

Greater Cambridge Employment Update June 2022

*Recovery from the pandemic is happening
but recession looms*

Highlights:

Overview

- The current business environment makes it important to have timely data on employment changes. This is the sixth of a series of updates that bring up-to-date information about what is happening to corporate employment in the Greater Cambridge area.
- This update covers accounting year ends between April 2021 and December 2021 (the median year end is August 2021). It is based on a sample of companies representing 70% of corporate employment in Greater Cambridge. This median period includes the second and third Covid lockdowns in England as well as the coming out of lockdowns. We compare this period with the previous year, which captures the effects of the first lockdown.
- Corporate employment growth in the Greater Cambridge area has increased from 3.6% in 2019-20 to 5.4% in 2020-21, pointing to an overall improvement in company performance as businesses learn how to live with Covid. However, there is variation in these growth rates across both industry sectors and firm sizes (**Figure 1, p7**).
- The faster employment growth in the last year is due to a strong performance of KI sectors, which have seen growth accelerating from 6.8% in 2019-20 to 9.7% in 2020-21. Non-KI sectors have shown more modest employment growth of 0.7% in the last year, up slightly from 0.4% in the previous year (**Figure 1, p7**).
- The picture for non-KI sectors is somewhat less optimistic if we exclude the Education sector, where amalgamations and incorporations of schools have inflated employment growth. Without Education, non-KI employment growth would be -2.7% in Greater Cambridge, -3.1% in Cambridge and -2.4% in South Cambridgeshire.
- Both Cambridge and South Cambridgeshire have achieved faster employment growth in the latest year compared with one year earlier. Employment growth in Cambridge has been high at 5.7% in 2020-21, up from 4.4% in 2019-20. Similarly, employment growth in South Cambridgeshire has been 5.1% in the last year against a 3.0% rate in the previous year (**Figure 1, p7**).

Sectors

- The Covid pandemic has had a varied impact across sectors. Sectors like Life Sciences are involved in supporting the fight against the virus and future outbreaks. Information technology and telecoms have benefited as a consequence of the increase in remote communications, gaming and internet security, which have more than offset the reduction of demand in other areas. Hospitality, travel and tourism, and some retail businesses have been severely affected by lockdowns and other restrictions.
- Consistent with these observations, we find that 'Life science and healthcare' (+16.6%) and 'Information technology and telecoms' (+11.1%) have been the fastest growing sectors during 2020-21 (**Figure 2, p10**).
- Many service sectors have suffered reduced demand from their customers as a result of the impact of Covid on their businesses. Employment growth to 2021 has declined in six of the nine non-KI sectors, with 'Other services' – e.g. hotels, pubs and restaurants – experiencing a significant decline (-5.3%) (**Figure 2, p10**).
- 'Life science and healthcare' and 'Information technology and telecoms' have seen employment growth accelerating despite the uncertainty over the unfolding of the pandemic. Among non-KI sectors, employment growth in 2020-21 has been higher than in 2019-20 in 'Property and finance', 'Construction and utilities' and 'Education, arts, charities, social care' (the reasons for which have been discussed above) (**Figure 4, p13**).
- The sectors with the largest fall in employment growth relative to 2019-20 are 'Transport and travel', 'Primary' and 'Other business services'. Employment growth has remained negative in 'High-tech manufacturing', 'Manufacturing', 'Wholesale and retail distribution' and 'Other services' (**Figure 4, p13**).

Size groups

- One-person businesses have grown by 4.4% in the latest year, a rate that is somewhat lower than total employment growth across all size classes. However, their small size means that they have played a minor role in employment growth – only 106 extra employees compared with the addition of 4,024 employees by other businesses.
- Whilst 1-9 employee businesses tend to have been the fastest growing companies in sectors such as 'Knowledge intensive services', 'Manufacturing' and 'High-tech manufacturing', businesses with 10+ employees have achieved particularly fast growth in 'Life science and healthcare', 'Information technology and telecoms' and 'Education, arts, charities, social care' (**Figure 3, p12**).

- The group of 10+ employee businesses tends to dominate employment changes given its large aggregate size. These businesses are significant contributors to the decline in employment observed in sectors such as ‘Transport and travel’ (e.g. punting company Scudamore’s Punting), ‘Other services’ (e.g. specialist school meal provider Lunchtime Co.) and ‘Wholesale and retail distribution’ (e.g. owner of local garden centres Scotsdale Nursery and Garden Centre) **(Figure 3, p12)**.
- Employment of 1-9 employee businesses has increased by 1.7% in 2020-21. This growth has been driven primarily by KI sectors **(Figure 8, p20)**.
- The picture looks similar for 10+ employee businesses. While employment growth has remained strong for KI sectors, employment has increased less fast amongst non-KI sectors. As a result, employment growth in this size class has been 6.0% in 2020-21 **(Figure 8, p20)**.
- Employment growth to 2021 has been faster than employment growth to 2020 in both 1-9 employee and 10+ employee size classes **(Figure 8, p20)**.

Comparison of employment and turnover growth

- We complement the findings from the employment update by examining a sample of 169 companies with accounting year ends between April 2021 and December 2021 which have provided both employment and turnover data for the last three years.
- Turnover resumed its pre-pandemic pattern (broken only by the existence of the furlough scheme) of showing a higher growth than employment. After falling from 9.1% to 0.2% in the period covering the three Covid lockdowns (February 2022 Update), turnover growth for this group of companies rose from 1.2% to 16.7% in the last year compared with a rise from 5.9% to 6.4% for employment **(Table 1, p31)**.
- In the KI sector, employment growth rose from 9.6% to 10.1% whilst at the same time turnover growth rose from 3.6% to 16.5% as business recovered. The unusual relationship between employment and turnover growth in these two years is explained by the introduction and subsequent cessation of the furlough scheme **(Table 1, p31)**.
- If we remove the impact of the incorporation of schools, we find that non-KI employment growth fell from 2.2% to -3.8% whilst at the same time turnover growth increased from -0.6% to 5.9%. The cessation of the furlough scheme has unmasked the impact of the pandemic on non-KI employment **(Table 1, p31)**.

Stop press

- We provide a snapshot of the impact of events in the Greater Cambridge corporate economy by considering a small sample of companies with interim results for the six-

month periods ending between May 2021 and December 2021. For each company we look at turnover in the same six months period in 2019, 2020 and 2021.

- Within this group of companies (all knowledge intensive), total turnover rose from £1,093m to £1,347m (+23%) in the 2021 recovery after experiencing a decline in the previous year (when the first and second lockdowns were introduced).
- Therefore, we find evidence of a stronger company performance and a marked improvement in business confidence amongst these KI companies. This is partly explained by an upturn in demand and partly by companies learning how to manage the impacts of the pandemic.

Concluding remarks

- Overall, the results suggest that Greater Cambridge corporate employment has started to recover from the worst impacts of Covid. Whilst non-KI sectors continued to show modest growth during 2020-21 – and would have suffered larger falls in employment without the furlough scheme – KI sectors achieved faster growth compared with 2019-20 as the local economy came out of lockdowns. The analysis of interim reports also reveals a marked improvement in business confidence amongst these KI companies.
- However, this optimism is now undermined by Putin's war. The impending substantial disruption to both supply and demand and associated unprecedented decline in living standards will further delay any return to normality, raising concerns over the pace of the recovery from the pandemic. We will explore these and other related issues in our next update.

1. Tracking Greater Cambridge corporate employment – the June 2022 update

The Centre for Business Research (CBR) at Cambridge University has developed three methods for tracking the employment and turnover of companies based in the wider Cambridge region (for further details see Appendix A4).

The first is the **annual draw** of all companies within the region.¹ It is comprehensive and also examines company births and deaths along with company location changes. This gold standard work does suffer from being less timely. The results of the 2020-21 annual draw were published in March 2022 and examined employment in the accounting years ending from 6th April 2020 to 5th April 2021. Since December and, to a lesser extent, March dominate companies' choice of year ends, the modal year end for the annual draw is early December 2020. For comparison, the ONS Business Register and Employment Survey (BRES) provisional annual employment data published in November 2021 has September 2020 as its latest information (and we will have to wait another year before these are confirmed as final).

