Government Actuary's Department

Gender Pension Analysis

Next steps report for the Local Government Pension Scheme Advisory Board

22 June 2023

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Contents

Summary

This report for the LGPS Scheme Advisory Board ("SAB") provides further analysis of how pension income and total pension pot size for members of the Local Government Pension Scheme ("LGPS"), were impacted by gender ("the gender pension gap") as at 31 March 2020.

Overview

Our January report identified that there is a substantial difference between the average level of LGPS pension benefits accrued by male and female scheme members. For benefits in payment at 31 March 2020 this difference is 49%. Although sizeable, this level of difference is comparable to other large public service schemes in aggregate, and wider UK private pension provision. Following our report SAB asked GAD to explore these gender gaps in more depth, focussing on:

- Career patterns – in particular, evidence of recent and past part-time working
- Differences relating to employers or categories of employers
- Comparing our analysis with LGA 2019 gender pay gap report

In this report we explain the main patterns our investigations have identified:

- Part-time working patterns are closely related to gender pension (and pay) gaps for LGPS members. Controlling for differences between men and women in terms of both current and historic part-time working patterns reduces, but does not eliminate, these gender gaps. Possible explanatory factors include length of service and employer differences.
- Pay and pension gender gaps can be attributed to both ('within employer') differences for males and females working for the same employer and ('between employer') differences in the proportions of males and females working at higher or lower paying employers or between different categories of employers.
- Data and methodology differences mean that the LGA report results and those in this report and in our earlier January report are not directly comparable. Filtering data and adopting a similar approach result in slightly higher figures than the LGA analysis.

The "Analysis" section of this report includes further summaries and charts. We have also included references to other analyses we have identified as potentially of interest to SAB in their considerations of the LGPS gender pension gap "Other gender pension analysis".

This report is based on data GAD has collected to conduct an actuarial valuation of the LGPS and to provide renewed evidence for developing government policy on the scheme. Some analysis also uses bulk rates and adjustment data from the 2019 LGPS local fund valuations. It should be read in conjunction with the GAD report 'Local Government Pension Scheme: England and Wales Membership data Actuarial valuation as at 31 March 2020' ("2020 data report") and our previous report 'Gender Pension Analysis Update for the Local Government Pension Scheme Advisory Board' dated 25 January 2023. GAD has processed the data to ensure it is suitable for the purposes of these investigations, as described in the "Data and methodology" section of this report. Please see the section "important information" for further details on the useability and limitations of the information presented in this report.

Other gender pension analysis

Numerous organisations have published and continue to publish analyses of gender pension gaps in the UK. Here we briefly highlight three publications which may be of interest to SAB.

National Audit Office (NAO): Public service pensions – 19 March 2021

This value for money report[1] examines data from the four largest pay-as-you-go public service pension schemes in the UK (those for NHS, teachers, civil servants, and armed forces). As the Armed Forces scheme provides for a predominantly male workforce, we have focused on the first three pay-as-you-go schemes. The NAO report includes the difference between mean pensions in payment for males and females, using data published by GAD as part of the 2016 scheme valuations. The equivalent figure for LGPS sits within the range for these schemes, as summarised in Table 1:

Table 1 Large public service pensions scheme average (mean) pension in payment

Scheme	Percentage of female pensioners	Male average pension	Female average pension	Gender gap
Civil service	47%	£11,047	£5,875	47%
NHS	75%	£17,541	£6,440	63%
Teachers	64%	£15,248	£10,882	29%
All three pay as you go	**64%**	**£14,138**	**£7,766**	**45%**
LGPS	62%	£6,957	£3,550	49%

Source: analysis of scheme actuarial valuation report supporting materials (as at 31 March 2016) produced by GAD

The LGPS 2016 gender gap figure above is very similar to the corresponding 2020 figure from our January report, 49.4%. GAD 2020 data summaries for other public service schemes are currently yet to be published.

The NAO identify differences in pay, part-time working, and length of service as likely explanatory factors.

[1] https://www.nao.org.uk/reports/public-service-pensions/ page 24

Department for Work & Pensions (DWP): The Gender Pensions Gap in Private Pensions – 5 June 2023

This statistical release[2] of estimates the gender pensions gap (GPeG) in terms of uncrystallised median private pension wealth near retirement age. (Private pensions wealth excludes State Pension, other benefits, and non-pension wealth.) Table 2 summarises some key findings:

Table 2 DWP Gender Pension Gaps (GPeG)

	DWP GPeG
All savers	35%
Employee eligible for automatic enrolment	32%
Members with exclusively defined benefit private pensions wealth	44%

In this GAD report and our previous January report we consider the difference between mean pension accrual for males and females. We previously observed that gender differences in median pensions were similar but slightly lower than mean differences for LGPS. Subject to these differences, the figure for exclusively defined benefit pensions wealth is comparable to the 49% for LGPS from our January report

Other areas DWP consider which may be of interest to SAB include patterns over time and levels of pension participation.

Pensions and Lifetime Savings Association (PLSA): LGPS Today's challenges, tomorrows opportunities – June 2022

This general independent report[3] on opportunities to evolve and future-proof the scheme examined "LGPS and scheme members" as one of several themes. Under this theme it commented that feedback collected during research suggested the gender pension gap was a "persistent problem" for the LGPS. It was also noted that the LGPS membership included a significant proportion of low-income earners and part-time workers. Women make up a high proportion of both these groups. The report used GAD data shared by SAB to provide a membership pay profile for males and females.

In the context of its theme, the PLSA report suggested improved understanding of member profiles and seeking opportunities to help member understand pensions.

[2] The Gender Pensions Gap in Private Pensions - GOV.UK (www.gov.uk)

[3] The Local Government Pension Scheme: today's challenges, tomorrow's opportunities (plsa.co.uk)

Analysis

Correlation with part-time working patterns

Part-time working patterns are closely related to gender pension (and pay) gaps for LGPS members. Controlling for differences between men and women in terms of both current and historic part-time working patterns reduces, but does not eliminate, these gender gaps.

The LGPS membership data collected by GAD does not include a full career history, but it does include information about working patterns for actives: Firstly the part-time proportion as at 31 March 2020 ('current part-time proportion'), which also closely corresponded to the ratio of actual pay received and full time equivalent pay for a role; Secondly reckonable service for individuals who were employed prior to 2014, the periods they worked during scheme membership up to 2014 i.e. when final salary pension was earned (LGPS benefit provision changed to career average from 1 April 2014).

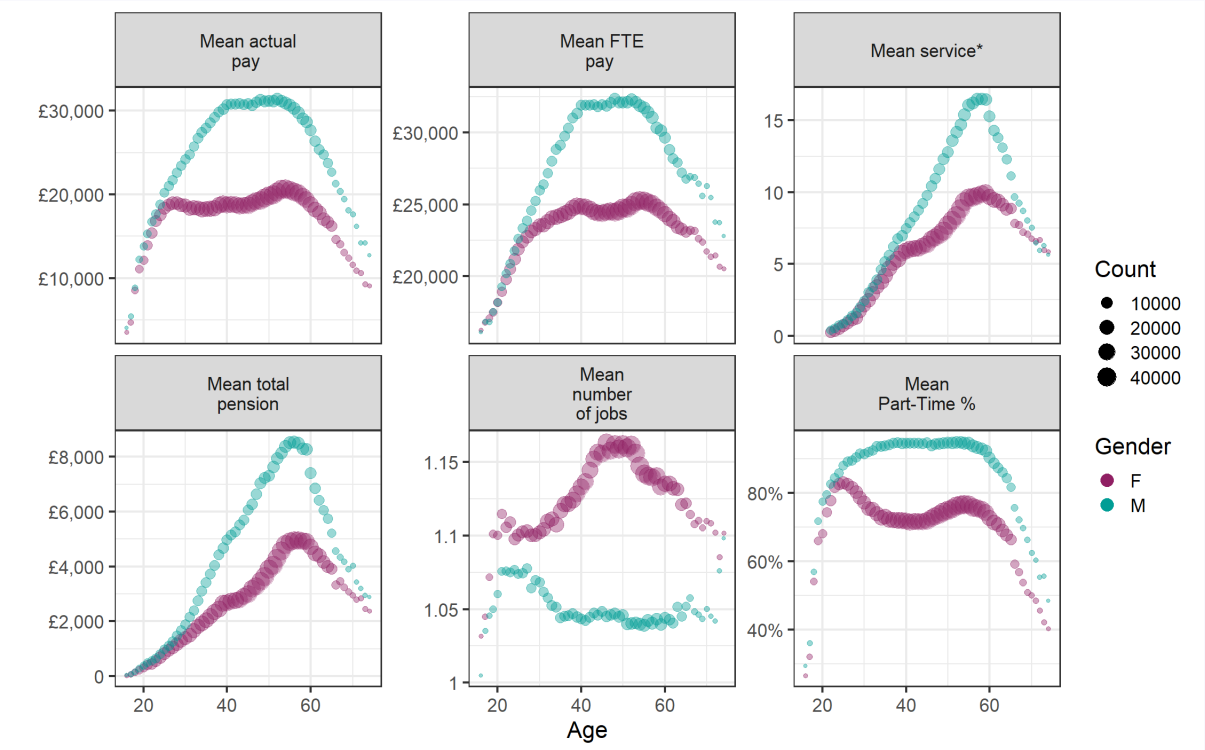
Table 3 below compares several key metrics for male and female actives. As in our initial report, means and counts have been calculated at the level of individuals. Filtering to include information about working patterns has slightly reduced the size of dataset compared with our initial report and so there are some small differences in figures (see 'Data and Methodology' section for details).

