

# Earnings and Low Pay

Distributions and Estimates from the  
Labour Force Survey

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The screenshot shows a web browser window with the URL <https://www.ons.gov.uk/>. The page header includes the Office for National Statistics logo and a language selector set to English (EN). A navigation menu contains links for Home, Business, industry and trade, Economy, Employment and labour market (which is highlighted), People, population and community, and Taking part in a survey?. Below the menu is a search bar with the placeholder text 'Search for a keyword(s) or time series ID'. The breadcrumb trail reads: Home > Employment and labour market > People in work > Earnings and working hours > Earnings and low pay. The article title is 'Earnings and low pay: distributions and estimates from the Labour Force Survey'. The introductory text states: 'This article explores the distribution of earnings using the Labour Force Survey (LFS) with a focus on low-paid jobs.'

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Article:

## Earnings and low pay: distributions and estimates from the Labour Force Survey

This article explores the distribution of earnings using the Labour Force Survey (LFS) with a focus on low-paid jobs.

Authors: James Rowlings and Ashley Nanton

# Outline

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- Using the LFS
- Analysis of the Distribution of Earnings
- Analysis of Jobs Paid Less Than or Close to the NMW or NLW
- Future Analysis
- Questions

# Using the LFS

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## **Previous Analysis:**

- Office for National Statistics (ONS) and the Low Pay Commission (LPC) focusing on characteristics of those paid below the NMW
- Hicks, Conn and Johnson (2009) exploring methodological issues in using the LFS for low-pay estimates

# ASHE and LFS

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## Annual Survey of Hours and Earnings

*Source of National Statistics for:*

*Producing estimates of pay in the UK*

*Estimating the number of jobs paid below the  
National Minimum Wage or National Living Wage.*

## Labour Force Survey

*Can be used to:*

*Produce estimates of earnings*

*Breakdown earnings by information not collected in  
ASHE such as nationality*

# ASHE and LFS

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- LFS has a smaller sample size compared to ASHE.
- LFS is a respondent-based household survey, whereas ASHE is a survey of employers:
  - Proxy and estimated responses
  - Memory reliant
  - Changes in NMW

