

A black and white photograph showing a caregiver on the left, wearing a dark uniform, leaning towards an elderly woman on the right who is seated in a chair. The caregiver is looking at the woman with a gentle expression. In the foreground, a small table holds a patterned mug and saucer. The background is slightly blurred, showing a clock on the wall.

# Filled posts monthly tracking revision notes

2024

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# Timeline

## Version 1: 15<sup>th</sup> November 2024

- First version using our data engineering pipeline published for care homes

## Version 2: 13<sup>th</sup> December 2024

- Percentage changed added for non-residential locations in 2024
- Improvements made to the rolling average model

# Improvements to the rolling average model

## Introduction

To predict the monthly changes in filled posts within adult social care, we first estimate the number of filled posts at each independent CQC-regulated location. For a detailed methodology, see [here](#).

## Data Submission and Gaps

Independent sector users of ASC-WDS submit data at varying frequencies, from monthly to annually. This results in gaps where data is not submitted for certain months, see Table 1. To address these gaps, we generate a trendline to extrapolate forwards or backwards and interpolate between known values. The way we generate this trendline has changed in version two of these estimates.

**Table 1. Example data for illustration**

Source: Example data

Location	Month 1	Month 2	Month 3	Month 4
Location 1		25.0		
Location 2	50.0		51.0	
Location 3		76.0		77.0
Location 4	100.0		102.0	
Location 5	125.0		128.0	
Location 6		151.0		155.0
Location 7	175.0		179.0	180.0
Location 8		202.0		206.0

## Version 1: Six-month rolling average trendline

Initially, we calculated a monthly average of all submitted data and then applied a six-month rolling average. However, infrequent submissions from atypical locations (for example very small or large numbers of staff) could skew the monthly average, leading to trends that were potentially not representative of the whole sector.

**Table 2. Monthly averages and changes based on illustrated data in Table 1**

Source: Example data

	Month 1	Month 2	Month 3	Month 4
Monthly Average	112.5	113.5	115.0	154.5
Change Since Previous Month		0.9%	1.3%	34.3%

As Table 2 shows, the change in month four is very large and is caused by larger than average locations submitting in that period. But looking at their previous submissions, they were only growing at a modest rate. So, applying a large rate of growth to other locations based on this data would not be accurate.

The six-month rolling average would smooth out individual monthly spikes to some extent, but they would still have an impact.

## Version 2: Rate of change trendline

Our solution was to focus more on how locations are changing from one month to the next, as opposed to top level averages. The first step was to remove locations who had submitted only once (in red in Table 3) and to fill gaps between submissions using a straight-line imputation approach (in purple in Table 3). This updates the original data in Table 1 to the following dataset.

**Table 3. Original data imputed with straight-line interpolation and single submissions removed**

Source: Example data

Location	Month 1	Month 2	Month 3	Month 4
Location 1		25.0		
Location 2	50.0	50.5	51.0	
Location 3		76.0	76.5	77.0
Location 4	100.0	101.0	102.0	
Location 5	125.0	126.5	128.0	
Location 6		151.0	153.0	155.0
Location 7	175.0	177.0	179.0	180.0
Location 8		202.0	204.0	206.0

The next step is to calculate an individual monthly rate of change. A location only qualifies as being included in the monthly rate of change if they have a known value in that specified month and the previous month. We then sum the values of all the qualifying locations for each month and the previous month to get the overall rate of change of all those locations combined, see Table 4.

**Table 4. Sum of locations who qualify for rate of change method using illustrated data from Table 3**

Source: Example data

	Month 1	Month 2	Month 3	Month 4
Sum of values (specified month)	450.0	455.0	893.5	618.0
Sum of values (previous month)	-	450.0	884.0	612.5
Change since previous month	-	101.1%	101.1%	100.9%

As before, we take the six-month average change into account to smooth out the trendline.

We found this trendline reflects monthly changes more accurately than the overall average because it is less affected by atypical locations joining, leaving, or not submitting data from one month to the next.

## Impact on published figures between version 1 and 2

Table 5 shows the impact on the estimates between the two sources. Note that these are presented as unrounded numbers here to assess the scale of change. When published they are rounded to reflect the fact they are estimates and not counts.

**Table 5. Comparison of estimates for care homes by version**

Source: Skills for Care estimates

	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24
Version 1	589,178	591,051	591,461	587,837	589,590	587,566	581,690	586,254	
Version 2	575,630	576,255	576,072	577,172	579,622	579,813	582,715	581,223	584,043
Difference	13,548	14,796	15,389	10,665	9,968	7,754	-1,025	5,031	



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