Table 3: Summary of actives data

	Mean FTE pay (£)	Mean actual pay (£)	Mean CARE pension (£)	Mean legacy pension (£)	Mean part-time proportion (%)	Mean reckonable service (yrs.)	Mean age	Head-count
Females	24,209	18,862	1,670	1,562	74%	3.7	45	1,172,399
Males	29,283	27,540	2,548	2,916	91%	6.0	45	398,709
Combined	25,497	21,065	1,893	1,905	78%	4.3		
Gender gap	17.3%	31.5%	34.5%	46.4%				

As before, the mean pensions and pay for women are lower than those for men. The working pattern data shows that women are also more likely to work part-time currently and have lower service despite being a similar age on average. The latter is likely to reflect a combination of past part time working and overall time in employment.

Chart 1: Actives gender differences by age



Notes
*only includes individuals with usable reckonable service values.
+Although the actual and full-time-equivalent ("FTE") pay gaps appear at first glance to be very similar, this appearance is a result of the different y-axis scales; the actual pay gap is in fact much larger than the FTE pay gap.

Chart 1 illustrates the ways in which key variables of interest vary by both age and gender.

As well as showing essentially the same patterns as our initial report, these plots show that at early ages, gender difference in part-time working are minimal. Gender differences in pay, pension and accrued reckonable service all emerge at roughly the same age (around 27 years), which is the age we have historically observed that some women have their first child. The trends shown above therefore complement the existing academic literature in indicating that the gender pay gap is likely attributable to gender discrepancies in childcare responsibilities and their impact on career trajectories. They suggest that childcare responsibilities may lead women to seek more flexible (including part-time) work, and that this leads them to compromise in relation to other job criteria such as FTE pay, resulting in lower pension accrual over time.

Historic part-time proportion

The current part-time proportion only reflects whether members worked part-time as at 31 March 2020. Some members who were full-time on the valuation date may have worked part-time or taken career breaks at some point in the past, potentially impairing their career progression and thus resulting in lower FTE pay on the valuation date despite switching to a full-time working pattern before then. If this is more common for women (as suggested by relevant academic literature[4]), then it could increase the gender pay and pension gaps without being fully reflected in current part-time working patterns.

[4] Petrongolo, B. (2019). The gender gap in employment and wages. *Nature Human Behaviour*, *3*(4), 316-318.

We investigated this by considering fraction of the calendar years during which they were an LGPS EW member for which they were working ('historic part-time proportion'). This was calculated as the ratio of reckonable service to the overall period of scheme membership (also commonly referred to as qualifying service). Because we were relying on information about final salary benefits, this was only possible for individuals with service prior to 1 April 2014. A member who took a long career break or who worked part-time for a considerable period in the past would be expected to have a lower service ratio than a member who has always been full time.

We then divided the data for individuals with service prior to 1 April 2014, by whether they were currently part-time (at 2020) or historically part-time (pre-2014) and compared mean FTE pay and mean total pension.

Full time currently and historically

Chart 2: Mean FTE pay by age and gender for individuals who were full-time at 31 March 2020 and full-time before April 2014

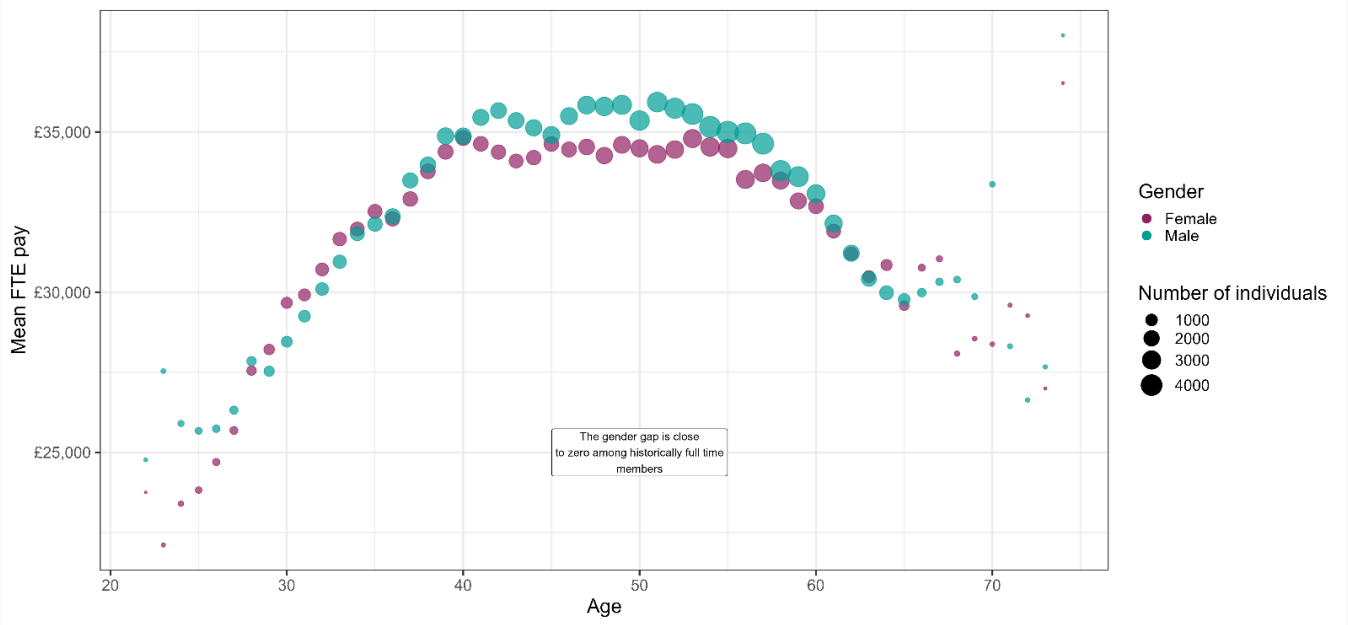


Chart 3: Mean pension by age and gender for individuals who were full-time at 31 March 2020 and full-time before April 2014