# ASHE and LFS

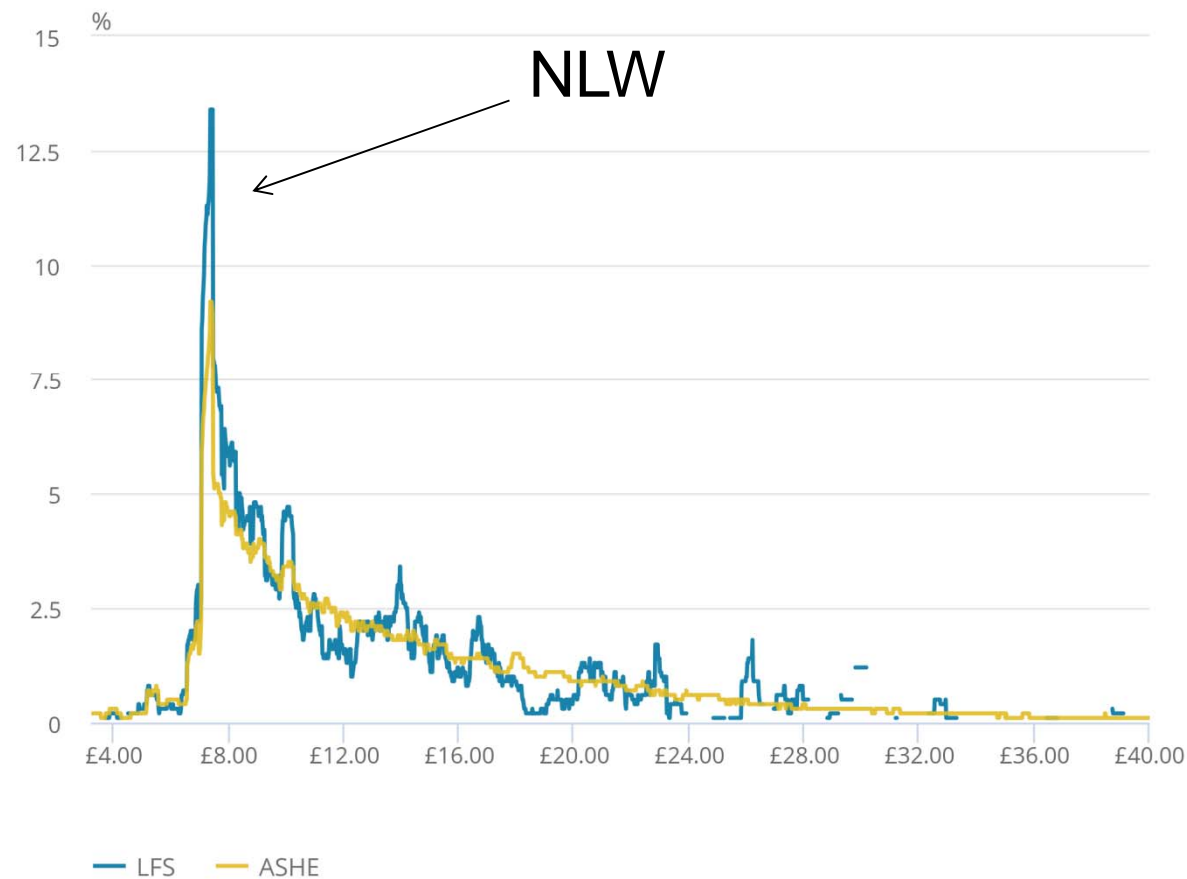
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- LFS has a greater number of variables on personal characteristics to be used for earnings breakdowns:
  - Disability
  - Ethnicity
  - Nationality
  - Qualifications
- Quarterly production of LFS data making more timely earnings estimates.

# ASHE and LFS

Figure 1: Distribution of nominal hourly earnings, ASHE (April 2016), LFS (April to June 2016), UK

Plus or minus 20 pence



Source: Office for National Statistics, Annual Survey of Hours and Earnings (ASHE)



# Methodology

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- Derived hourly rate = Gross weekly pay / Usual number of hours worked
- Stated hourly rate collected directly from respondents.
- A stated rate is more accurate than a derived rate for measuring low pay (Ormerod and Ritchie, 2007).
- Missing stated hourly pay rates account for about two-thirds of LFS observations on individuals aged 16 and over.

# Imputed Rate

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- Regression analysis
  - Dependent variables: natural log of stated hourly rate
  - Independent variables: derived hourly rate of pay, qualifications, age, gender... etc.
- Identifying outliers
  - Cook's distance
  - Coded as missing
- Observations ordered
  - By predicted fitted values for the natural log of the stated hourly rate