The second method involves an **update** of companies in the Greater Cambridge area achieved by sampling the annual corporate database in February, June and October. On each occasion a large sample is drawn (over 40% on average) of companies that have reported in recent months. This brings more timely information about what is happening to employment, but does not take account of births and deaths or location changes. For example, this June 2022 update includes companies with a financial year end between April 2021 and December 2021 and has a modal year end of August 2021. This median period captures the impact of the second and third Covid lockdowns in England as well as the coming out of lockdowns. Since the lifting of Covid restrictions began in the spring of 2021, companies with a December year end have had a higher proportion of months during the recovery period than companies with an April year end. We compare this period with the previous year, which includes the effects of the first lockdown. The final sample for the June 2022 update is 6,035 companies representing about 70% of corporate employment in the Greater Cambridge area.

We use the update sample to provide estimates of employment for those companies with a year end between April 2021 and December 2021 that have not yet reported. We then use this larger sample to compare the performance of this sample in 2020-21 with their performance a year earlier (2019-20). A sample of this size, with good coverage of all sectors and company sizes, should give a very accurate picture of what is happening to continuing businesses in the region.

The third method has a much smaller sample since it also examines recent changes in turnover growth. This sample is restricted to 169 companies in Greater Cambridge with accounting years ending between April 2021 and December 2021 which have provided both employment and turnover data for 2018-19, 2019-20 and 2020-21. Since large businesses provide both employment and turnover figures, the sample is quantitatively significant, with total employment over 22,000 and total turnover of £3.4bn. This allows us to examine their employment and turnover growth in the last year against the growth one year earlier. The comparison between these two measures allows us to evaluate the impact of the furlough scheme on employment in the corporate sector in Greater Cambridge.

¹ The underlying core corporate database has been established and maintained with the ongoing support of Cambridge Ahead, and is currently sponsored by Arm, Marshall of Cambridge and the Cambridgeshire and Peterborough Combined Authority.

The fourth method is a **snapshot** of very recent growth that draws on a small sample and should be regarded as merely indicative. It considers only the largest businesses (top 100 by employment or turnover) and examines those that have filed interim reports for six-month periods ending between May 2021 and December 2021. The fourteen companies in the snapshot sample do not provide employment figures in their interim reports, but together they represent a combined annual turnover of about £1.2bn. The gain from focusing on interim results is that they allow us to compare turnover in the same six months period in 2019, 2020 and 2021. The first year was before the onset of the pandemic; the second year includes the first and second lockdowns in England; and the latest year covers the recovery from the worst impacts of Covid.

The remainder of this report is structured as follows. Section 2 presents the results of the June 2022 employment update, drawing on a set of charts that we developed specifically for this study. The section examines growth of Greater Cambridge-based companies by area, industry sector and firm size. Section 3 provides an analysis of the new payroll-based employee estimates produced by ONS, which are examined against the results of our employment update as well as other labour market data sources. Section 4 complements the findings from Section 2 by discussing the results of the June 2022 update sample that includes both employment and turnover growth. Section 5 shows the findings of the snapshot sample, while Section 6 offers some concluding remarks. Appendices A1-A3 provide a summary of employment growth rates by sector for Greater Cambridge as a whole, as well as for Cambridge and South Cambridgeshire separately. Appendix A4 explains the methodology underpinning the Greater Cambridge Employment Update. Appendix A5 reports some additional analysis of ONS payrolled employee data.

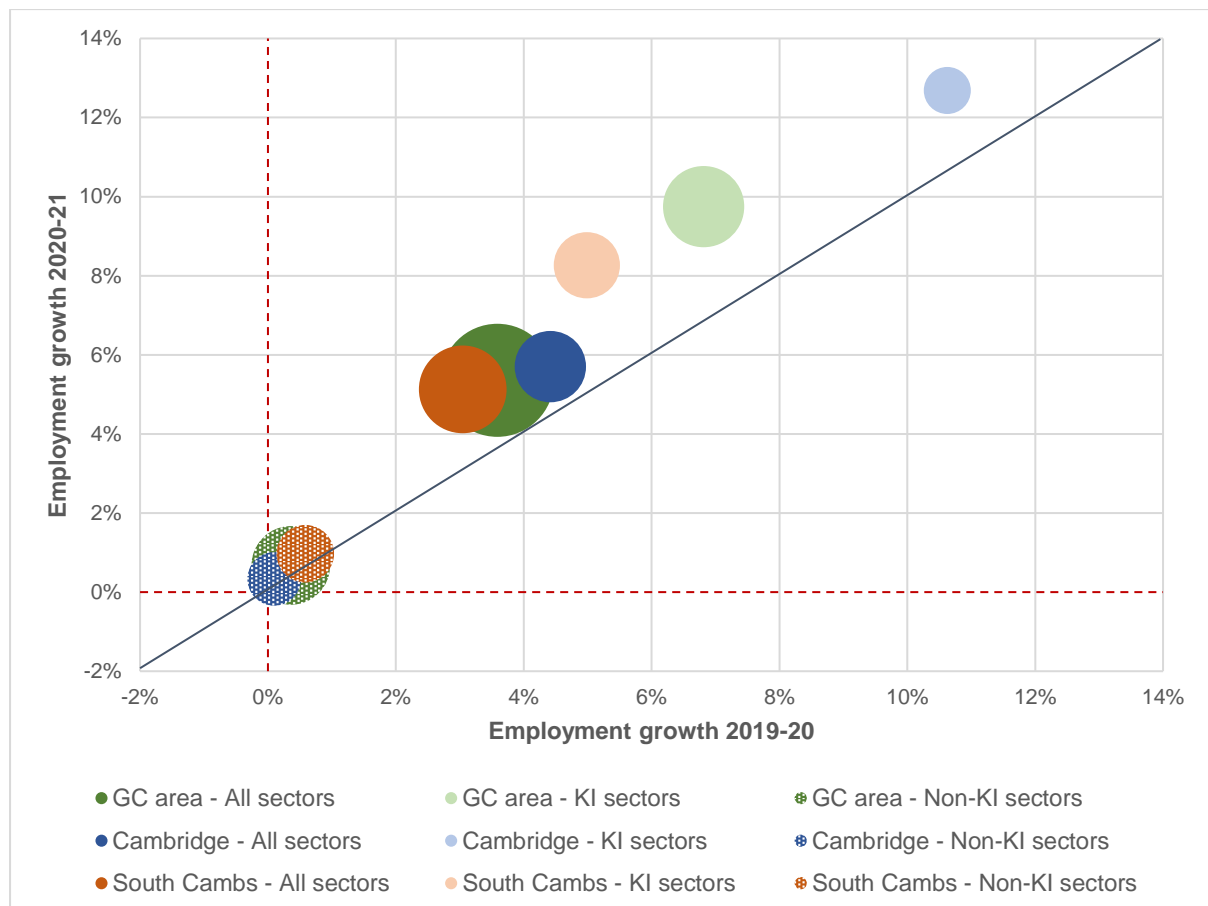
2. June 2022 employment update results

In this section, we present the results of the June 2022 employment update, the sixth of a series of updates aimed at providing a timely picture of the performance of the Greater Cambridge corporate economy. This update captures the impact of the second and third Covid lockdowns in England as well as the coming out of lockdowns.

2.1. Analysis by area

Figure 1 depicts employment growth in KI and non-KI sectors during 2019-20 (horizontal axis) and 2020-21 (vertical axis) by area. It is drawn from a large sample of 6,035 companies with accounts for the years ending April-December 2021. The position of the area marker relative to the 45° line indicates whether a given area has grown more or less fast than last year. Areas with positive growth in 2020-21 are found above the horizontal axis and those with positive growth in 2019-20 appear to the right of the vertical axis. It shows growth for KI, non-KI and all sectors for Cambridge, South Cambridgeshire and for Greater Cambridge overall. This chart allows us to compare the performance of each area over time. A summary of employment growth rates by sector for each area is reported in Appendices A1-A3.

Figure 1 Employment growth by area – 2020-21 vs 2019-20



Note: The size of each bubble is proportionate to the number of employees in 2019-20 on a continuous scale.
Source: Cosh & Caselli, CBR.

Figure 1 portrays a picture of continued and faster overall employment growth in the Greater Cambridge area during the period including the coming out of lockdowns (but preceding Putin’s war). Growth in the area has increased from 3.6% in 2019-20 to 5.4% in 2020-21,

suggesting that corporate employment growth has begun to recover from the effects of the pandemic.

The 5.4% employment growth over the median period to August 2021 (June 2022 Update) is significantly faster than the 2.0% growth to March 2021 (February 2022 Update), which captures the impact of the three Covid lockdowns in England but not the coming out of lockdowns. However, there are considerable differences across both sectors and areas.

Our data show that the faster employment growth in the area is due to a strong performance of KI sectors, which have seen employment growth accelerating from 6.8% in 2019-20 to 9.7% in 2020-21. This higher growth in the last year compares with a 6.2% rate during the period covering all three lockdowns (February 2022 Update).

