

Methodology for estimating the size and characteristics of the adult social care workforce in England

July 2024

Acknowledgements

This paper was compiled by Will Fenton, Gary Polzin, Marion Holloway, Anna O’Gara and Natalie Fleming of our Workforce Intelligence team at Skills for Care.

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Feedback on any aspect of the methodology is welcomed and will improve future updated editions. Please contact our Workforce Intelligence team: analysis@skillsforcare.org.uk

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Direct payments – payments from the local authority that allow people to purchase care services that work for them. These payments are often used to directly employ personal assistants.

Domiciliary – adult social care and support provided in a person's home which might include personal care, or support with domestic tasks such as shopping, cleaning, and gardening.

Dormancy – adult social care establishments that are not currently providing care services. Establishments could be dormant for several reasons, for example a care home might need renovations to the site.

Employees – people directly employed by an establishment on a permanent or temporary basis.

Shared Lives – a scheme in which people can live with or spend periods of time with a family who provide their care and support. This can be long term care or respite care and may or may not include providing accommodation.

Source of recruitment – the occupational group a person was previously employed in before they started their current job role.

Total posts – all posts, including posts currently filled by a person (filled posts) and posts that are currently being advertised for (vacant posts).

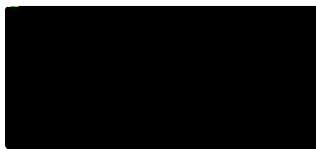
Workers – the number of people working for an establishment. This includes employees and indirectly employed workers (e.g., bank staff).

Workforce characteristics – Skills for Care's estimates of other variables in adult social care. This is the second stage in creating our estimates, after filled posts.

Workforce estimates – Skills for Care's estimates of filled posts in adult social care. This is the