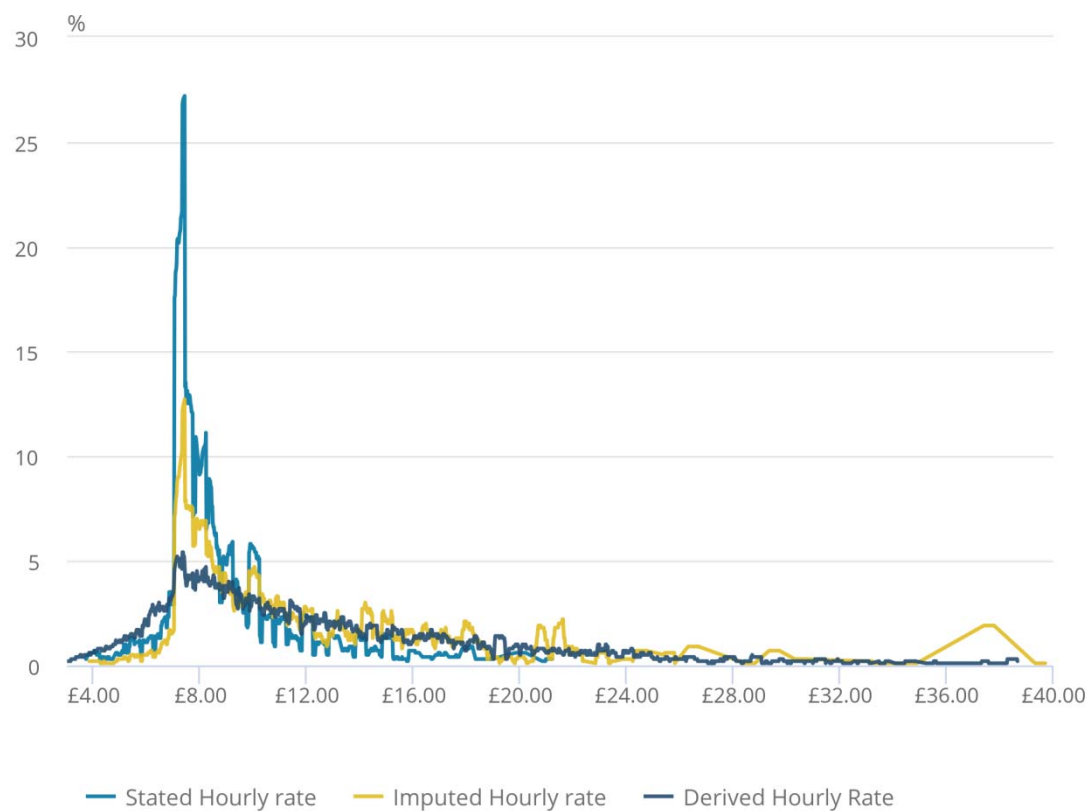
# Imputed Rate

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- Splitting the dataset
- Non-outlier stated rates remain
- Missing values are imputed
  - Average of 5 values 'above' and 5 values 'below' the observation in the ordered dataset
- Repeated for second jobs
- Dataset recombined
- Exclusions
  - Aged under 16
  - Apprentices\* and the self-employed
  - Hourly earnings of £40 or greater

# Rate Comparison

Figure 9: Comparison of stated measured, derived and imputed Labour Force Survey earnings distributions, main jobs, UK, Quarter 4 (Oct to Dec) 2016  
Plus or minus 20 pence



Source: Office for National Statistics, Labour Force Survey (LFS)

# Analysis of the Distribution of Earnings

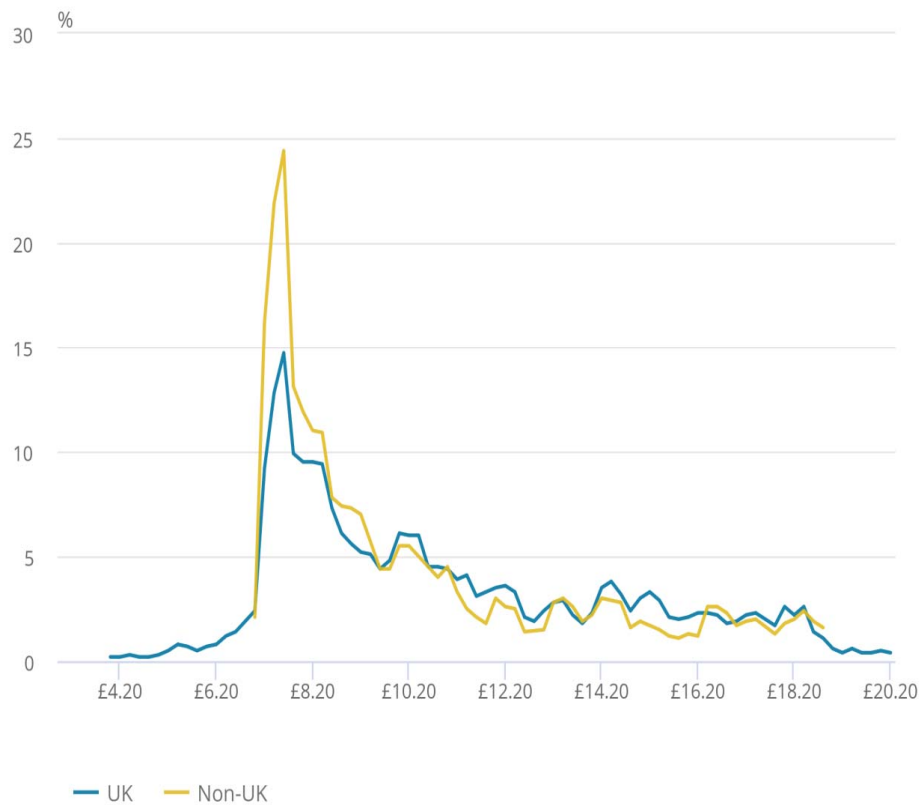
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Quarter 4 2016 saw a concentration of jobs paid at levels close to the National Living Wage.