In each of the charts the size of the bubble is proportional to total employment in that area or sector. The bubble that identifies KI sectors is to the right of the bubble for non-KI sectors – showing that KI sectors have been growing faster than non-KI sectors. Employment growth amongst non-KI sectors has been slightly higher in 2020-21 (0.7%) than in 2019-20 (0.4%).

Turning to the individual districts, both Cambridge and South Cambridgeshire have achieved faster employment growth in the latest year compared with one year earlier. Employment growth in Cambridge has been high at 5.7% in 2020-21, up from 4.4% in 2019-20. Similarly, employment growth in South Cambridgeshire has been 5.1% in the last year against a 3.0% rate in the previous year.

The KI sectors have shown a particularly high degree of dynamism in Cambridge, where KI employment growth has increased from 10.6% in 2019-20 to 12.7% in 2020-21. This has been helped by the performance of AstraZeneca and Abcam, who have added 675 and 253 employees respectively.

The growth of the KI sectors in South Cambridgeshire has accelerated from 5.0% to 8.3%, driven by the addition of 315 and 145 employees by Darktrace and CMR Surgical respectively.

We found a rather different picture for non-KI sectors, which have witnessed more modest employment growth in both districts.

Although most of the non-KI companies in Cambridge have exhibited stable employee numbers (1,597 companies out of a total of 1,784 non-KI companies in the district), the slowdown in employment by several other companies (e.g. Scudamore's Punting, one of the largest punting companies in Cambridge – we all know how quiet the centre of Cambridge and the river were in this year – and the Møller Institute, a subsidiary of Churchill College providing conferencing and accommodation facilities) has brought employment growth in non-KI sectors in Cambridge to 0.3% in the latest year compared with 0.1% one year earlier.

Non-KI employment growth has been somewhat higher in South Cambridgeshire than in Cambridge, reaching 1.0% in 2020-21. However, this growth largely reflects the incorporation of several academies by some of the largest education trusts in the area as explained in the next section.

Impact of amalgamations and incorporations in the Education sector

Looking at the data more closely, the picture for non-KI sectors is somewhat less optimistic than the one portrayed above. We find that most of the non-KI sectors are exhibiting negative growth in 2020-21 (see Figure 2 below) and that the Education sector has inflated the overall growth of non-KI employment.

The slightly higher employment growth in non-KI sectors during the last year compared with the previous year is mainly explained by some of the largest education trusts in the area incorporating several academies. For example, the Meridian Trust incorporated Northstowe Secondary College and Stratton Upper School, while Eastern Learning Alliance incorporated Chesterton Community College, Downham Market Academy and Girton Glebe Primary School. This section examines the impact of excluding the Education sector.

Non-KI employment growth in Greater Cambridge after removing the Education sector would be lower at -2.7% in 2020-21 – close to the -2.9% rate over the median period to March 2021 (February 2022 Update) – and 0.0% in 2019-20. Overall employment growth in the area would be 4.7% and 3.9%, respectively.

In Cambridge, employment growth amongst non-KI sectors would be -3.1% during 2020-21 and -0.1% during 2019-20. Overall employment growth in the district would be 5.5% in both years.

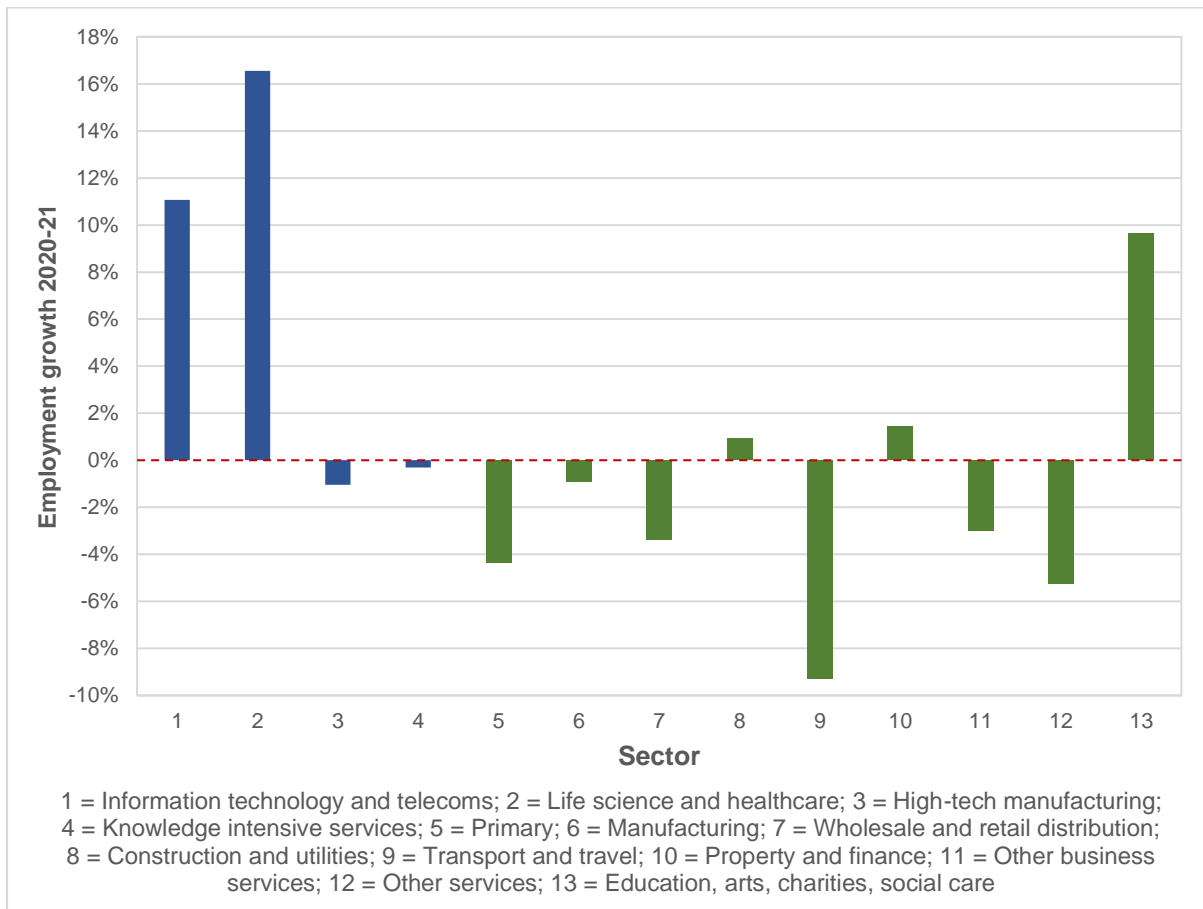
Non-KI employment growth in South Cambridgeshire would be -2.4% in 2020-21 and 0.0% in 2019-20. Overall employment growth in the district would be 4.2% and 3.1%, respectively.

2.2. Analysis by sector

Greater Cambridge

Figure 2 compares the 13 industry sectors used in the analysis based on their employment growth during 2020-21 (on average the year to August 2021), the latest year covered by this work. It is drawn from a sample of companies with accounts for the years ending April-December 2021.

Figure 2 Employment growth 2020-21 by sector in the Greater Cambridge area



Note: Blue bars identify KI sectors, whereas green bars are for non-KI sectors.

Source: Cosh & Caselli, CBR.

'Life science and healthcare' (+16.6%) and 'Information technology and telecoms' (+11.1%) have been the fastest growing sectors during 2020-21.

The strong performance of these two KI sectors through the pandemic testifies to the resilience of the Life Science and ICT clusters in Greater Cambridge. Whilst some companies in these sectors have been hampered by Covid (e.g. Quixant), others have benefited from it (e.g. AstraZeneca).

By contrast, employment growth during 2020-21 has been negative in the other two KI sectors.

'Knowledge intensive services' has seen employment growth declining by 0.3% in 2020-21. This decline has been driven by reduced employee numbers at Displaylink following its acquisition by US company Synaptics, along with some of the largest engineering and science consultancies in the area (e.g. Cambridge Consultants and Science Group) keeping their headcount virtually unchanged within a context of ongoing uncertainty about the unfolding of the pandemic.

At first glance, the results for 'Knowledge intensive services' may seem at odds with the results from the February 2022 Update, which showed an employment growth rate of 3.7% for the sector in the year through March 2021. This is largely explained by differences in the sample composition between the two updates, with the June 2022 Update now capturing the negative effects on employment caused by Displaylink.