Key for flow diagrams

Shape



Meaning

Skills for Care database

External database

Process with sub-steps

Process

Data

Decision

Introduction

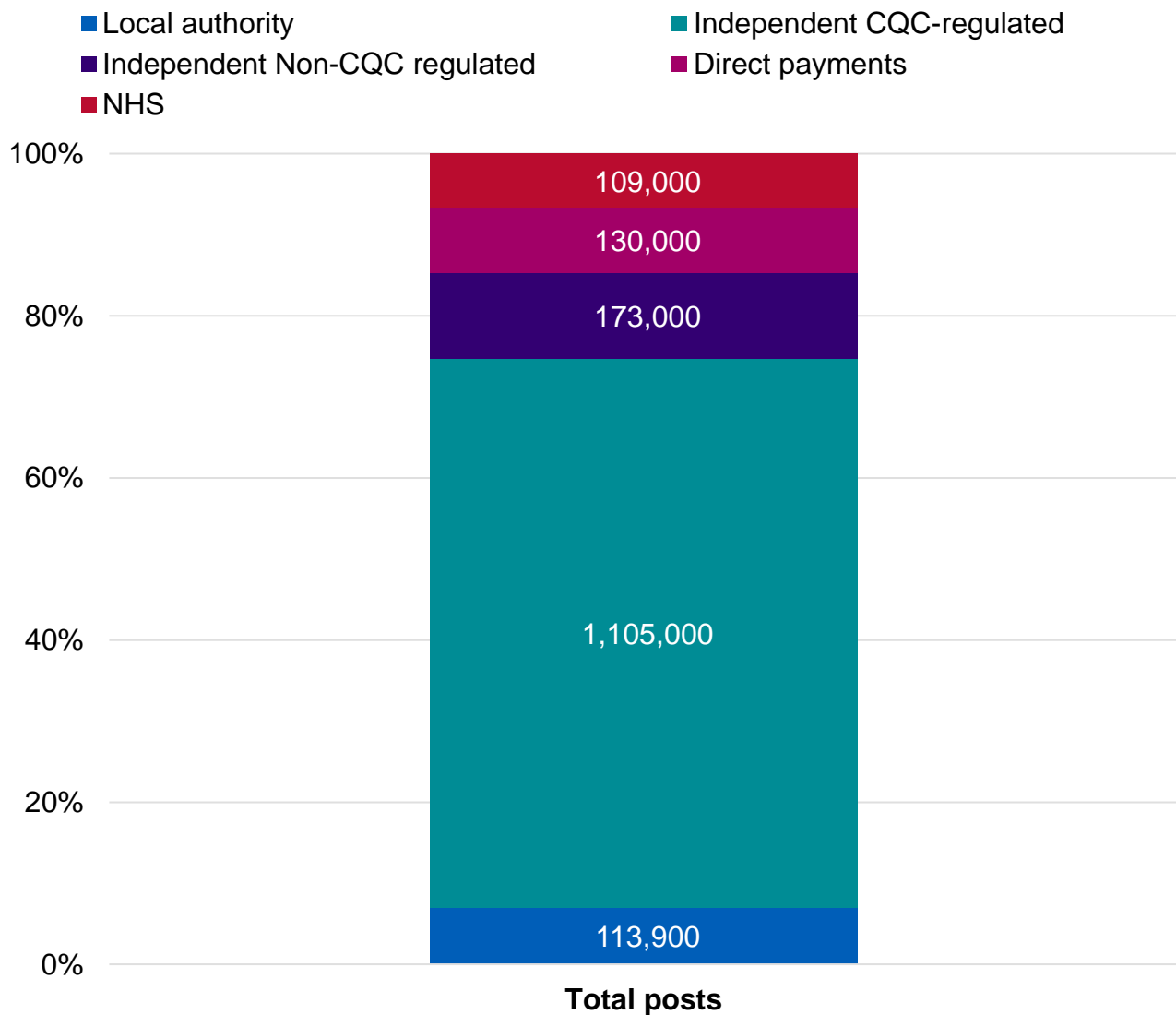
Introduction

Adult social care in England

Social care provides care and support for people with disabilities, illnesses, or old age to live more comfortable and independent lives. This can include a range of support services, advice, and equipment with the aim of enabling independent daily living. Adult social care provides

Chart 1. Adult social care employer types by workforce size, 2022/23

Source: Skills for Care estimates



Service types

As mentioned above, adult social care comprises a wide range of services that support people in their daily lives. These include residential services, such as care homes (which may include nursing); domiciliary care, which support people to live independently at home; day services, which provide social activities during the daytime; or community services. The workforce required to provide these different services can vary considerably. The size of these service types is shown in Chart 2 (below).

Chart 2. Adult social care main service types by workforce size in the local authority and independent sectors only

Source: Skills for Care estimates 2022/23

Social care organisations and establishments

Adult social care in England comprises of a range of employer structures. These range from large organisations with multiple locations employing thousands of workers, to micro employers

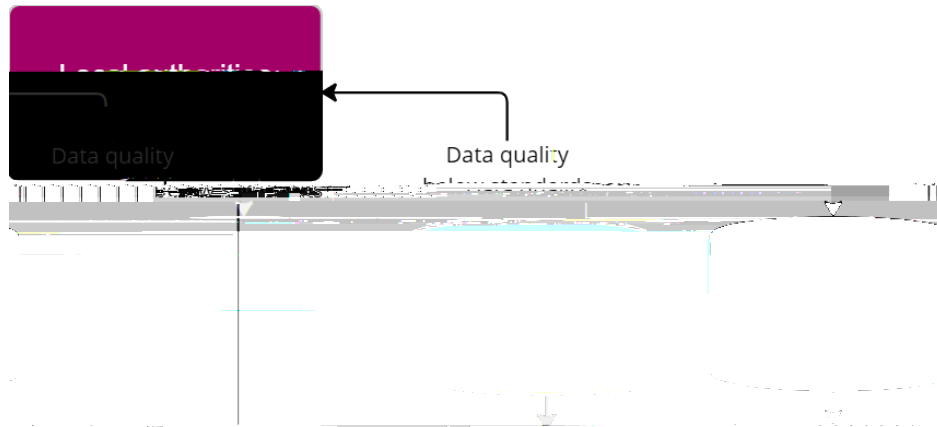
accurate information on some variables than others. As a result, we do not achieve 100% coverage of the sector, so some estimating is required³⁴.

Finally, our data is primarily collected by employers rather than employees, which means that some variables, such as those about demographics, may not be known by the employer.

Overview of methods

Estimating the size of the adult social care workforce

Figure 2. Process for estimating the size of the local authority workforce



For the local authority sector, the local authority area is allocated based on the local authority who submitted the return, regardless of where the postcode or building is located. However, we join the ONS postcode directory with the postcode of the establishment to add in the appropriate ICBs.

Between 2012 and 2021 all local authorities in England met the criteria of a full ASC-WDS

In terms of limitations, data is only collected once per year and therefore trends within the year cannot be identified. Also due to the timing of the collection window (September), the local authority data does not align with data about the rest of the workforce, which is cut at the end of March each year.

In terms of data quality, the information for each local authority area is provided by one user (as opposed to the independent sector where potentially hundreds of different users are all submitting information independently in each area). Therefore, if any data quality issues or inconsistencies cannot be detected by our data quality checks, they will affect the whole geographic area for the local authority sector. In comparison to the independent sector, where if an establishment has data quality issues, the impact is reduced because they are grouped with other establishments with accurate data.

1.2 The independent sector: CQC-regulated

1.2.1

equivalent (FTE) filled posts by job role in the Shared Lives scheme. This is required because these services often use self-employed carers which are not captured by ASC-WDS.

1.2.4 Time period

ASC-WDS data for the CQC-regulated portion of the independent sector are a snapshot of data held at the end of March each year. Data is submitted through the financial year at different points. We use the trend throughout the year to estimate what older data would be if it were submitted in March, i.e. if filled posts had increased by 2% in the year, we would add on 2% for data that was 12 months old.