# Nationality and Sector

Figure 3: Distribution of hourly earnings by nationality, Labour Force Survey (October to December 2016), UK

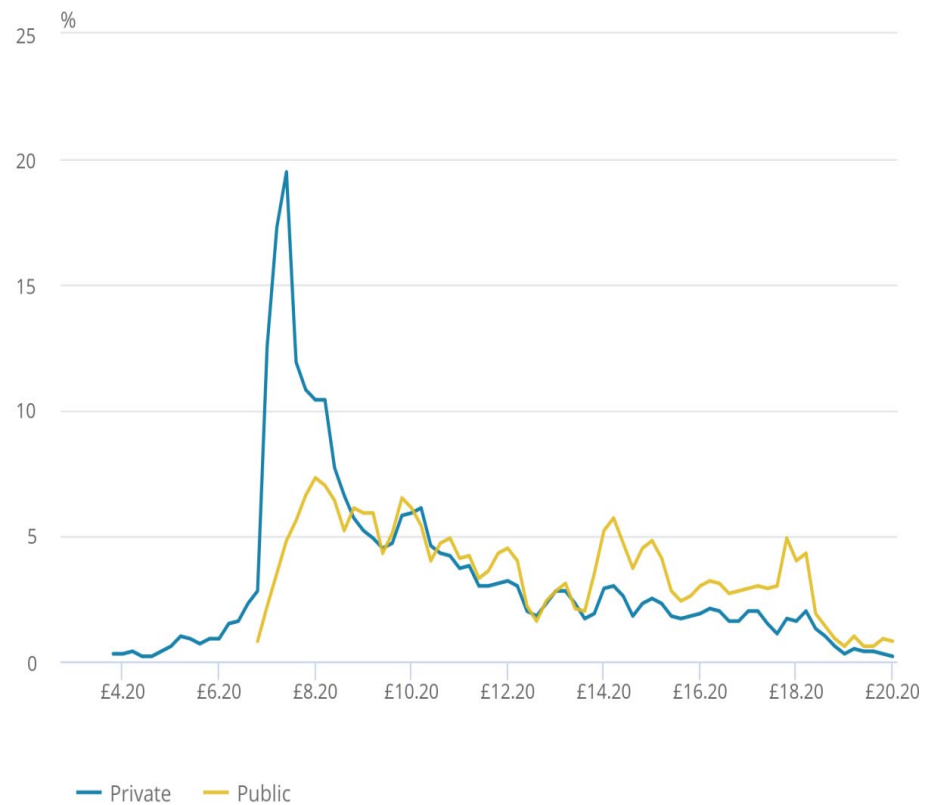
Plus or minus 20 pence



Source: Office for National Statistics, Labour Force Survey (LFS)

Figure 8: Distribution of hourly earnings by sector, Labour Force Survey (October to December 2016), UK