Employment growth in 'High-tech manufacturing' has fallen by 1.0% in the last year, caused primarily by a drop in employee numbers by OLED equipment manufacturer APEVA. However, this fall is modest if compared with the -4.1% rate for the period covering all three lockdowns (February 2022 Update).

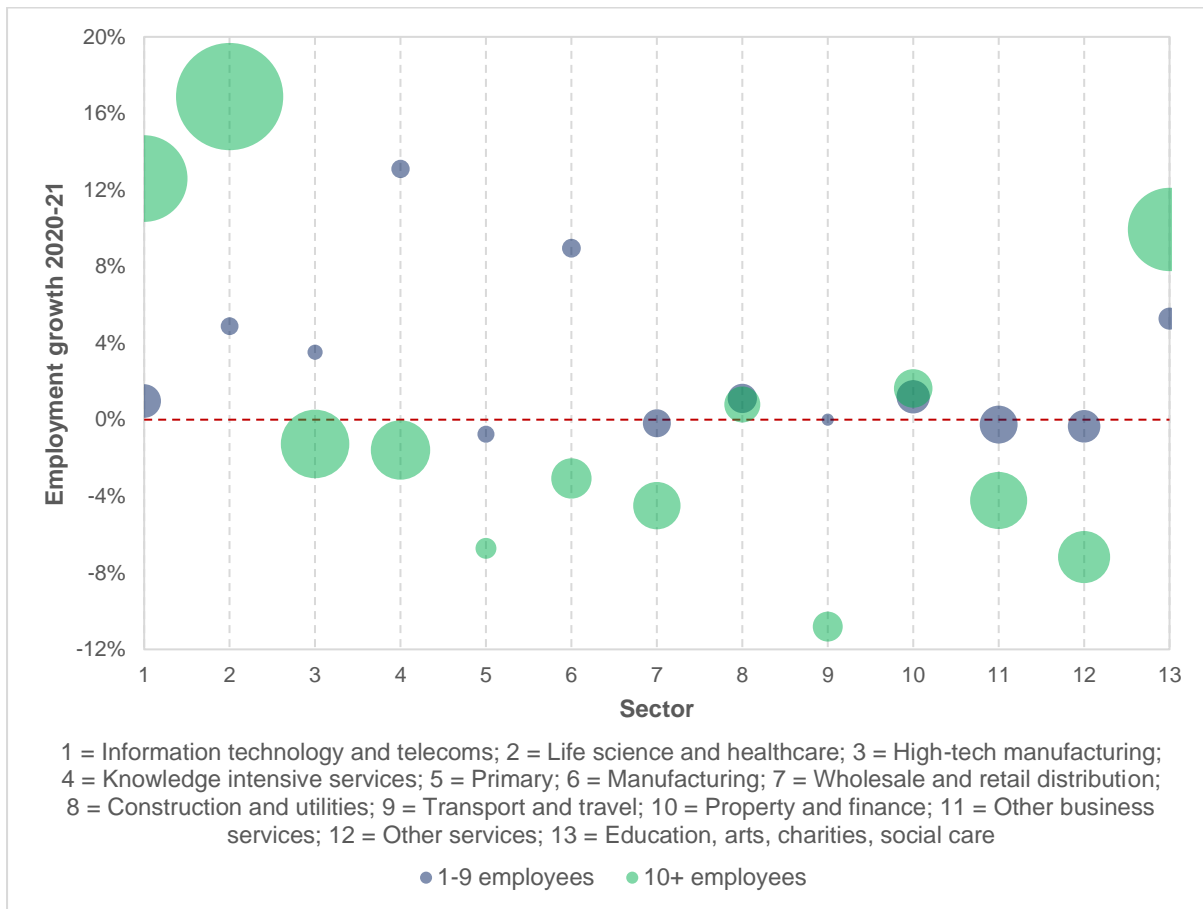
The drop for 'High-tech manufacturing' is mirrored by the performance of the low- and med-low-tech manufacturing sectors ('Manufacturing') – down by 0.9% from the previous year. Among the manufacturers who have had the largest fall in employee numbers is Histon Sweet Spreads, a leading manufacturer of grocery products including sweet spreads and jellies.

Other non-KI sectors have witnessed more substantial declines in employment growth. The largest declines are found for 'Transport and travel' (-9.3%), 'Other services' (-5.3%), 'Primary' (-4.3%) and 'Wholesale and retail distribution' (-3.4%).

Conversely, employment growth to 2021 has been positive in 'Property and finance', 'Construction and utilities' and 'Education, arts, charities, social care' (the reasons for which have been discussed above). Among the companies that have contributed to this growth are Bluestone ('Property and finance'), Sitec Infrastructure Services ('Construction and utilities') and the Meridian Trust ('Education, arts, charities, social care').

Figure 3 expands on the results from Figure 2 presented above by providing a breakdown of employment growth to 2021 by both industry sector and firm size. It is drawn from a sample of companies with accounts for the years ending April-December 2021. Companies were assigned to two size classes: 1-9 employees; 10+ employees. Further analysis by firm size with individual sectors grouped into KI and non-KI sectors is presented in Section 2.3 below.

Figure 3 Employment growth 2020-21 by sector and firm size in the Greater Cambridge area



Note: The size of each bubble is proportionate to the number of employees in 2019-20 on a continuous scale.
Source: Cosh & Caselli, CBR.

The results from Figure 2 pointed to ‘Life science and healthcare’ and ‘Information technology and telecoms’ as the fastest growing sectors during 2020-21, whereas negative employment growth was observed for most of the non-KI sectors. Figure 3 qualifies these results by suggesting that there is variation in employment growth rates across both industry sectors and firm sizes.

Looking at percentage growth rates for small businesses can be problematic. Most small businesses do not grow and the median growth is uninformative at 0%. However, a few small businesses can grow very fast in percentage terms (e.g. from 2 to 8 employees). It is these rare businesses that create the overall growth of smaller businesses.

Businesses with 1-9 employees tend to have been the fastest growing companies in sectors such as ‘Knowledge intensive services’, ‘Manufacturing’ and ‘High-tech manufacturing’. However, the relatively small size of their bubbles shows that their impact on total employment growth has been somewhat limited.

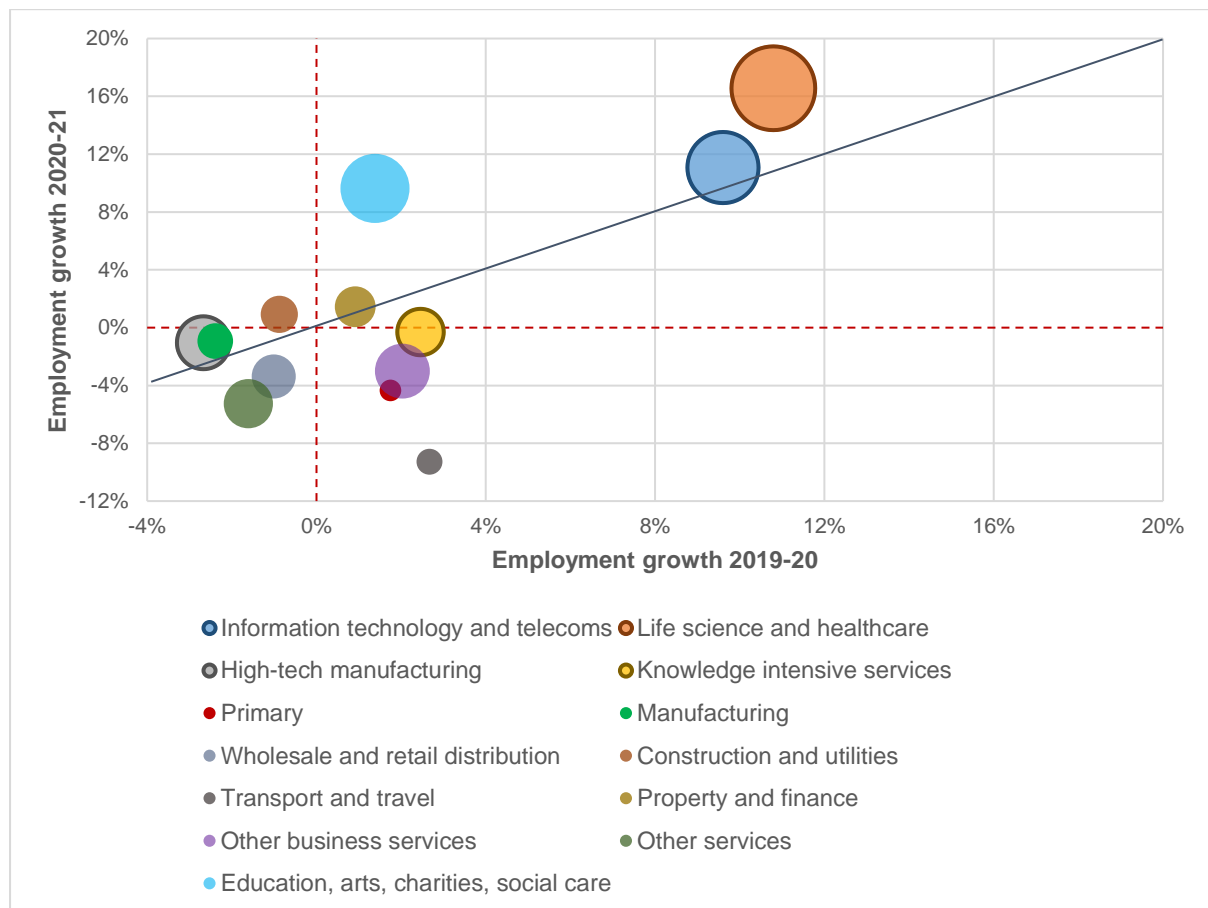
Good examples of fast growth in the 1-9 employee businesses are Heartfelt Technologies, a medical equipment manufacturer that has created a device to monitor heart failure from the patient’s home, and Nu Quantum, a University of Cambridge spinout developing a portfolio of quantum photonic technologies.