Using the end of March snapshot allows for us to capture data at the end of the financial year and before the increase of the national living wage in April. We then use this snapshot for our annual “Size and Structure” [publication](#) in the summer and in our “State of” [publication](#) in the autumn.

The CQC [Care Directory](#) is updated monthly. We use a snapshot of the most relevant Care Directory from the end of March to align with our snapshot of ASC-WDS data.

The Shared Lives Plus data is available towards the end of each calendar year for the previous financial year. This means, for example, that towards the end of 2022, figures for the 2021/22 financial year were available.

1.2.5 Method steps

The CQC Care Directory provides accurate and up to date information on numbers of regulated adult social care establishments, by type, geography, and capacity (for care homes). It is updated monthly. We collect the CQC location ID of CQC-regulated locations in ASC-WDS. These IDs can be matched with the CQC data to show the proportion of CQC-regulated establishments that the ASC-WDS covers.

The Care Directory does not contain information comparable to our definition of sectors (e.g., independent, or local authority). We manually remove local authority establishments using text matching from the CQC register using their ‘provider name’. Shared Lives locations are also removed using their service type and this part of the sector is estimated separately (see Figure 5. Process for estimating the Shared Lives workforce).

Figure 3: Process for filtering to CQC-regulated independent establishments

Residential establishments and non-residential establishments are estimated separately. We determine whether an establishment is residential or non-residential by the main service it provides. We determine the main service by applying hierarchical logic to the list of services the establishment provides in the CQC Care Directory. If the establishment offers multiple services, we use the highest one on our list to determine their main service group (see Table 1 below).

Figure 4. Process for estimating the workforce at CQC-regulated independent establishments



The numbers of domiciliary care services, nursing agencies, supported living services, extra care housing services and other CQC-regulated non-residential services are taken directly from the CQC register. These comprise the non-residential segment.

For these non-residential establishments, where the CQC location ID can be matched to an establishment in ASC-WDS the filled posts figures for those establishments in ASC-WDS are used (see Figure 4). For non-residential establishments which do not complete the ASC-WDS, we estimate their filled posts figure using a regression model which uses ASC-WDS filled posts, region, the count of CQC service user groups, the count of CQC activities, the count of CQC services, CQC registration date, and dormancy status, based on the data we hold for similar establishments. For more information, see '[Appendix B: Regression models for estimating filled posts in the independent CQC-regulated sector](#)'.

As of March 2022, the CQC began adding a [dormancy flag](#) into the Care Directory for non-residential establishments and we have now added dormancy as a field into our model. The CQC marks establishments as dormant when they exist as a business but are not currently providing services. This often (but not exclusively) applies to newly opened businesses who are looking for contracts. As the dormancy field did not exist previously, we have used the March 2022 ratio of the model outputs without dormancy against the model outputs with dormancy included at regional level and applied that to previous years, i.e. assuming that dormancy rates are consistent over time. For example, if region A overall was modelled at 100 without dormancy in the model and 95 with dormancy included, we multiplied estimates from previous years in that region by 0.95.

Estimates of the number of filled posts for Shared Lives services are made using a different method (see Figure 5). Shared Lives Plus publishes a comprehensive [report](#) on the Shared

workforce. Independent providers are not obliged to provide their data to the ASC-WDS though many offer this willingly for a variety of reasons, including access to the benefits such as the benchmarking tools on the ASC-WDS portal and use of the Workforce Development Fund. This means that the level of coverage is not as high as in the local authority sector, however we offer strong incentives and engage directly with providers to encourage participation.

We identify these providers and calculate ASC-WDS coverage by comparing CQC location IDs provided monthly by the CQC with the location IDs within the ASC-WDS. Coverage is tracked monthly and is one of our key performance indicators. The ASC-WDS covered 51.1% of all CQC-regulated independent sector establishments as at March 2023. Excluding dormant locations, this increases to 53.2% of establishments.

To estimate the size of the workforce, the following variables are required:

- Sector
- Service

about the missing data (service, beds, location etc.). However, some estimates are provided in the appendix, using confidence interval methodologies, to give an idea of the loss of precision caused by not having 100% coverage.

1.3.6 Coverage

Our coverage estimate is the proportion of our estimate of non-CQC regulated independent sector establishments that are in the ASC-WDS. As there is no definitive list of non-CQC regulated independent sector establishments, it is not possible to provide a more accurate estimate of coverage. Using a combination of data from the CQC and the Office for National Statistics (ONS) to identify the gap between all care services and CQC-regulated services (i.e. non-CQC regulated services), it is estimated that ASC-WDS covers between 25% and 30% of unregulated independent establishments. Please see the section on Data Quality for more information on how this was calculated.

Certain variables are required to estimate the size of the social care workforce. These are:

- Sector
- Service
- Filled posts
- Geography
- Job role

As at March 2023, the variables listed above were completed by 99% or more of the unregulated independent providers in ASC-WDS.