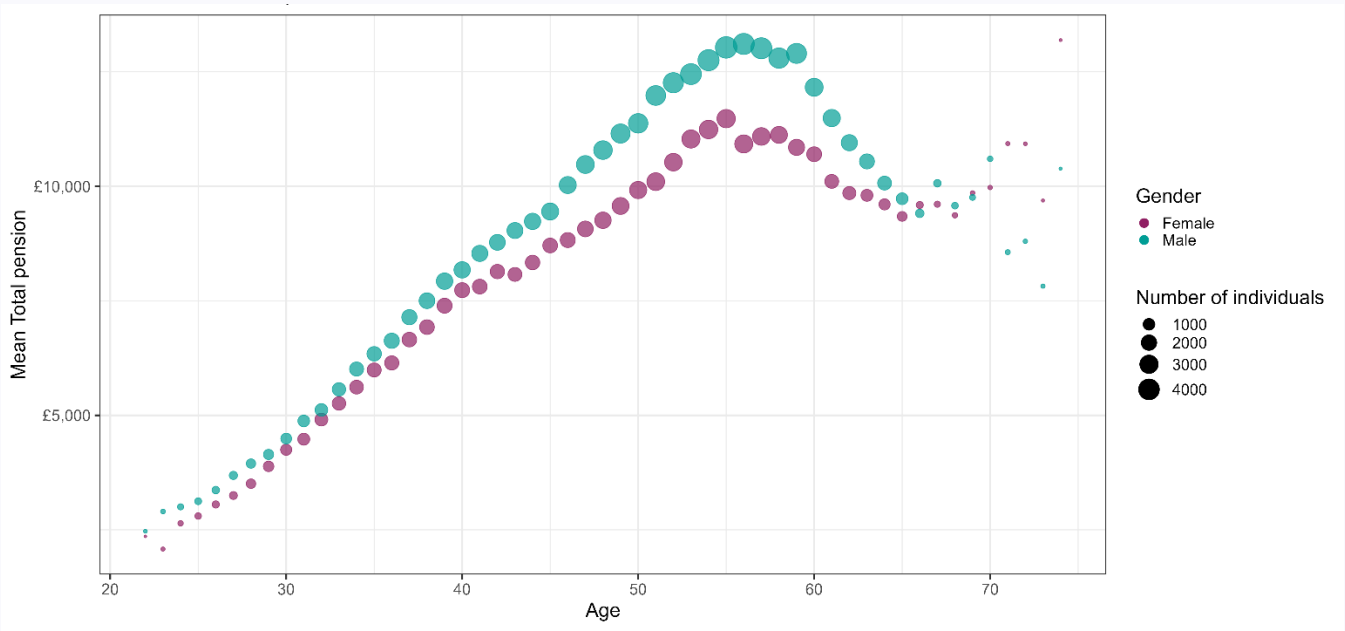
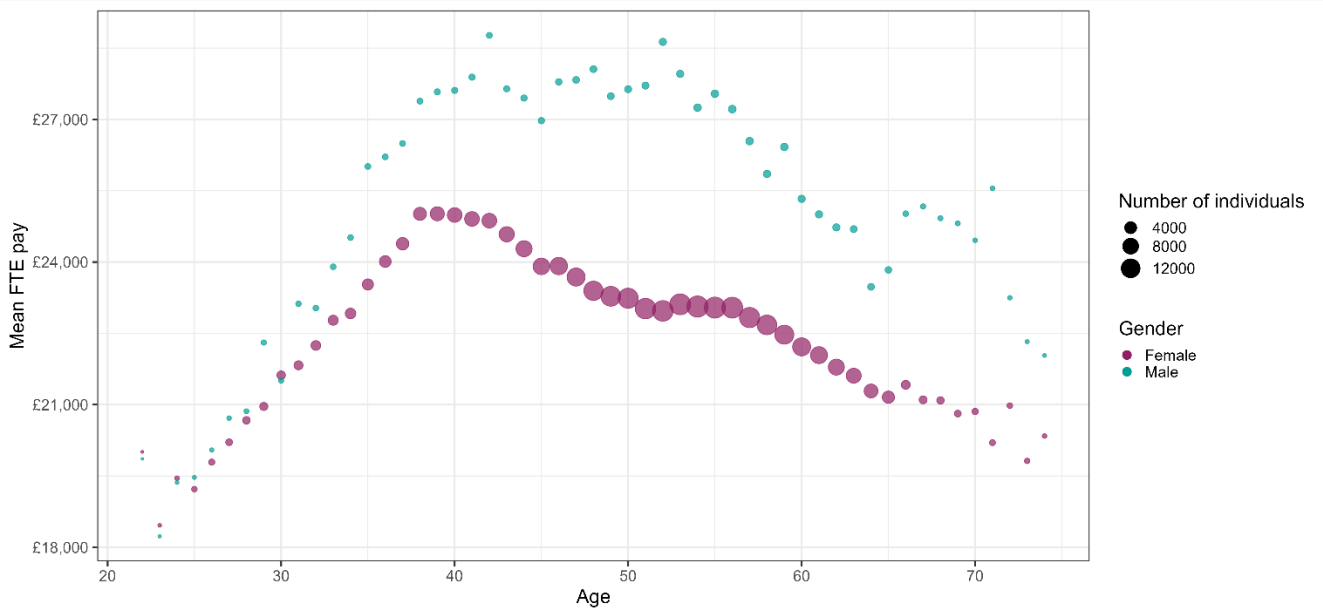


Chart 2 suggests that among people who were full-time on the valuation date and had always worked full-time before then, the gender pay gap is minimal. However, Chart 3 shows evidence that there is still a gender pension gap for this group, though it is much smaller than the overall gap in chart 1. Further investigation indicated that the gender pension gap among members who appeared to have historically worked full-time and who worked full-time at the valuation date was almost entirely because female members had, on average, 2.3 years less reckonable service than the male members (10.0 years for women vs. 12.3 years for men; paralleled by a similar difference in qualifying service).[5]

Part time currently and historically

Chart 4: Mean FTE pay by age and gender for individuals who were part-time at 31 March 2020 and part-time before April 2014



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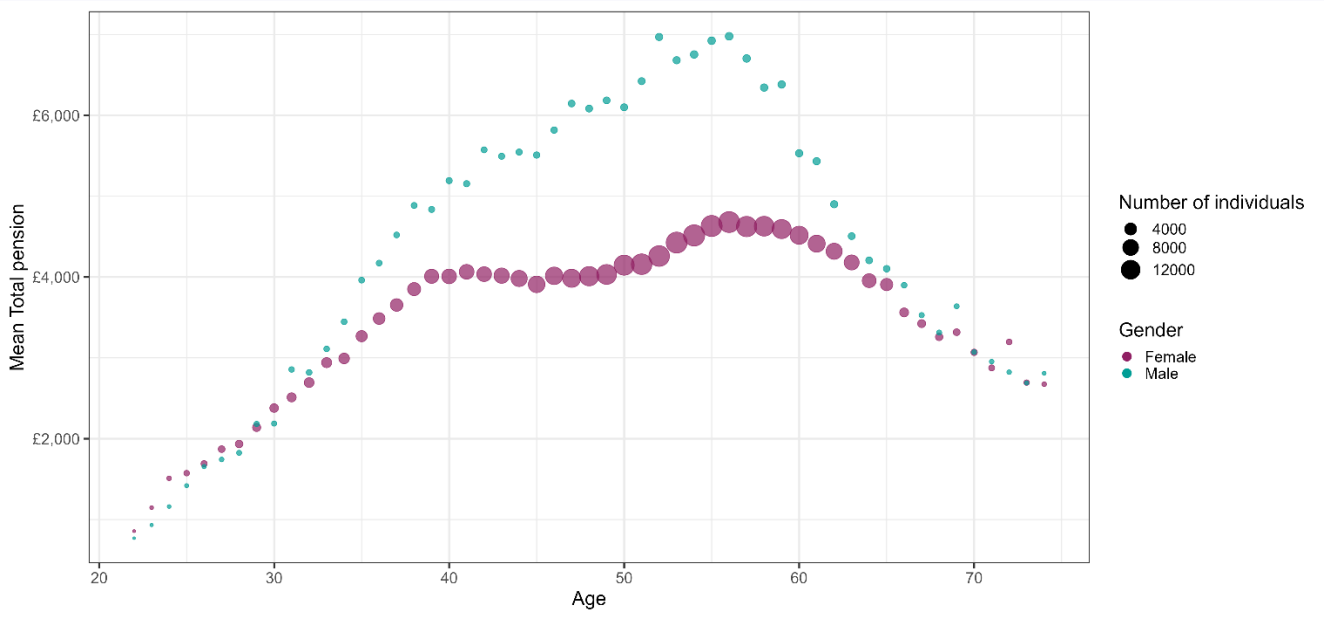
[5]The mean female pension within this subgroup was £8,910 while the mean male pension was £10,352. I.e., the male pension was about 16.2% higher than the female pension even though the mean male reckonable service was about 23.1% higher than the female reckonable service. So, if anything, the mean male pension would be lower than the mean female pension in this subgroup when adjusting for differences in reckonable service.

Chart 5: Mean pension by age and gender for individuals who were part -time at 31 March 2020 and part -time before April 2014



Charts 4 and 5 show a clear gap in pay and pensions for males and females who are part time. Further investigation suggested that there were different average part-time proportions for males and females who work part time. These pay and pensions gaps above will in part reflect this.