In turn, 10+ employee businesses have achieved particularly fast growth in 'Life science and healthcare', 'Information technology and telecoms' and 'Education, arts, charities, social care'.

The group of 10+ employee businesses tends to dominate employment changes given its large aggregate size. These businesses are significant contributors to the decline in employment observed in sectors such as 'Transport and travel' (e.g. punting company Scudamore's Punting), 'Other services' (e.g. specialist school meal provider Lunchtime Co.) and 'Wholesale and retail distribution' (e.g. owner of local garden centres Scotsdale Nursery and Garden Centre).

Figure 4 compares the 13 industry sectors according to their employment growth during 2019-20 (horizontal axis) and their employment growth during 2020-21 (vertical axis). It is drawn from a sample of companies with accounts for the years ending April-December 2021. The position of the sector marker relative to the 45° line shows whether the sector has grown more or less fast than last year. Sectors with positive growth in 2020-21 are found above the horizontal axis and those with positive growth in 2019-20 appear to the right of the vertical axis. This chart allows us to compare the performance of sectors over time.

Figure 4 Employment growth by sector in the Greater Cambridge area – 2020-21 vs 2019-20



Note: The size of each bubble is proportionate to the number of employees in 2019-20 on a continuous scale. Bubbles with an outline identify KI sectors.
Source: Cosh & Caselli, CBR.

'Life science and healthcare', the largest sector in Greater Cambridge, has seen employment growth accelerating during 2020-21 despite the challenges brought about by Covid (16.6% compared with 10.8% in 2019-20). This result, which has been driven by CMR

Surgical (+26.6%), AstraZeneca (+19.5%) and Abcam (+19.0%), is all the more encouraging given that our June 2022 Update sample covers 86.5% of corporate employment in the Life Science sector in Greater Cambridge (see the fourth data column of Appendices A1-A3).

Employment growth in the second-largest sector, 'Information technology and telecoms', has been high at 11.1%, up from 9.6% in the previous year. Among the companies contributing to this growth are Darktrace (+28.0%), Frontier Developments (+17.7%) and Quartix Technologies (+15.2%).

On the contrary, employment growth in the 'Knowledge intensive services' sector has gone down to -0.3% in the latest year from 2.5% one year earlier. The main reason behind this slowdown are the redundancies made by Displaylink after it was acquired by US company Synaptics (-28.3% employment growth on the previous year).

Amongst non-KI sectors, 'Education, arts, charities, social care' has witnessed the largest increase in employment growth relative to 2019-20 (+9.6% in the latest year compared with +1.4% one year earlier). As discussed in Section 2.1 above, this growth has been driven by several academies being incorporated into some of the largest education trusts in the area (e.g. Meridian Trust and Eastern Learning Alliance).

Employment growth has been somewhat faster during 2020-21 than during 2019-20 also in 'Property and finance' (+1.4% and +0.9%, respectively) and 'Construction and utilities' (+0.9% and -0.9%, respectively).

By contrast, the sectors with the largest fall in employment growth compared with 2019-20 are 'Transport and travel' (-9.3% and +2.7%, respectively), 'Primary' (-4.3% and +1.7%, respectively) and 'Other business services' (-3.0% and +2.0%), suggesting that non-KI sectors had not yet recovered from the negative impacts of Covid during the period under study.

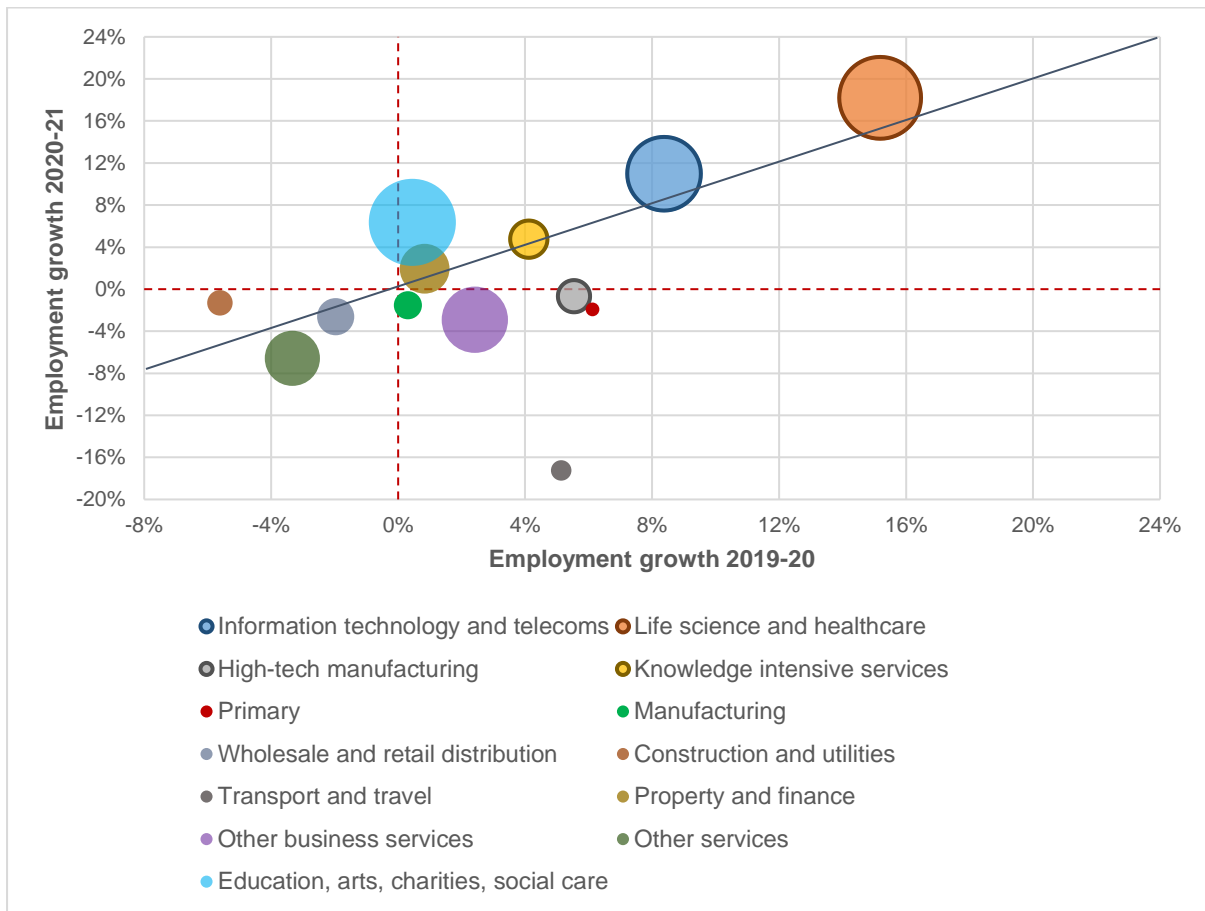
Employment growth has remained negative in 'High-tech manufacturing', 'Manufacturing', 'Wholesale and retail distribution' and 'Other services'.

