for Northern Ireland. Remember to check that you are looking at the most up-to-date information.



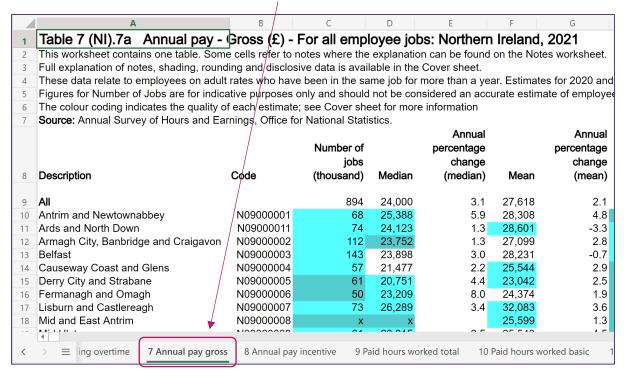
Again, you can choose whether you want to work with where you work or live, and if you prefer to look at data for your local elections or for your parliamentary constituency. As with the previous section, we'll use data for the local authority where you live.

This time the spreadsheet may open directly in your browser window.

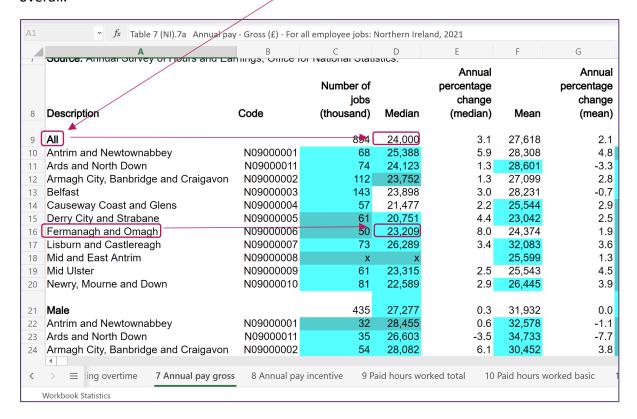




Scroll across the tabs until you find table 7.



This time the data on all; full-time; part-time; male; female is all together, so you can find everything you need on one tab. The top 'All' in each section refers to Northern Ireland overall.

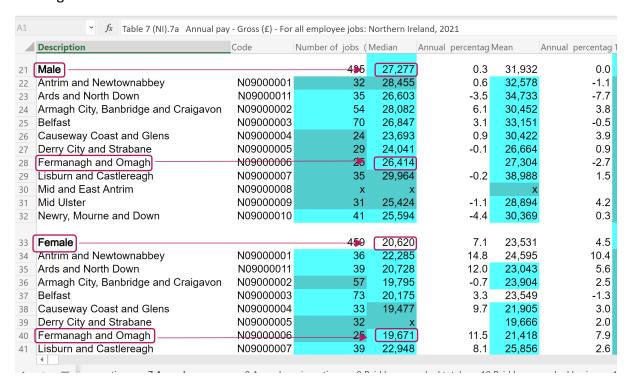




Let's use Fermanagh and Omagh as the local authority example this time.

	MEDIA	MEDIAN ALL EARNINGS 2021		
REGION	ALL (£)	MEN (£)	WOMEN (£)	
Northern Ireland	24,000			
Fermanagh and Omagh	23,209			

In fact, it's now easy to fill in the rest of the table as we can see both male and female earnings on one screen.



	MEDI	MEDIAN ALL EARNINGS 2021		
REGION	ALL (£)	MEN (£)	WOMEN (£)	
Northern Ireland	24,000	27,277	20,620	
Fermanagh and Omagh	23,209	26,414	19,671	

Now you can find the data on your local area. You'll find a template on the next page.



Here's a template you can use to record earnings data

	MEDIAN ALL EARNINGS 2021		
REGION	ALL (£)	MEN (£)	WOMEN (£)
Country			
Region			
Local authority			

What patterns do you notice?

And here's one you can use to record the difference between men's and women's earnings.

	MEDIAN ALL EARNINGS 2021			
REGION	ALL (£)	MEN (£)	WOMEN (£)	Difference (W to M)
Country				%
Region				%
Local authority				%

14



A note on the calculations and how they relate to power.

We have used the same calculations that the Office for National Statistics uses to calculate the official gender pay gap. This means that we have used male earnings as the benchmark.

If we change the calculation to use women's earnings as the benchmark, we can change the focus from how much women lose, to how much men gain.

$$\frac{\text{men's earnings} - \text{women's earnings}}{\text{women's earnings}} \times 100$$

Take a look at the new percentages. These represent the percentage of a woman's salary that a man earns **extra** in each geographical area.

	MEDIAN ALL EARNINGS 2021			
REGION	ALL (£)	MEN (£)	WOMEN (£)	Difference (M to W)
England	26,192	31,153	21,175	47%
Yorkshire and The Humber	24,065	29,111	19,281	51%
York	24,041	28,711	20,507	40%

We note also that this data is not disaggregated by other protected characteristics, e.g., ethnicity, age, disability.