Residual gender gaps after controlling for part-time patterns

We explored the extent to which gender pay and pension gaps are explained by part-time working patterns more specifically in quantitative terms. We re-calculated the gender gaps for pay and pensions taking account of differences in current part-time proportion between individuals ('percentage gender difference when controlling for current part-time percentage'). See the "Data and methodology" section of this report for details of the approach used.

This process was repeated using both current and historic part-time proportion so that we could also assess the extent to which the male advantage is attributable to longer term part-time working patterns. This second analysis used the smaller subset of members with service prior to 1 April 2014.

Table 4: Residual gender gaps after controlling for part-time proportions

Variable	% Gender Difference Overall figure	% Gender Difference controlling for current part-time proportion	% Gender Difference controlling for current and historic part-time proportion
Mean FTE pay	17%	12%	8%
Mean legacy pension	46%	35%	21%
Mean CARE pension	35%	21%	14%
Population analysed	1.57 million	1.57 million	0.73 million

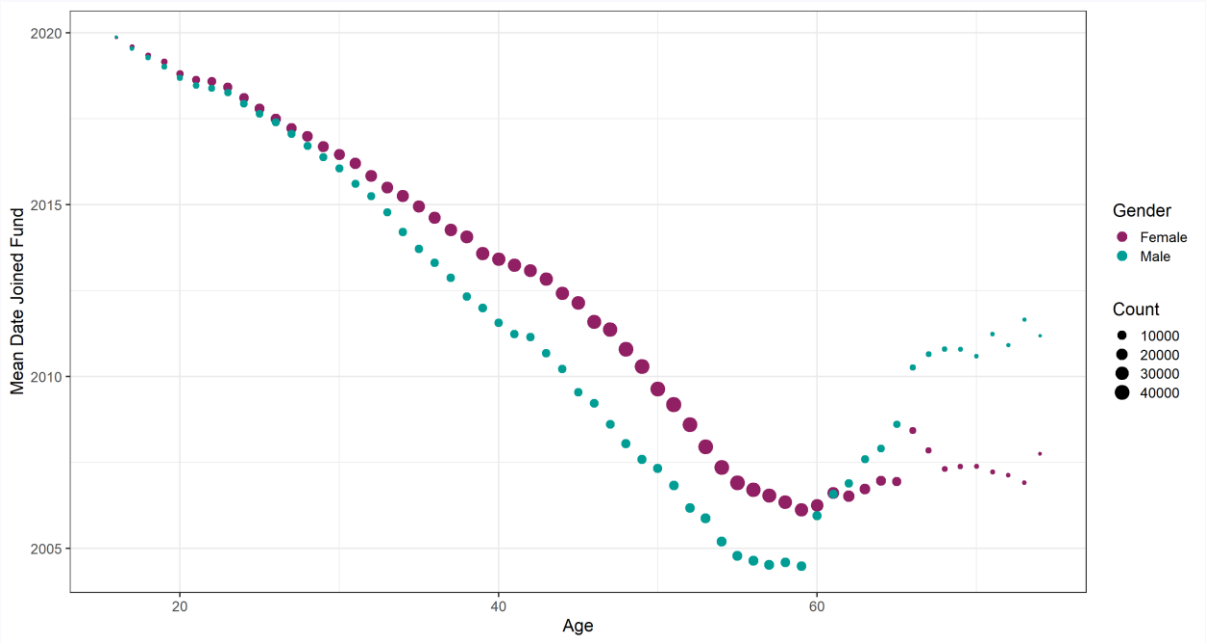
Table 4 above shows the results of this analysis. Although the gender pay and pension gaps are greatly reduced when controlling for current and historic part-time working, there is still a large male advantage even when these factors are taken into account. Controlling for both current and historic part-time working removes more of the pay gap than controlling for current part-time working alone.

The current part-time working patterns appear to explain a greater share of gender difference for CARE benefits where the gender difference when controlling for current part-time percentage, 21% is 14% lower than the overall difference (35%). Including historic part-time, the percentage is 7% lower again. This partly reflects that the overall gender CARE pension gap for the subset of members with service prior to 1 April 2014, 33%, is slightly lower than the main dataset.

This compares with legacy pension where the differences between controlled for current part-time proportion, 35%, and overall, 46%, is only 11%. Including historic part-time percentage is 14% lower again. This partly reflects that the overall gender CARE pension gap for the subset of members with service prior to 1 April 2014, 43%, is slightly lower than the main dataset.

The fact that these measures show a residual gap in pay and pension, suggests that there are other underlying reasons for the overall gap beyond the differences between males and females in the rate of part-time time working (though as discussed in “Data and methodology” it is possible that an alternative approach to controlling for part-time could produce differ). Over length of time working as an active scheme member may be one explanatory factor for the gender differences not explained by rate of part-time time working patterns. We briefly analysed members earliest date of joining, as this was included within the data we hold. Chart 6 illustrates what we found.

Chart 6: Mean earliest date of joining LGPS by age and gender



Younger males and females on average appear to join at similar times, but at older ages up to age 60 males have earlier mean joining dates compared to females of the same age. This is likely to correspond to overall higher pension accrual for males. At age 60, there is a sharp drop in mean tenure length among males that we believe indicates a tendency for males with relatively long tenures to retire at age 60. The same trend is observed for women over age 60, but it is much weaker.

Another possible explanatory factor is the employer which males and females work for. This is explored in more depth in the next section of this report.

Differences between employers

Within-employer make a larger contribution to the gender pay and pensions gap than between-employer effects.

The LGPS has several thousand different employers. Local authorities, academy trusts, other central government funded bodies, and private contractors all participate in the Scheme. A key question that emerges in the context of the gender pay and pension gap is the extent to which the gap is attributable to between-employer or within-employer effects. In principle, we can break the gender gap down into two distinct sources:

1. **Women tending to work for lower-paying employers than men ('between-employer effects').**

2. **Women working for a given employer tending to be paid less than men working for the same employer ('within-employer effects').**

The LGPS member data collected by GAD includes employer references which have allowed us to investigate these effects. We have also been able to link a significant proportion of records to rates and adjustments data from local fund valuations. This latter data provides more details about employers including classifications by DLUHC and SAB and their name. The classifications allow us to partition employers into similar groups and divided the between-employer effects into those for between similar employers and more widely. The employer's name, or key words within it, provide some additional scope for exploring the patterns of LGPS membership on top of categorisation.

Within-employer and between-employer effects on pay

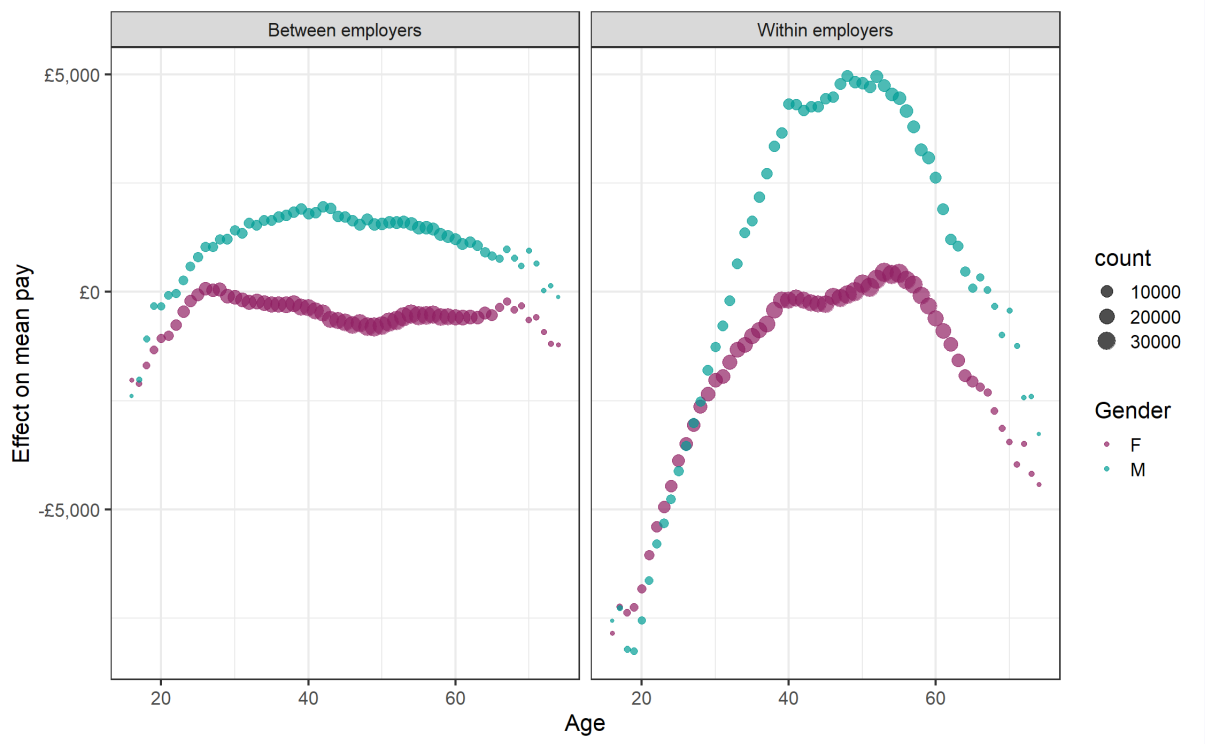
We calculated mean FTE pay for each unique employer code in the data. We were then able to determine 'between-employer effects' as the difference in average mean employer pay for males and compared against females. 'Within-employer effects' were calculated as the average difference between members own pay and pension and their employer's average. For simplicity we only considered individuals with a single employer (i.e., a smaller group than above).