The 'Other services' sector, which includes hotels, restaurants and other hospitality businesses, has been severely affected by the pandemic. Employment growth in the sector has dropped from -1.6% in 2019-20 to -5.3% in 2020-21, with less than one in ten companies showing an increase in employee numbers over the last year.

Cambridge

Figure 5 compares the 13 industry sectors based on their employment growth during 2019-20 (horizontal axis) and their employment growth during 2020-21 (vertical axis), this time focusing on Cambridge. It is drawn from a sample of companies with accounts for the years ending April-December 2021. The position of the sector marker relative to the 45° line shows whether the sector has grown more or less fast than last year. Sectors with positive growth in 2020-21 are found above the horizontal axis and those with positive growth in 2019-20 appear to the right of the vertical axis. This chart allows us to compare the performance of sectors over time.

Figure 5 Employment growth by sector in Cambridge – 2020-21 vs 2019-20



Note: The size of each bubble is proportionate to the number of employees in 2019-20 on a continuous scale. Bubbles with an outline identify KI sectors.
Source: Cosh & Caselli, CBR.

Employment growth in Cambridge has been driven by the strong performance of ‘Life science and healthcare’, ‘Information technology and telecoms’ and, to a lesser extent, ‘Knowledge intensive services’.

Employment growth has been particularly fast in ‘Life science and healthcare’, where it has reached 18.2% in the latest year (up from 15.2% one year earlier). This largely reflects the strong performance of AstraZeneca (+19.5% on the previous year), Abcam (+19.0%) and SDI Group (+17.2%).

‘Information technology and telecoms’ has seen employment growth accelerating from 8.4% in 2019-20 to 11.0% in 2020-21. Quartix Technologies (+15.2%) and Microsoft Research (+11.8%) are among the main contributors to this growth.

‘Knowledge intensive services’ has achieved virtually the same growth rate during 2019-20 and 2020-21 (4.1% and 4.8%, respectively). The largest companies in the sector, such as Rand Europe and Cambridge Econometrics, have all shown a steady increase in their employee numbers.

After growing by 5.5% in 2019-20, ‘High-tech manufacturing’ has recorded negative employment growth in 2020-21 at -0.7%. This weaker performance in the most recent year reflects a drop in employee numbers by OLED equipment manufacturer APEVA, which has

not been offset by the stronger growth achieved by world-leading manufacturer of industrial inkjet printheads Xaar after restructuring its business.

Among non-KI sectors, employment growth in 2020-21 has been faster compared with 2019-20 only in 'Property and finance' (1.9% and 0.8%, respectively) and 'Education, arts, charities, social care' (6.4% and 0.4%, respectively) – the reasons for which have been explained above.

Conversely, we find evidence of a considerable slowdown in employment growth in several other non-KI sectors. 'Transport and travel' (-17.2% in 2020-21 compared with 5.1% in 2019-20), 'Primary' (-1.9% and 6.1%, respectively), 'Other business services' (-2.9% and 2.4%, respectively) and 'Manufacturing' (-1.5% and 0.3%, respectively) have all seen their employment growth turning negative in 2020-21.

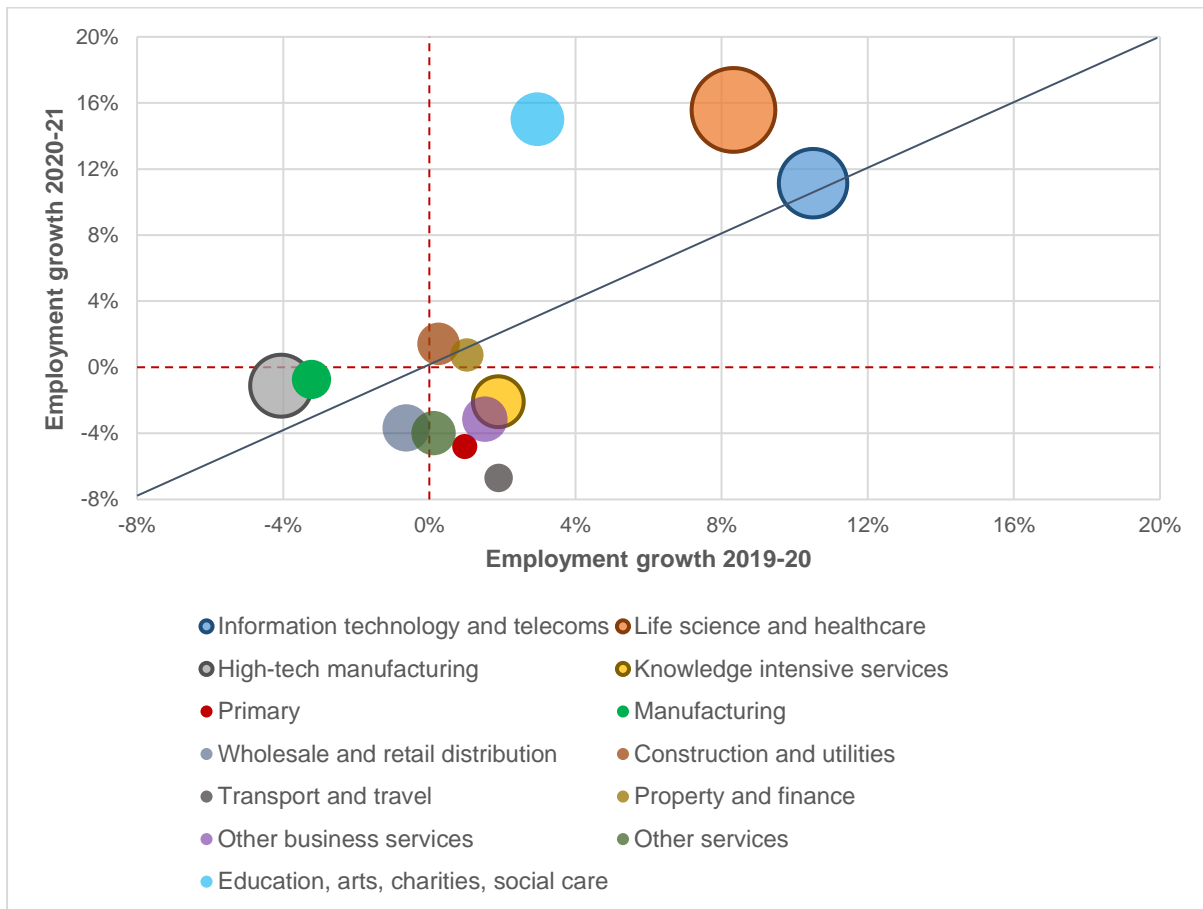
The fall in employment in the 'Transport and travel' sector during 2020-21 is due primarily to lower employee numbers at Scudamore's Punting. This and other similar businesses have been significantly impacted by Covid-related restrictions and have yet to show signs of recovery in their accounts.

'Other services', 'Wholesale and retail distribution' and 'Construction and utilities' have all had negative employment growth for the second consecutive year.

South Cambridgeshire

Figure 6 focuses on South Cambridgeshire and compares the 13 industry sectors based on their employment growth during 2019-20 (horizontal axis) and their employment growth during 2020-21 (vertical axis). It is drawn from a sample of companies with accounts for the years ending April-December 2021. The position of the sector marker relative to the 45° line shows whether the sector has grown more or less fast than last year. Sectors with positive growth in 2020-21 are found above the horizontal axis and those with positive growth in 2019-20 appear to the right of the vertical axis. This chart allows us to compare the performance of sectors over time.

Figure 6 Employment growth by sector in South Cambridgeshire – 2020-21 vs 2019-20



Note: The size of each bubble is proportionate to the number of employees in 2019-20 on a continuous scale. Bubbles with an outline identify KI sectors.
Source: Cosh & Caselli, CBR.

Similar to Cambridge, South Cambridgeshire-based companies in ‘Life science and healthcare’ and ‘Information technology and telecoms’ have shown robust employment growth in the latest year.

Employment growth in ‘Life science and healthcare’ has accelerated from 8.3% in 2019-20 to 15.6% in 2020-21, driven by a considerable increase in the number of staff employed by CMR Surgical (+26.6%) and Genome Research (+11.7%). Overall, the sample for our June 2022 Update represents 86.2% of corporate employment in the Life Science sector in South Cambridgeshire.

‘Information technology and telecoms’ has reached 11.1% employment growth in 2020-21, up slightly from 10.5% in 2019-20. Behind this steady growth is the strong performance of Darktrace (+28.0%) and Frontier Developments (+17.7%).