1.3.7 Strengths and limitations

One of the main strengths of our unregulated independent sector data is that our support team carefully checks all unregulated establishments meet our definition of providing adult social care in England. This means we do not accidentally include data about establishments which do not fit our definition of adult social care. We also conduct detailed data quality checks on submissions from large organisations.

This remains a small but challenging part of adult social care to gather data on. It is difficult to identify establishments providing unregulated services and these are often small businesses or charities, which may not have the time or see the value in supplying their data. This means we have proportionally lower coverage for this sector.

In terms of data quality, there is no accurate way to know if the establishments in this group completing ASC-WDS are representative all unregulated providers. As such there is more potential for bias for this part of the sector, than for CQC-regulated providers where we have information about the missing locations.

1.4 Individuals employing their own staff (personal assistants)

1.4.1 Definition of sector

Individuals with care and support needs and their carers can choose to employ their own staff (known as personal assistants). Personal assistants are employed directly by one or more different people receiving care. They will usually support individuals in their own home or to go out in the community.

1.4.2 Inclusions and exclusions

Individual employers are included in our workforce estimates if they are in receipt of social care direct payments from a local authority in England and employ their own personal assistants. Individual employers who employ personal assistants to support children under 18 are not included. Individual employers who are funded solely through other means (e.g., NHS personal health budgets, self-

staff and the number of carer direct payment recipients who employ staff. This provides us with an estimate for the total number of people employing staff.

2023, we estimated that there were 69,000, 95% CI [63,000, 75,000], individuals employing their own staff via direct payments. In addition, we estimated that there were 130,000, 95% CI [120,000, 145,000], personal assistant filled posts. These are not true confidence intervals as we understand some elements of the missing data. For example, we have historical data provided by local authorities and characteristics of these local authorities, making our estimates more accurate than the confidence intervals suggest.

By using data from a range of sources, we are able to increase the accuracy of our estimates and provide estimates at a national and regional level.

excluded from our total figures. This results in the workforce estimates for the adult social care related filled posts in the NHS sector.

1.5.6 Strengths and limitations

Using NHS England data in this way allows us to provide an estimate for the NHS employees who work in adult social care related roles. However, because of the data available through NHS England, we are only able to provide top level figures, and we are not able to describe the characteristics of this sector. In addition, the NHS England Social Care Dataset snapshot is taken in September of each year, which means the reports released the next October use data which is over one year out of date.

Also, not everyone in the roles identified will be carrying out a role deemed adult social care related. For example, some NHS occupational therapists will work predominantly with children.

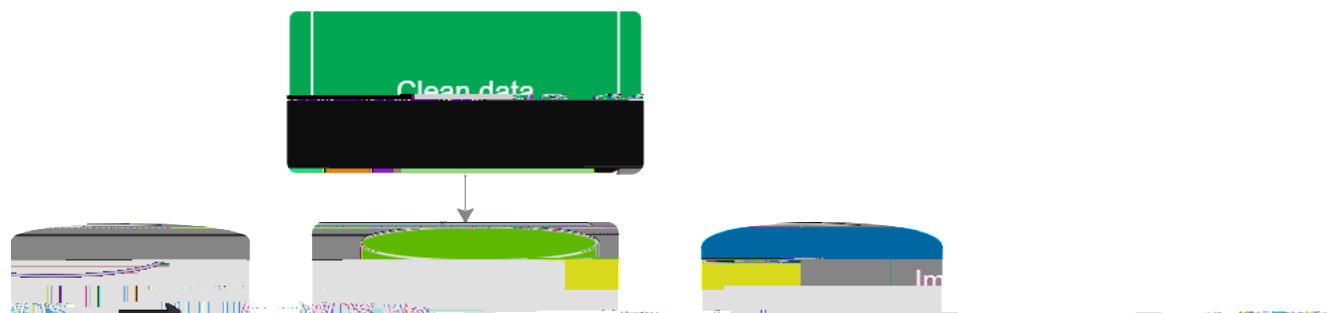
2.2 Inclusions and exclusions

Our full estimates of workforce characteristics cover the filled posts working for direct payment

Full-time equivalent pay has been submitted instead of actual pay (some local authorities may keep their own records differently)