Plus or minus 20 pence

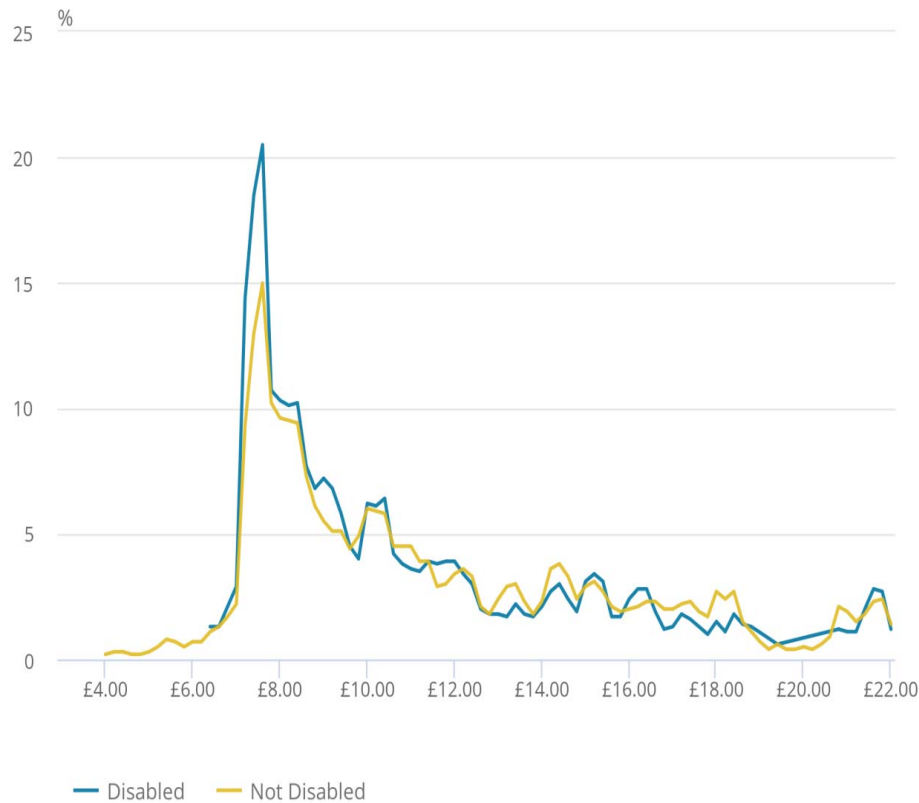


Source: Office for National Statistics, Labour Force Survey (LFS)

# Disability and Skill Level

Figure 4: Distribution of hourly earnings by disability, Labour Force Survey (October to December 2016), UK