Table 5:: Between and within employer effects

	Mean male pay less mean female pay	% Gender difference
Between-employer effects	£1,883	6.4%
Within employer effects	£2,904	9.8%
Overall (equals total of above)	£4,787	16.2%

As Table 5 clearly shows, the within-employer component of the mean gender pay gap above is larger than the between-employer component. The overall pay gap is slightly smaller for individuals with a single employer compared with the 17.3% shown in Table 1. We also examined the structure of these differences by age which is shown in Chart 7 below.

Chart 7: Between and within employer effects by age and gender



The ‘between’ panel shows the difference between the mean ‘employer FTE score’ for the individuals in the given age-gender combination vs. the mean ‘employer FTE score’ for all individuals. The ‘within’ panel shows the mean difference between the individuals’ own FTE pay and their ‘employer FTE score’.

Chart 7 suggests that pay gap observed until around age 30 is almost entirely attributable to a ‘between employers’ effect; this follows a similar pattern to our earlier analysis. Women only appear to start earning less than the mean for their employer at around age 30. As noted previously, this is approximately the age we have historically observed that some women have their first child. The ‘between employer’ contribution to the gender pay gap appears to manifest among individuals as young as age 20. It may therefore be driven by factors that are unrelated to childcare responsibilities that lead women to end up with lower-paying employers at the very early stages of their careers. The ‘between employer’ effect is less variable with age.

Current part-time proportion and within-employer and between-employer

To assess the extent to which these differences were explained by increased part-time working among women, the same linear regression technique described above was used to assess the within- and between- employer contributions to the gender pay gap after adjusting for gender differences in part-time working.

Chart 8: Between and within employer effects before and after controlling for part-time

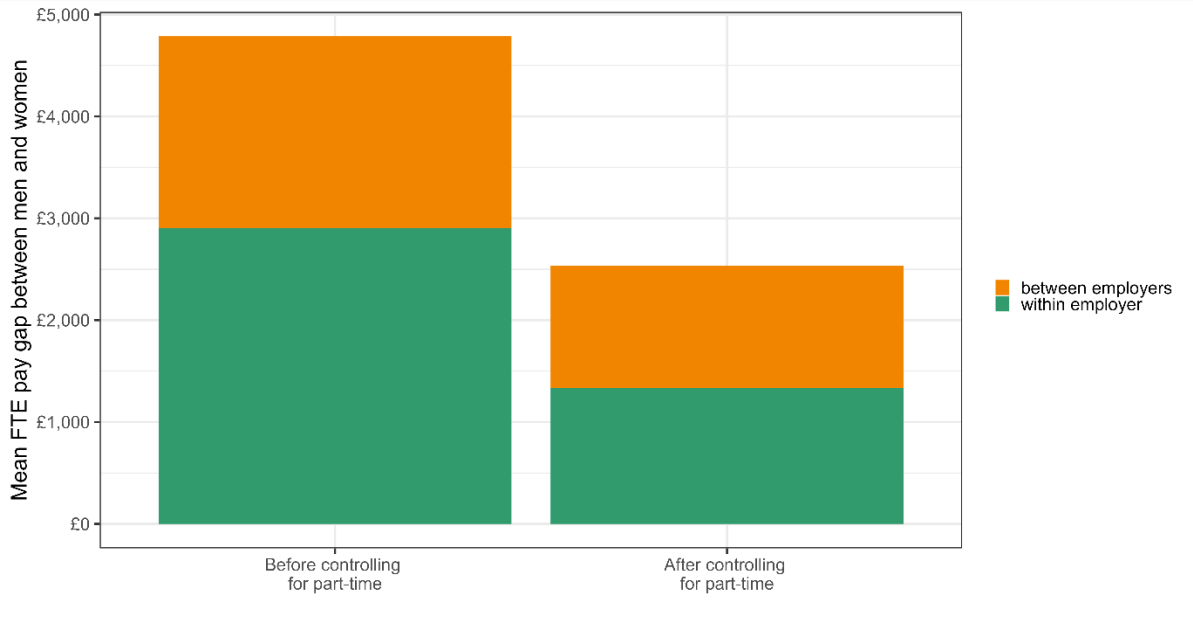


Chart 6 shows that current part-time patterns influence both the between and within employer effects. However, the within-employer contribution to the gender pay gap was reduced much more than the between-employer contribution. That is women's increased part-time working mainly corresponds to reduced pay relative to others within their employer.

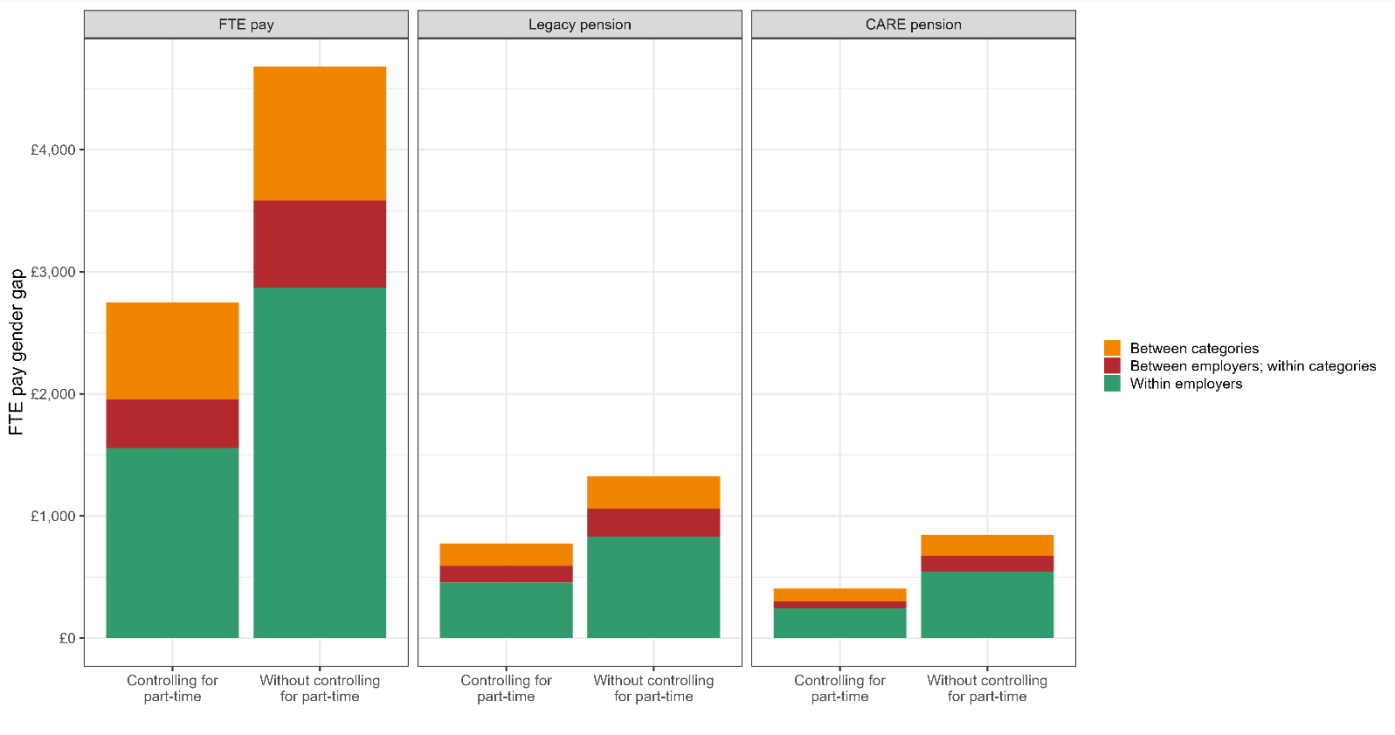
Grouping employers by category

We further split the between employer differences by calculating mean pay for all employers within each combination of DLUHC and SAB categories. This allowed us to calculate 'between category' and 'between employers; within category differences', which equated to the 'between employer' differences. We found that these measures both indicated an overall average advantage for men. That is: Women are more likely than men to work for lower-paying categories of employer. Women who work for a given category of employer tend – to a greater extent than men in the same category - to work for employers that pay less than the mean for that category.