The picture looks different for the other two KI sectors. Employment growth has dropped in ‘Knowledge intensive services’ (-2.1% in 2020-21 compared with 1.9% in 2019-20) and remained negative in ‘High-tech manufacturing’ (-1.1% and -4.1%, respectively).

The results for the ‘High-tech manufacturing’ sector, which are driven by APEVA (-36.5%), are similar to those for the low- and med-low-tech ‘Manufacturing’ sector. Employment of Manufacturing companies has declined by 0.7% in 2020-21, largely because of a reduction in employee numbers by Histon Sweet Spreads (-4.4%).

'Construction and utilities' (1.4% and 0.3%) and 'Education, arts, charities, social care' (15.0% and 3.0%, respectively) are the only two non-KI sectors with higher employment growth in the last year than in the previous year. Behind the fast growth of the Education sector is the incorporation of several academies by some of the largest education trusts in the area (see Section 2.1).

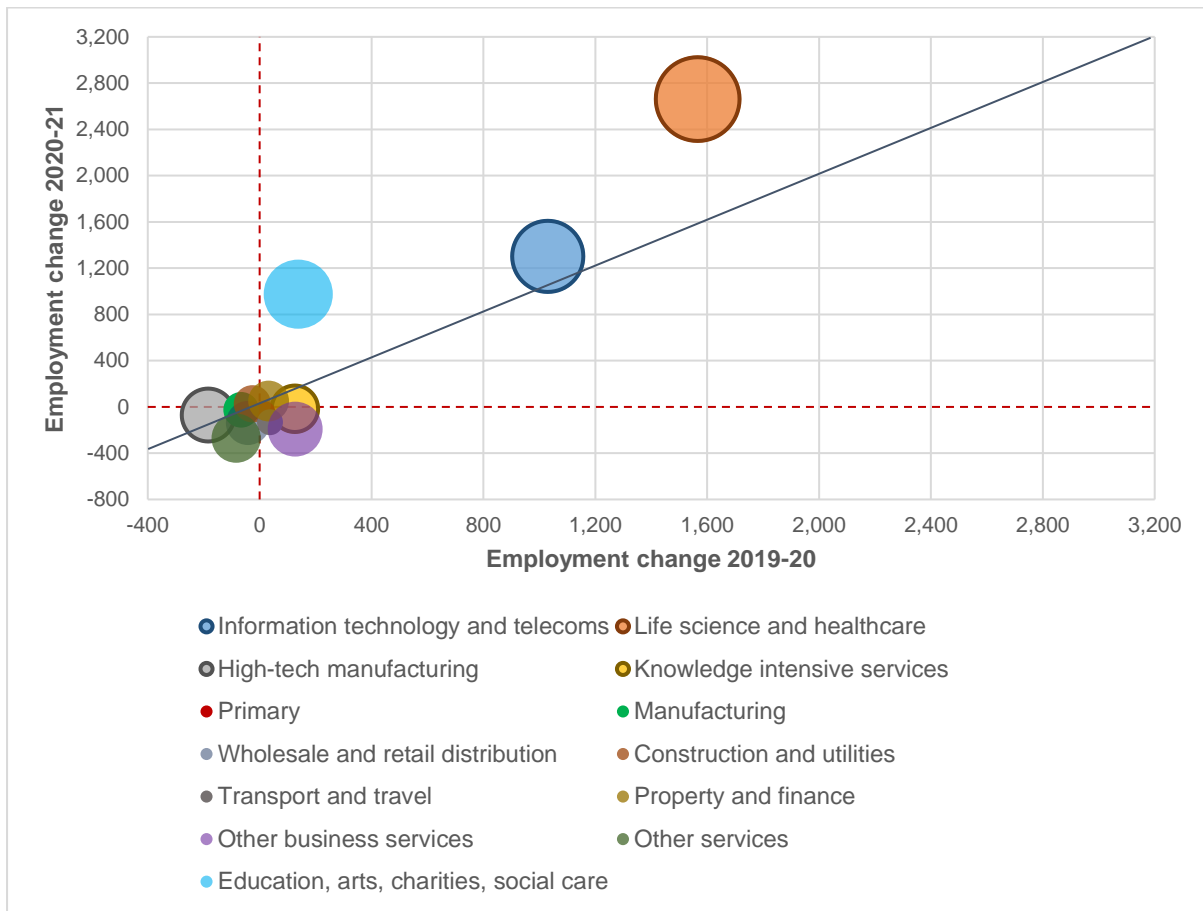
On the contrary, among the sectors with the largest slowdown in employment growth over the last year are 'Transport and travel' (-6.7% in 2020-21 compared with 1.9% in 2019-20), 'Primary' (-4.8% and 1.0%, respectively), 'Other business services' (-3.1% and 1.5%, respectively) and 'Other services' (-4.0% and 0.1%, respectively).

Nine in ten companies operating in the 'Other services' sector have seen either no growth or a decline in their employment during 2020-21. Some examples are independent café Aromi, occupational health provider Corazon Health and local catering services provider Victoria's.

Greater Cambridge

Figure 7 offers another comparison of the 13 industry sectors, this time looking at their employment change (rather than their employment growth) during 2019-20 (horizontal axis) and 2020-21 (vertical axis). It is drawn from a sample of companies with accounts for the years ending April-December 2021. The position of the sector marker relative to the 45° line indicates whether employment change in the sector has been higher or lower than last year. Sectors with a positive change in employment during 2020-21 are found above the horizontal axis and those with a positive change during 2019-20 appear to the right of the vertical axis. Similar to Figures 4-6, this chart allows us to compare the performance of sectors over time.

Figure 7 Employment change by sector in the Greater Cambridge area – 2020-21 vs 2019-20



Note: The size of each bubble is proportionate to the number of employees in 2019-20 on a continuous scale. Bubbles with an outline identify KI sectors.
Source: Cosh & Caselli, CBR.

Since % changes can sometimes be misleading, Figure 7 examines changes in employment in terms of the number of people employed. In this case, the findings from Figure 7 largely confirm those from Figure 4.

The performance of the ‘Life science and healthcare’ and ‘Information technology and telecoms’ sectors stands out when examined in terms of absolute employment changes.

There has been a change of +2,662 employees in ‘Life science and healthcare’ in 2020-21 compared with +1,566 in 2019-20, most of which is associated with increased employee numbers at AstraZeneca (+675 employees), Abcam (+253 employees) and CMR Surgical (+145 employees).

‘Information technology and telecoms’ has had the second largest employment change in 2020-21 after ‘Life science and healthcare’, adding 1,302 employees in the latest year compared with 1,030 one year earlier. Darktrace (+315 employees) and Frontier Developments (+88 employees) have contributed almost a third of the employment change to 2021.

Among non-KI sectors, employment change in 2020-21 has been higher than employment change in 2019-20 in ‘Construction and utilities’ (+27 and -26, respectively), ‘Property and finance’ (+51 and +32, respectively) and ‘Education, arts, charities, social care’ (+975 and +138, respectively). The incorporation of several academies by the Meridian Trust and

Eastern Learning Alliance, which has resulted in a combined addition of 567 employees, accounts for over half of the employment change to 2021 in the Education sector.