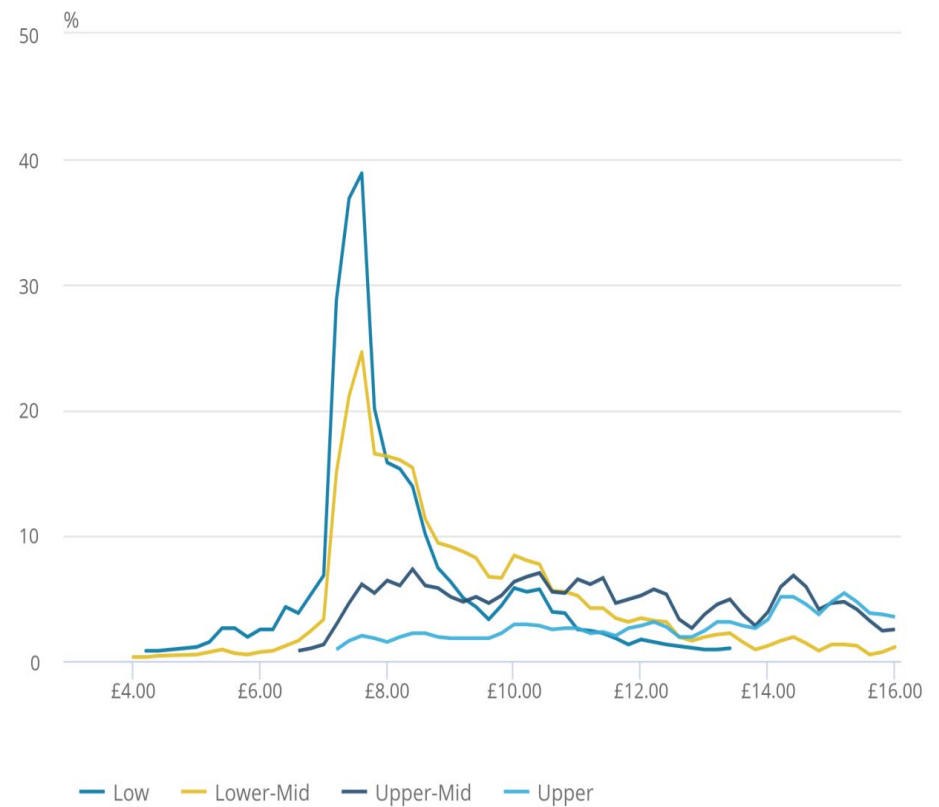
Plus or minus 20 pence



Source: Office for National Statistics, Labour Force Survey (LFS)

Figure 7: Distribution of hourly earnings by skill level, Labour Force Survey (October to December 2016), UK

Plus or minus 20 pence

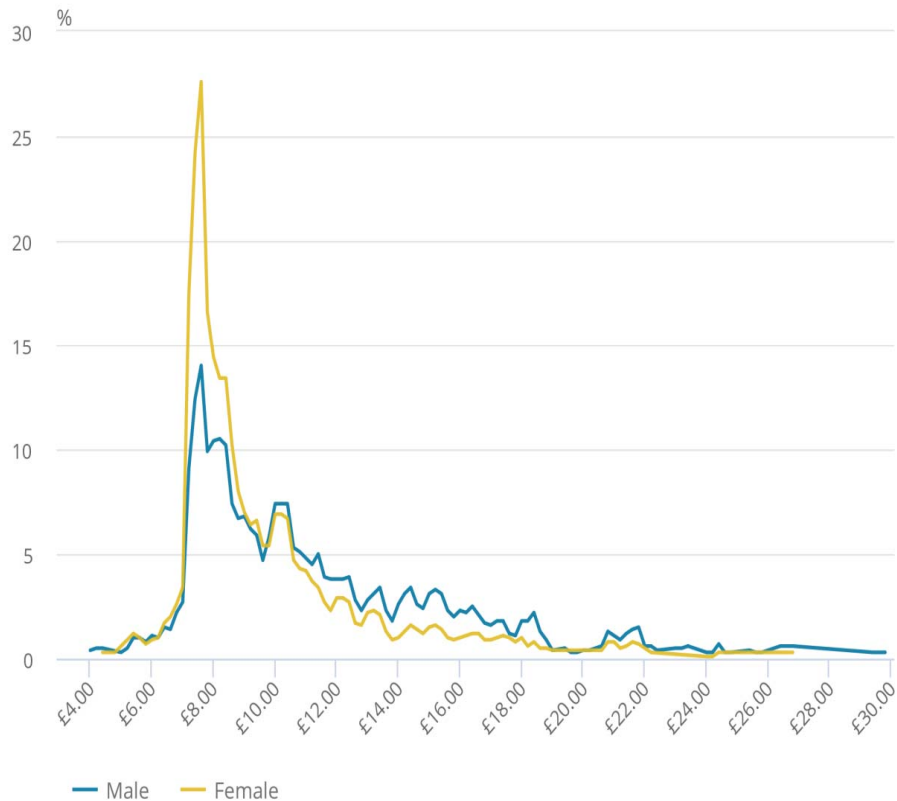


Source: Office for National Statistics, Labour Force Survey (LFS)

# Gender and Graduate Status

Figure 5: Distribution of hourly earnings of non-graduates by gender, Labour Force Survey (October to December 2016), UK