The scale of both these differences was reduced by controlling for current part-time proportion. However, 'between employers; within category differences' was reduced more in a similar proportion to the 'within-employer' difference.

We also extended our analysis to consider legacy pension and CARE pension in equivalent terms. In both instances we found similar patterns as for FTE pay. Chart 9 below shows these results. Note that the lower columns for legacy and CARE pension primarily reflect that accrued pension is on average much lower that FTE pay.

Chart 9: Between categories, between employers; within category and within employer effects prior and post allowing for part-time



Further employer analysis

To support SAB in understanding the within and between employer related aspects of the LGPS gender pension gap we include a few further charts below.

Chart 10: proportion of employee members who are female against mean pay per employer

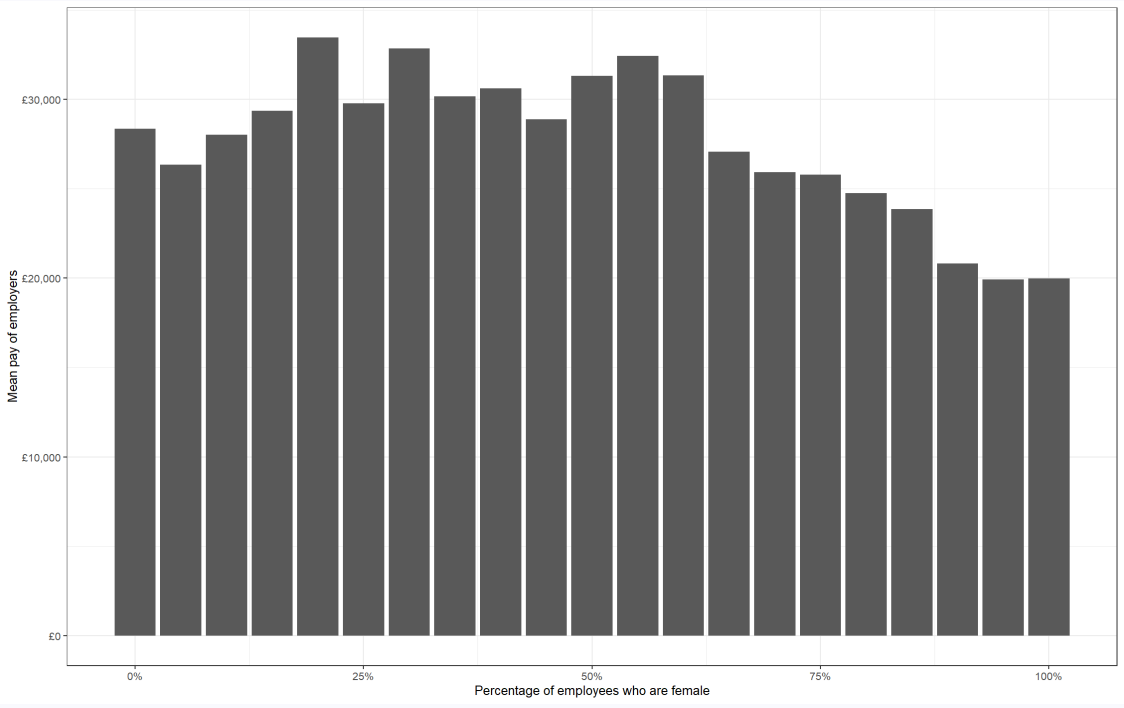


Chart 10 shows that employers with the highest proportions of female LGPS members tend to have lower mean (FTE) pay of LGPS members.

Chart 11: mean current part-time percentage of members against mean pay per employer

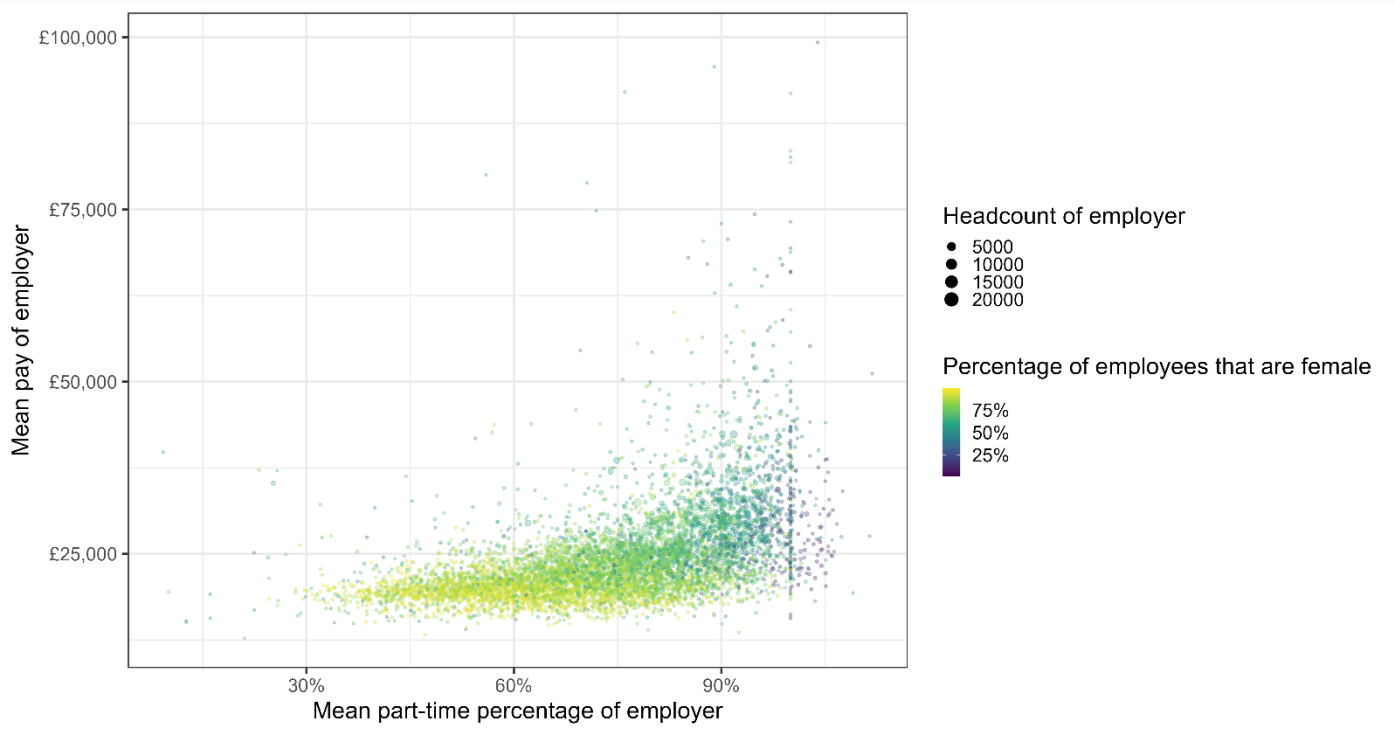


Chart 11 above shows how mean (FTE) pay of LGPS members varies with the mean part-time proportion of LGPS members on an employer-by-employer basis. Yellow shading indicates employers with a high proportion of female members, and blue/purple a majority of males. Consistent with Chart 10, yellower shading (higher proportion of females) is concentrated at employers with lower mean pay. It also illustrates that lower mean part-time percentages (i.e., more significant part-time working patterns), are associated with employers with a high proportion of female members and lower mean pay.