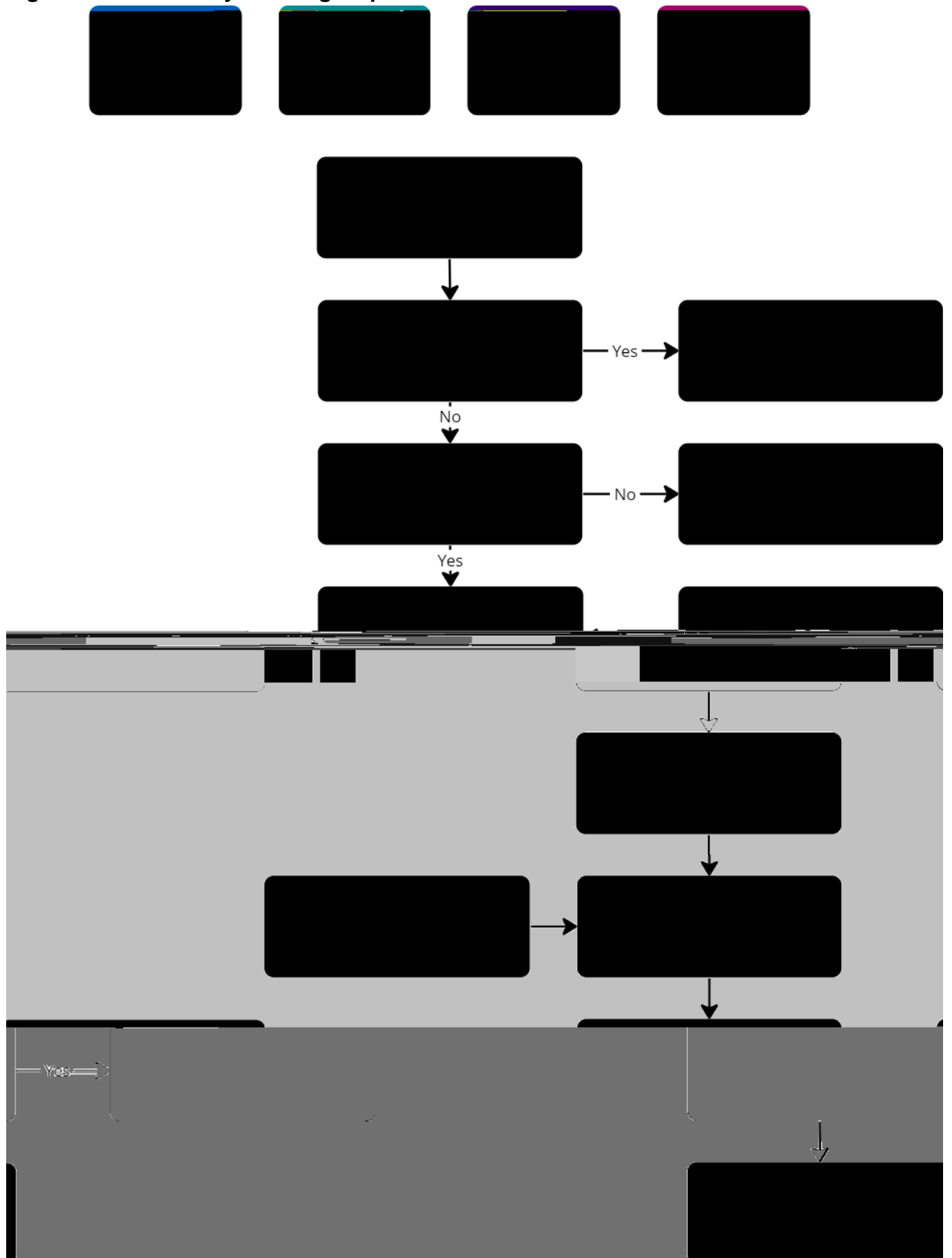
We check for these issues in our process and work with local authorities to identify the problem so they can fix it. All local authority data is checked through automatic and manual processes.

Figure 10. Process for cleaning workforce characteristics data



Preliminary cleaning is conducted, including tasks such as purging inactive accounts (see Figure 11 below) Geographies are added by linking the data to the ONS postcode directory.

Figure 11. Preliminary cleaning steps

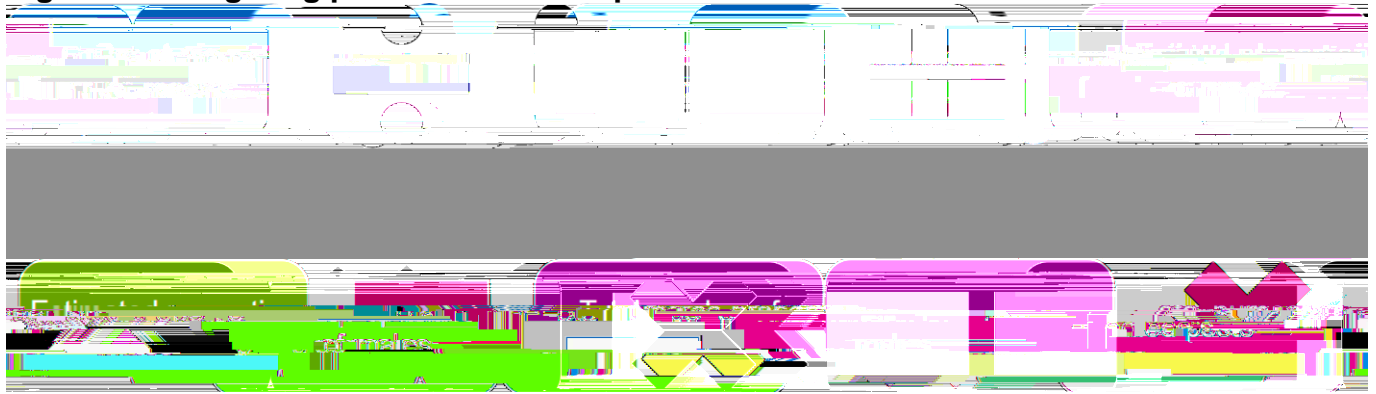


recipients. This is because local authorities are mandated to complete the ASC-WDS, and the incentives used to encourage independent establishments to submit their data are more often valuable to larger employers, which tend to be CQC-regulated establishments.