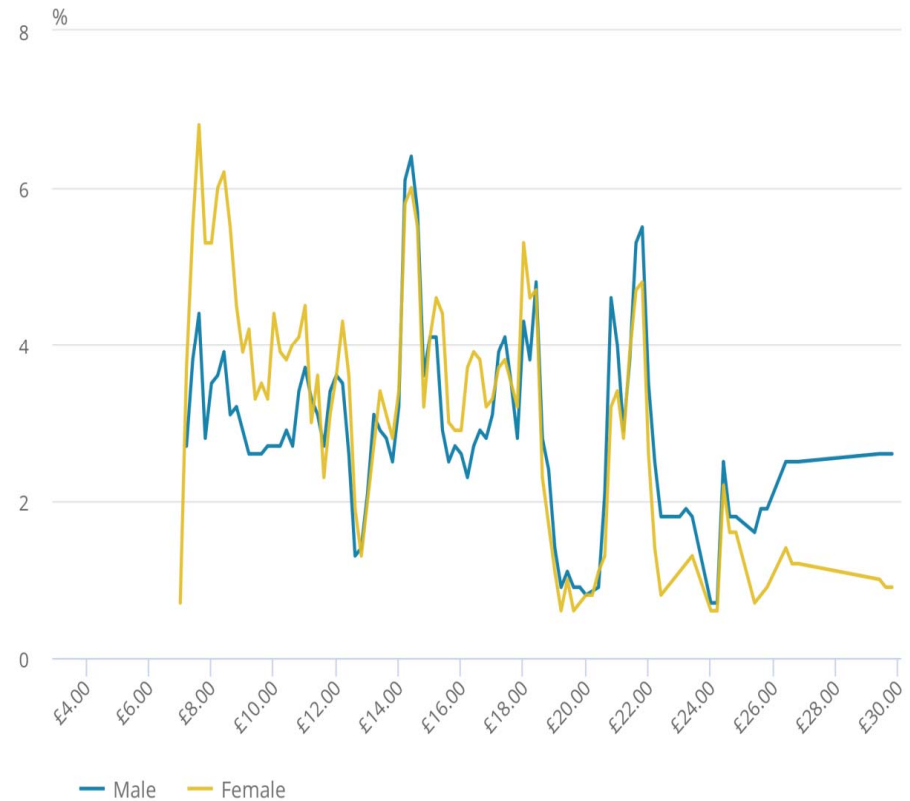
Plus or minus 20 pence



Source: Office for National Statistics, Labour Force Survey (LFS)

Figure 6: Distribution of hourly earnings by gender for graduates, Labour Force Survey (October to December 2016), UK

Plus or minus 20 pence



Source: Office for National Statistics, Labour Force Survey (LFS)



# **Jobs Paying Less Than or Close to the NMW or NLW – Job Characteristics**

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- ‘Elementary occupations’ was the occupation group with the highest proportion of lower-paid jobs.
- ‘Distribution, hotels and restaurants’ was the industrial group with the highest proportion of lower-paid jobs.
- The ‘construction’, and ‘energy and water’ industrial groups had the lowest proportion of low-paying jobs.
- Firms with a low headcount had the highest proportion of low-paying jobs.

# **Jobs Paying Less Than or Close to the NMW or NLW – Personal Characteristics**

- Jobs filled by those with no qualifications were most likely to be low-paying.
- A higher proportion of employees declaring a disability were in low-paying jobs compared to those without a disability.
- A higher proportion of jobs filled by females were low-paying compared to males.
- Non-white employees were more likely than white employees to be in low-paying jobs.

# **Jobs Paying Less Than or Close to the NMW or NLW – Other Characteristics**

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- A larger proportion of low-paid jobs were filled by part-time employees compared with full-time employees.
- The majority of low-paying jobs were classified as low skilled.
- A higher proportion of employees with zero-hour contracts were low-paid compared to those with non zero-hour contracts.
- The country with the highest proportion of low-paying jobs was Wales.
- The North East and the North West had the highest proportion of low-paying jobs.

# Future Analysis

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- More recent data
- Increased National Living Wage and National Minimum Wage

# Questions and Future Analysis

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