Chart 12: LGPS employers by male female member ratio and headcount

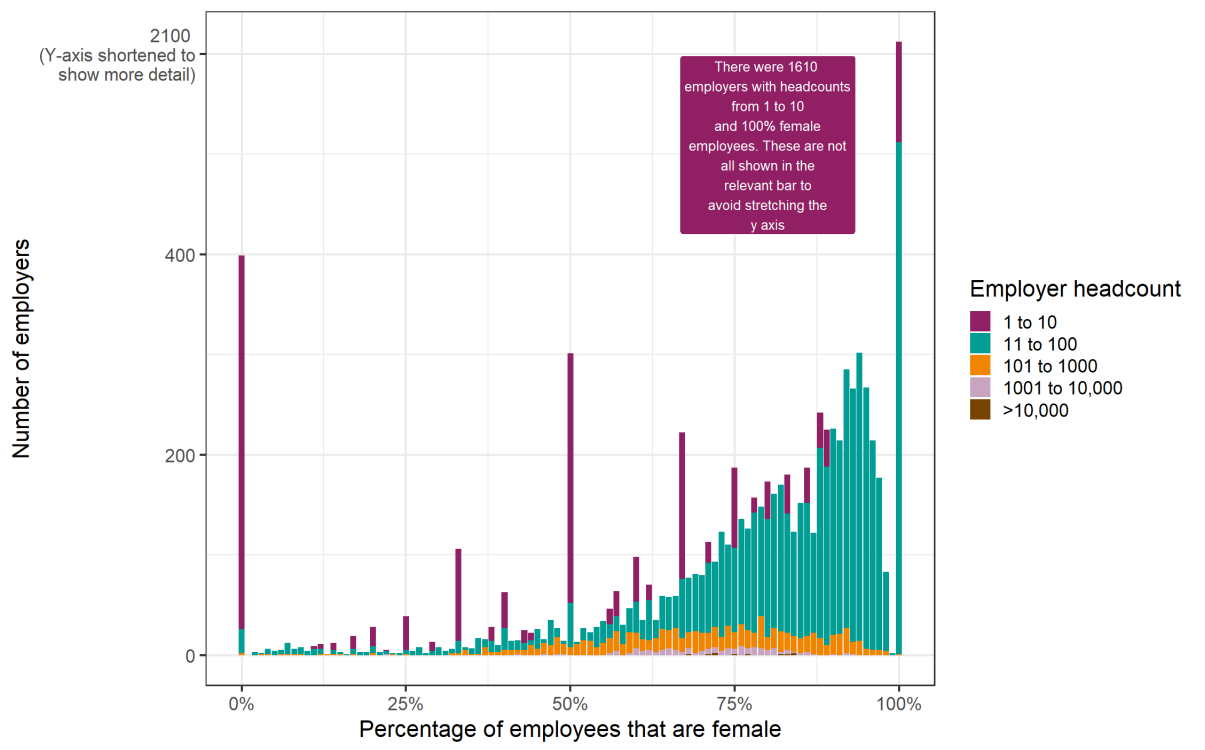


Chart 12 illustrates how the male and female LGPS members are distributed across LGPS employers of different sizes. The horizontal axis shows the ratio of males and females and the vertical axis the number of employers with that ratio. Colour shading groups the employers by the number of LGPS members in their employees. Columns for higher proportions of females are taller, consistent with the majority of LGPS members being females. Many employers with the highest proportions of female members are small with less than 100 members employed. For simplicity in this analysis, we have treated employers with employees in multiple funds as multiple employers.

To explore this further we looked at the relationship between the employer names and the proportion of female LGPS members. We found a trend for the names of employers with the highest proportions of female members to have a strong education focus. This is shown in chart 13 below.

Chart 13: employer name unigrams associated with the highest

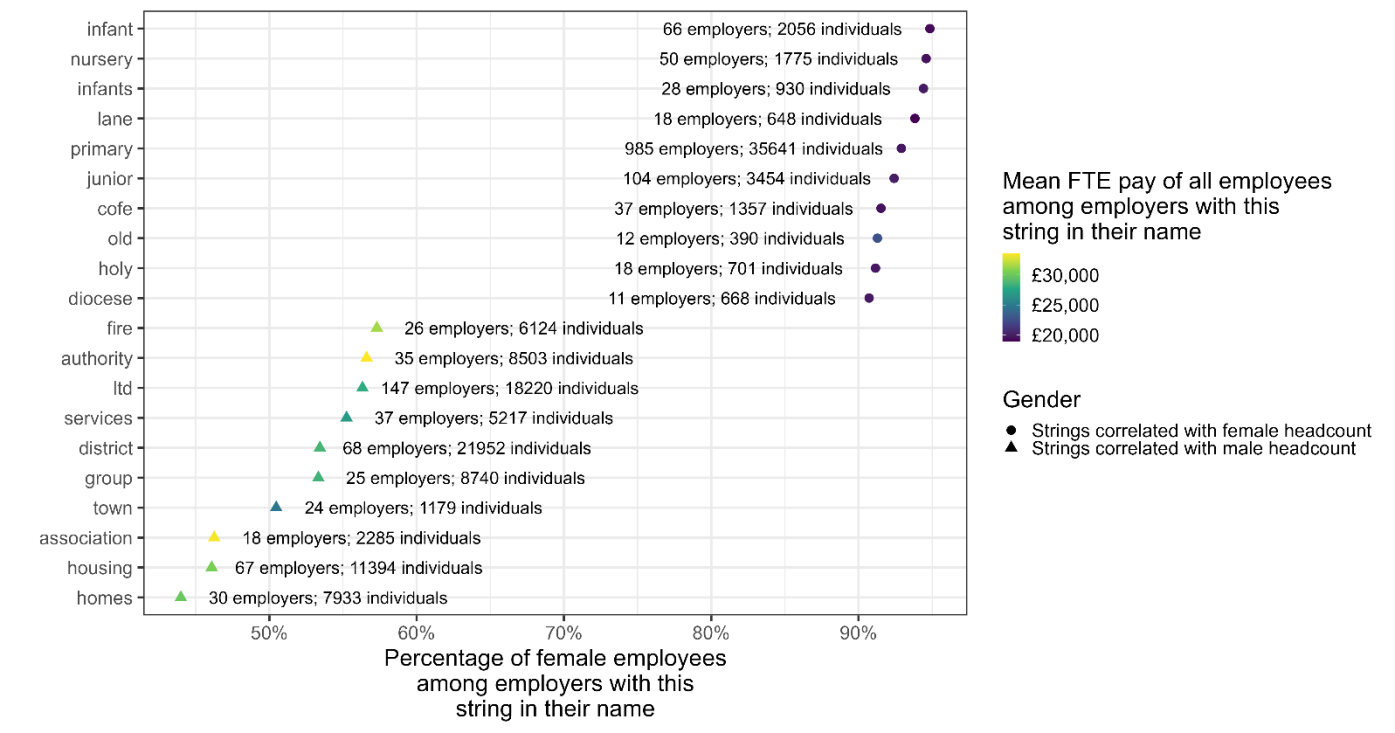


Chart 13 groups employers by the words included in their names and shows those groups with the 10 highest and 10 lowest percentage of female members. 1,806 employers are shown, 19% of the 9,657 we were able to match to member data. 139,167 members are shown, 13% of the 1,110,345 members we were able to match to employer data. Note, only employers with more than 20 employees were included in this analysis.

Reconciliation with 2019 LGA gender pay gap

Data and methodology differences mean that the LGA report results and those in this report and in our earlier January report are not directly comparable. Filtering data and adopting a similar approach result in slightly higher figures than the LGA analysis.

The Local Government Association published a report exploring the gender pay gap among local authority employers[6]. SAB asked GAD whether the information presented in that report was consistent with the GAD gender pay gap from our analysis based on the LGPS membership data. As shown in Table 6, the LGA report uses very different data and methodology from our analysis.