Local authorities are mandated to complete the ASC-WDS, meaning that error due to coverage is minimal, however enforced reporting could create other types of bias in the data. We mitigate

Figure 12. Overview of process for weighting the workforce characteristics data

Figure 13. Weighting process for each split of the data



A worked example – male workers

For the binary variable “gender_male” all records where the worker is known to be male will be marked “true”. All records where the worker’s gender has been recorded but is not recorded as male will be marked as “false”. All records where the worker’s gender has not been recorded will be null.

For each split of the data (e.g., care workers in Leeds in the independent sector who provide domiciliary care), we count the number of records that are not null (e.g., 100) and the number of records which are marked “true” for “gender_male” (e.g., 20). We divide the number of records that have “true” responses by the number of records containing any data for the variable to create an estimated proportion of the number of filled posts where that variable holds true (e.g., $20 \div 100 = 0.2$). We multiply this by the total number of filled posts for that split (e.g., 1,000) to estimate the number of males in that split. Therefore, in this example the number of male care workers in Leeds in the independent sector who provide domiciliary care would be estimated as: $1,000 \times 0.2 = 200$.

Where there is a continuous variable, instead of recording the number of “true” responses we record the mean of the responses. We use this mean, instead of the proportion of true responses to weight the data for each split.

Not all splits of all variables have sufficient data in ASC-WDS to produce an estimated proportion or average. To estimate a proportion or average for splits with insufficient data (fewer than five records known), we use larger geographical areas to pull in more data to the split. Geography is the only hierarchical variable, which makes this technique possible. The geographical areas we use are set by the ONS postcode directory. We then either use the larger pool of data to create an estimated proportion, model an estimated proportion using either a binomial distribution model for the binary variables, or a normal distribution model for the continuous variables. The models we use are trained on the whole of the data in ASC-WDS and we use the specific output for the geographical area. This estimated proportion is then applied to the number of filled posts as above. The logic used for this process is depicted in Figure 14.

Figure 14. Process for estimating proportions and averages for each split of the workforce characteristics

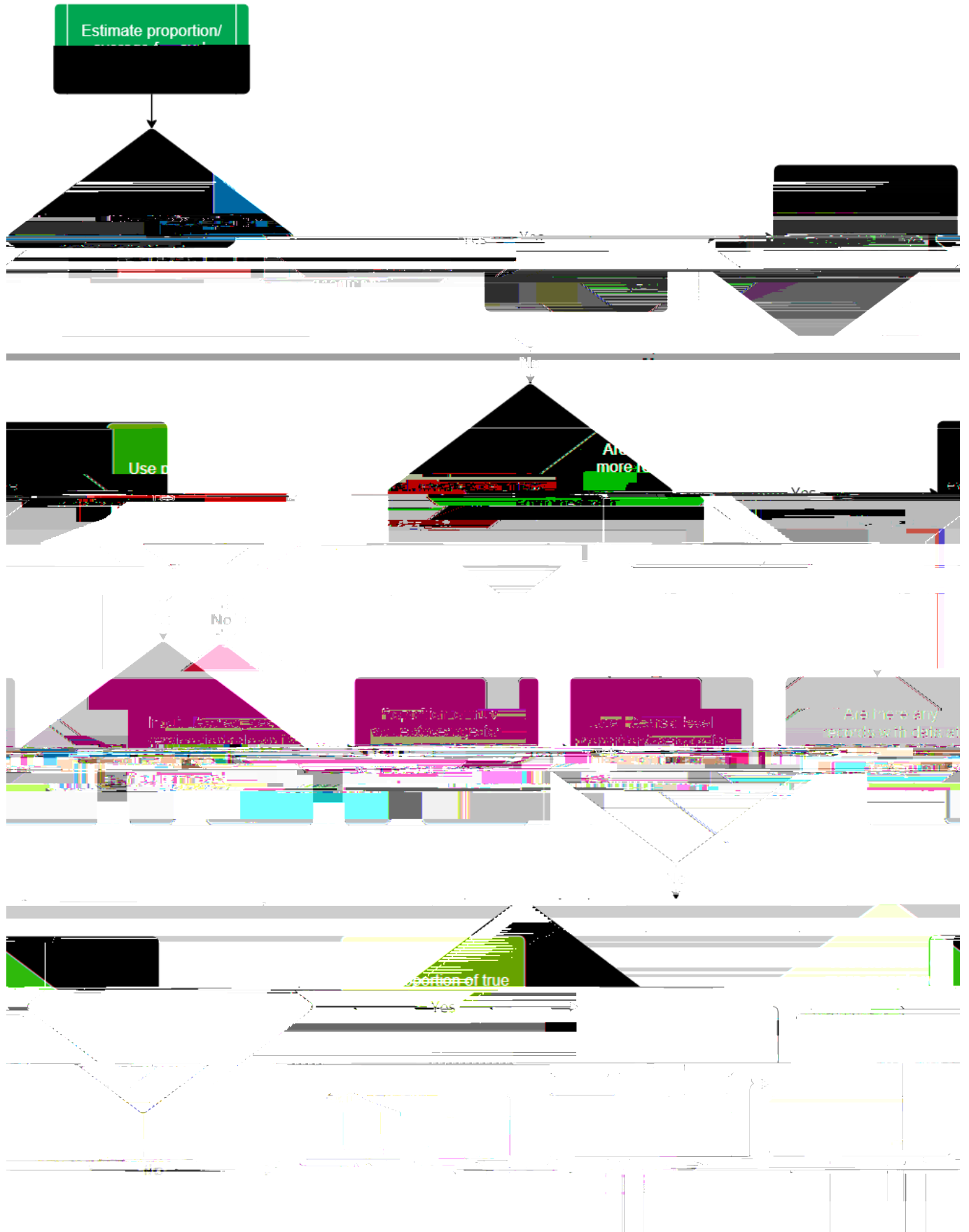


Chart 3. Response rates for selected variables across sectors

Source: ASC-WDS unweighted data October 2022 and March 2023, Personal assistants survey 2023

* 90% of worker records required for the local authority return; 90% of worker records required for independent sector access to the Workforce Development Fund.

** Not required for the local authority return or for independent sector access to the Workforce Development Fund.

The local authority sector tends to have high response rates due to the data checking process and their obligation to h 12 Tf1 0 0 1 Qattbu

3.1.4 Filtering

Filters are applied to several variables to exclude records which are likely to be incorrect or came from providers who have overall questionable data for that variable. See the methods section of Section 2 '[Estimating the characteristics of the adult social care workforce](#)' for more detail on our filtering process. Filters are checked and updated as necessary. However, they may still inadvertently exclude legitimate data while including incorrect data.

3.1.5 Measuring error

We don't provide confidence intervals for our estimates. Confidence intervals are a method used to estimate the range for the population mean based on a random sample. The establishments who submit their data through the ASC-WDS aren't a random sample, they are self-selected. This means that confidence intervals are not generally a suitable tool for our data.

Chart 4. Confidence interval width (in days) for estimates of the average workforce age for an average sized local authority

3.1.7 Rounding and suppression

Instead of confidence intervals, we use rounding to evidence our degree of confidence in the data. It can minimise the impact of inaccurate data on overall figures and reduce the risk of identifying individuals. We use suppression when figures are too low to protect the identity of individuals, or the sample is small so figures may be inaccurate.

Table 8 outlines the rounding and suppression used in our analyses. As we have a higher degree of confidence in local authority data, larger figures do not require as broad rounding as for independent sector data.

Table 8. Rounding and suppression rules

Lower value	Upper value	IND	LA
0	0.000	0	0
0	Suppression value (either 10 or 25)	<10 or <25	<10 or <25
10	14.999	10	10
15	499.999	25	25
500	999.999		

3.1.8 Strengths and limitations

Some of the main strengths of our local authority estimates are the high coverage and thorough data checking. Local authority coverage is consistently very high, frequently with 100% of local authorities submitting data. It is only once local authority submissions have passed many checks that their data is accepted, meaning that the quality of data is high.

The independent CQC-regulated sector is the largest sector within adult social care in England and the ASC-WDS frequently covers more than 50% of establishments. We have numerous filters which are applied as necessary when conducting analyses. These are robust, replicable, and applied consistently. Filters are applied most frequently to independent sector data, which balances the fact that data from this sector is not routinely checked upon submission.

The independent sector contributed the most data to the ASC-WDS. Due to the scale of the sector, we do not have the resources to check the quality of data at the point of submission in the manner given to local authority data. This means that the independent sector is more likely to provide low quality data. This is addressed through at source validation on the service and filtering the data before weighting.










There is no definitive list of unregulated independent sector establishments, meaning our coverage of this sector is an estimate. The ASC-WDS support team is not able to identify and contact unregulated providers so they may be less likely to engage and provide data to the ASC-WDS.

Data can be submitted to the ASC-WDS by manual entry on the ASC-WDS service or by “bulk upload”. Manual entry may be preferable for smaller organisations while large organisations are more likely to use the bulk upload mechanism. These methods may introduce their own sources of error. For example, human error is more likely to impact individual submissions, though any error that is repeated across entries in a bulk upload will impact all entries.