Table 6: Comparison of LGA and GAD data and methodology approach

LGA analysis	GAD analysis
Data was for local authority employers only and excluding the majority of schools' staff.	Data is for all employers, but only includes LGPS members (i.e., doesn't cover opt outs).
Analysis was based on per employer pay gap data, and so only consider 'within-employer effects' and not 'between-employer effects'.	Analysis is based on individuals. So, it includes both 'within- employer effects' and 'between-employer effects'.
Employers of with different numbers of employees are given equal weight.	Analysis is on a per individual basis.

Note: We found correlation between employer size and employer pay gap. This means that results weighted by employers are likely to be different from those per individual basis.

These differences mean that the LGA report results and those earlier in this report are not directly comparable. To provide a more valid comparison, we took a relevant subset of our data and applied a similar methodology, as described in the "Data and Methodology" section of this report.

The tables below compare the LGA report figures against those derived from GAD's replication analysis. Table 7 relates to the distribution of mean FTE pay gaps across employers, and Table 8 relates to the distribution of median FTE pay gaps across employers.

Table 7: Comparison of distribution of mean gender pay gaps

	Individuals	Employers	Percentage of employers with higher mean male pay	Mean of the mean gender pay gap for all employers	Minimum mean gender pay gap	Maximum mean gender pay gap
LGA analysis	Not stated	322	81.3%	6.1%	-18.0%	23.9%
GAD analysis	437,803	160	85.0%	8.7%	-9.0%	24.0%

[6]https://www.local.gov.uk/sites/default/files/documents/Gender%20pay%20gap%20report%2017%20April%202019.pdf

Table 8: Comparison of distribution of median gender pay gaps

	Percentage of employers with higher median male pay	Mean of the median gender pay-gap for all employers	Minimum median gender pay gap	Maximum median gender pay gap
LGA analysis	64.9%	4.0%	-50.0%	32.7%
GAD analysis	69.4%	7.5%	-24.8%	31.4%

The GAD and LGA analysis figures above align reasonably well, albeit the GAD figures show higher male advantage. The greater differences being between the values for the mean of the median gender pay gap, and the mean of the mean gender pay gap, and the corresponding minimum values. With filtering our analysis only covers about half as many. It is therefore likely that the primary cause of this discrepancy is a small number of additional employers in the LGA dataset have very negative values. Nevertheless, the estimates from both analyses are in the same region.

Data and Methodology

Gender gaps

Following the approach taken for gender pay gap calculations, all gender gaps in this paper are calculated as follows:

$$\frac{\{value\ for\ males\} - \{value\ for\ females\}}{\{value\ for\ males\}}$$

A positive gap indicates that the pay or pension for males is higher than for females.

The gaps in this paper focus purely on LGPS pensionable pay and LGPS pension benefits. Many LGPS EW members are likely to have other sources of income, so the mean FTE values used in the current analysis may not reflect the full pay received by the individuals considered by this report. Similarly, the figures in this report exclude State Pension entitlements and other private pensions individuals may be entitled to.

Further not all individuals employed by LGPS employers join the pension scheme. Such individuals are not included in our analysis and may exhibit different pay patterns from those we have analysed here.

Residual gender gaps after controlling for part-time patterns

To measure the extent to which gender pay and pension gaps are explained by part-time working patterns more specifically, we undertook some regression modelling. We created simple estimates of FTE pay, legacy pension, and CARE pension for every member in our dataset based purely on their current part-time proportion. We looked at the residual differences between these estimates and actual values separately for males and females. We calculated the gap between the average male residual differences and average female residual differences ('percentage gender difference when controlling for current part-time percentage').

This approach assumed that there is a simple (linear) proportional relationship between part-time proportion and the level of FTE pay and pension accruals. We believe that this is appropriate for the purpose of this analysis, but approaches assuming different relationships might produce a different result for 'percentage gender difference when controlling for current part-time percentage'.

Multiple records

The membership data GAD holds are collected from LGPS administrators, which may include multiple records for an individual member. We understand that individual records often correspond to individuals' different, possibly concurrent, employment arrangements. Consistent with our January report the summaries in this report reflect individuals rather than records. We have used National Insurance Numbers ("NINOs") to link the records in the underlying data used. Please refer to our January report for further details on the importance of this approach.

Current part-time data

We have only used data for active members of the scheme as at 31 March 2020 in the preparation of this next steps report. This is because this active data contains more detailed information about the working patterns of individual scheme members compared with other areas of the 2020 valuation data.

We have carried out some checks and adjustments in addition to those undertaken for the valuation to ensure the data is fit for the purpose of this report. These additions were necessary to produce the individual level information above (i.e., by NINOs), and support the current part-time analysis. The latter required further processing than used for our January report. In summary:

- All records that were excluded as part of the valuation processing were also excluded.
- All records with a 'part-time percentage' of 120% or more were excluded as potentially unreliable.
- All records with missing or zero pay were excluded, except where actual pay could be calculated using FTE pay and part-time percentage.
- Where the part-time percentage was missing or zero, it was replaced with the ratio of pensionable to FTE pay. Very low part-time percentage values were corrected if they were found to be ratios of actual to full-time hours rather than the number of percentage points.
- All records without NINOs or with the same NINO as another record with a different gender or affected by one of the exclusions above were excluded.
- Accrued legacy pension was calculated for each record from the service and FTE pay
- Almost all data in each record was summed to give the total for the particular individual. However, FTE pay was taken as the mean of the pre-aggregated record values and Date Joined Fund was taken as the earliest of the pre-aggregated record values.

We briefly reviewed the excluded records which strongly indicated that the patterns observed in the outputs were minimally impacted by the set of exclusions and pre-processing steps applied.

Historic part-time data

To develop the 'historic part-time proportion' statistic used in some areas of this report further processing was required. This per individual statistic was calculated as the ratio of reckonable service to the overall period of scheme membership (also commonly referred to as qualifying service). This calculation was only possible where service information was complete and of good quality for all relevant aggregated records.

Service information is only recorded in respect of final salary benefits, which were only accrued prior to 1 April 2014. Therefore, the data including 'historic part-time proportion' only includes individuals with longer periods of scheme membership. I.e., it excludes recent joiners and younger members.

Employer data

For the between-employer and within-employer analysis, we excluded individuals linked to more than one employer code. This affected less than 50 thousand records.

To develop the employer code categories and the employer's name analysis it was necessary to link the 2020 valuation membership data to bulk rates and adjustment data from the 2019 LGPS local fund valuations. This latter dataset included per employer information for all employers as at 31 March 2020 including employer contribution scheduled from 1 April 2020 onwards.

We undertook some cleansing of the employer codes in the valuation membership to improve the number of matches between the datasets. For example, we removed leading characters not featured in the per employer data. With effort proportionate to the aims of the analysis we were able to match 70% of the membership data.

Processed data

As shown in Table 9, analyses in this report use a high proportion of the original active data.

Table 9: Active data used for the scheme valuation and this gender pension analysis

Active dataset	Records (000's)	Unique NINOs (000's)
Valuation data	2,000	1,676
Used in January report	1,813	1,619
Current part-time dataset	1,751	1,571
Historic part-time dataset	767	730
Employer code dataset	1,217	1,110

Important information

The limitations set out in the GAD 2020 valuation membership data report ("the data report"), apply equally to this document. In addition:

Reliance

In preparing this report, GAD has relied on data and other information supplied by the administrators of the LGPS. GAD has not sought independent verification around its general completeness and accuracy. Any checks that GAD has made are limited to those described in this report and the data report. However, our checks do not constitute a full audit of the data and our adjustments, although reasonable in our view, may not mean that the dataset adopted accurately reflects the true data of the scheme. This means that there is residual data uncertainty.

However, in large and complex data sets this uncertainty is normal and is not usually a cause for concern. In our view, the residual uncertainty present in this data is not significant enough to prevent SAB from using this report to explore the extent of inequalities of benefit outcomes between male and female LGPS members, and to make decisions on further analysis.

Sharing

This report has been prepared for the use of the SAB and must not be reproduced, distributed, or communicated in whole or in part to any other person without GAD's prior written permission.

Other than the SAB, no person or third party is entitled to place any reliance on the contents of this report, except to any extent explicitly stated herein. GAD has no liability to any person or third party for any action taken or for any failure to act, either in whole or in part, on the basis of this report.

This report will be made available to the Department for Levelling Up, Housing and Communities.

Compliance

This report has been prepared in accordance with the applicable Technical Actuarial Standards: TAS 100 issued by the Financial Reporting Council (FRC). The FRC sets technical standards for actuarial work in the UK.