3.1.9 Summary

Whilst many factors affect the quality of our estimates for each sector, we have attempted to summarise these into a data quality rating for both the size of workforce estimates and workforce characteristics estimates (see Table 9 below). The more stars a set of estimates is awarded, the higher the quality of data that was used to make those estimates.

Table 9. Visual estimate quality ratings by sector and type of estimates

Sector	Estimate quality rating	
	Estimating the size of the workforce	Estimating the workforce characteristics
Local authority		
Independent: CQC-regulated		
Independent: unregulated		
Individuals employing their own staff		
NHS		N/A

3.2 Future developments

3.2.1 Automated data checking

We check the submissions of local authorities in the ASC-WDS using automated and manual checks. At this stage, the automated tools we have are only available to analysts at Skills for Care. We are in the process of developing an easy-to-use tool that will allow local authorities to check their own data before submitting it to us. The tool will identify patterns in the data which suggest incorrect submissions (e.g., submitting full-time equivalent sickness rates instead of actual sickness rates) and allow local authorities to make changes before submitting their data.

3.2.2 Checking independent sector data

If the automated data checking tool works well for local authorities, it will be possible to make it available to independent organisations as well. Currently one of the main limitations of our method is that we don't have the resources to check the data of individual independent sector submissions before the analysis stage, like we do with local authority data. Providing an automated checking tool, will be the first step to improving this.

3.2.3 Data engineering pipeline

Currently, the methods outlined in this paper are undertaken manually. Given the complexity and detail in these methods, this is a time-consuming process to undertake manually and check at each stage. We are currently working to transfer our analytical process into a data engineering pipeline, allowing us to automate much of the analysis. This will make our estimates quicker to produce and more accurate. We are also able to use additional statistical techniques (such as interpolation and extrapolation over time) at the level of the establishment or worker, meaning that we will be able to provide trended estimates at smaller geographical levels.

Conclusion

Conclusion

Further resources

Further resources

Our workforce intelligence publications

We provide outstanding workforce intelligence which the Government, strategic bodies, employers, and individuals rely upon to help them make decisions that will improve outcomes for the people who use care services. To access our reports and visualisations, please refer to the relevant pages on our [Workforce Intelligence website](#).

The three annual reports that we have referred to in this document are as follows:

The state of the adult social care sector and workforce in England

This report delivers in-depth analysis of the workforce in the adult social care sector in England. This includes further detail on the size and structure of the workforce, as well as information on workforce characteristics, trends and future projections.

To access this information, visit <http://www.skillsforcare.org.uk/stateof>

Appendices

Appendices

Appendix A: Data collected through the ASC-WDS service

For a full list of variables collected and questions asked in ASC-WDS as at January 2023, please see the accompanying spreadsheet(0)71 0 595.32 841.92of vari0 1F1 12 . lluosnB[vallected ad in

Appendix B: Regression models for estimating filled posts in the independent CQC-regulated sector

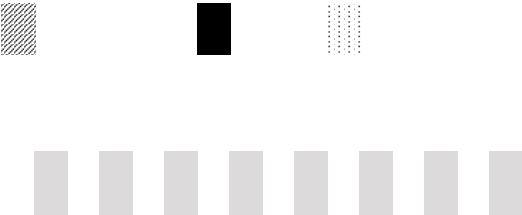
The following charts show the relationship between residential CQC-regulated independent sector establishments filled posts and beds for March 2023. Residential establishments tend to be buildings with a specific number of beds. The charts below show there is a strong correlation between the number of beds and the number of posts required.

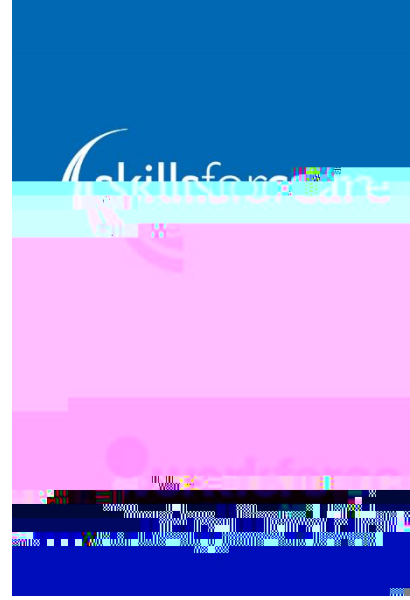
Chart

'Appendix C: Regression models for estimating filled posts in the independent CQC-regulated sector' shows comparisons between our estimates and the data collected by [Capacity Tracker](#).

Appendix D: Timeline of data sources

Chart 10. Visual timeline of data source collection, cutting, and publication by sector





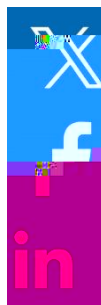
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