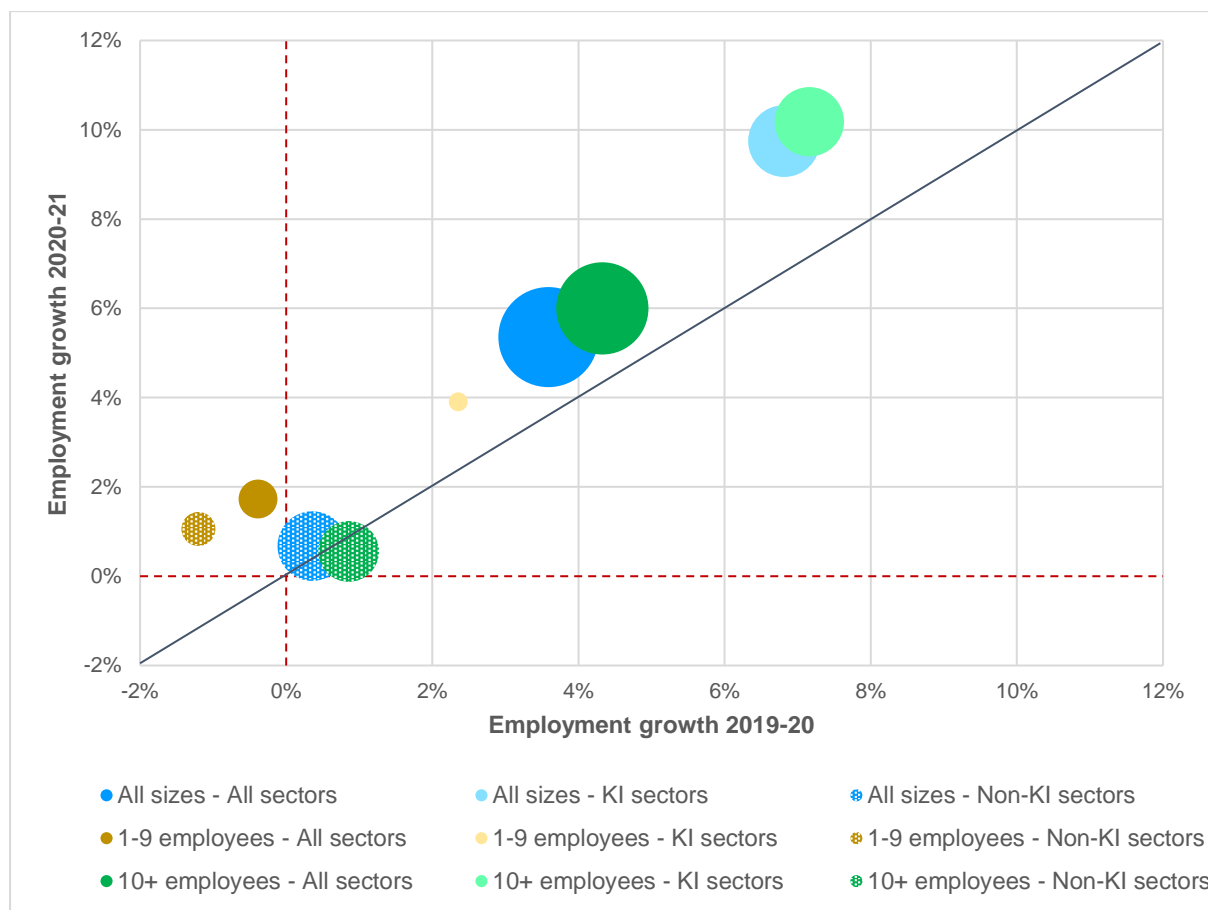
All of the other non-KI sectors have reported a negative employment change in 2020-21. The largest drop is observed in 'Other services' (-270 employees), 'Other business services' (-192 employees) and 'Wholesale and retail distribution' (-139 employees).

Collectively, KI sectors have added 3,878 employees during 2020-21, whilst non-KI sectors have contributed 252 employees.

2.3. Analysis by firm size

Figure 8 shows employment growth in KI and non-KI sectors during 2019-20 (horizontal axis) and 2020-21 (vertical axis) by firm size. It is drawn from a sample of companies with accounts for the years ending April-December 2021. The position of the size marker relative to the 45° line indicates whether the size class has grown more or less fast than last year. Size classes with positive growth in 2020-21 are found above the horizontal axis and those with positive growth in 2019-20 appear to the right of the vertical axis. This chart allows us to compare the performance of size classes over time.

Figure 8 Employment growth by firm size in the Greater Cambridge area – 2020-21 vs 2019-20



Note: The size of each bubble is proportionate to the number of employees in 2019-20 on a continuous scale.
Source: Cosh & Caselli, CBR.

Employment growth to 2021 has been faster than employment growth to 2020 in both 1-9 employee and 10+ employee size classes.

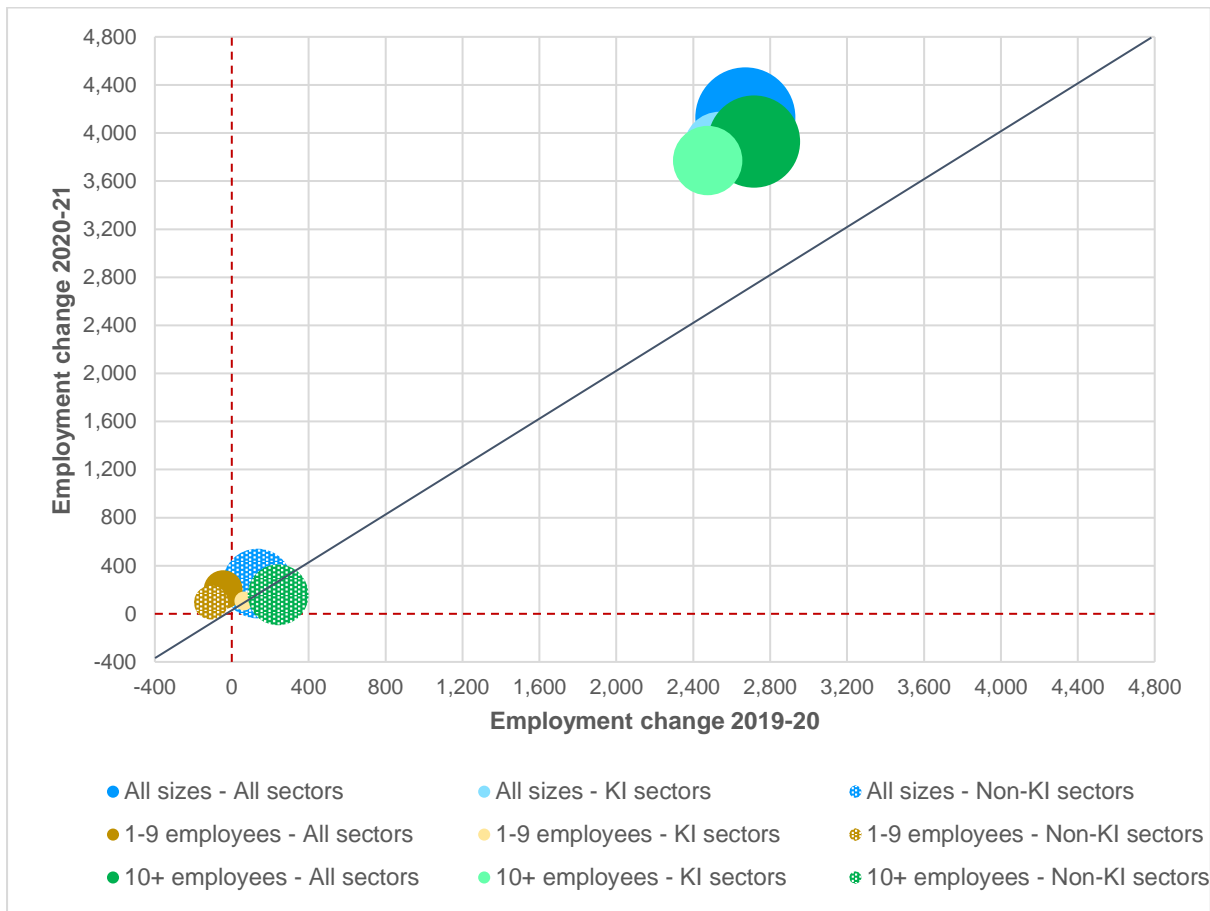
Employment of 1-9 employee businesses has increased by 1.7% in 2020-21 (-0.4% in 2019-20). This growth has been driven primarily by KI sectors, which have seen employment growing by 3.9% in the latest year compared with 2.4% one year earlier. Non-KI sectors in this size class have grown less fast than KI sectors, reaching 1.1% in 2020-21 up from -1.2% in 2019-20.

The picture looks similar for 10+ employee businesses. While employment growth has remained strong for KI sectors (10.2% in the latest year, up from 7.2% in the previous year), employment has increased less fast amongst non-KI sectors (0.6% in 2020-21). As a result, employment growth in this size class has been 6.0% in 2020-21 (against a figure of 4.3% in 2019-20).

Given the strong performance of both size classes in the most recent year, which includes the coming out of lockdowns but precedes Putin's war, corporate employment in Greater Cambridge has been growing faster during 2020-21 (+5.4%) compared with 2019-20 (+3.6%).

Figure 9 compares size classes based on their employment change during 2019-20 (horizontal axis) and 2020-21 (vertical axis). It is drawn from a sample of companies with accounts for the years ending April-December 2021. The position of the size marker relative to the 45° line indicates whether employment change in the size class has been higher or lower than last year. Size classes with a positive change in employment during 2020-21 are found above the horizontal axis and those with a positive change during 2019-20 appear to the right of the vertical axis. Similar to Figure 8, this chart allows us to compare the performance of size classes over time.

Figure 9 Employment change by firm size in the Greater Cambridge area – 2020-21 vs 2019-20



Note: The size of each bubble is proportionate to the number of employees in 2019-20 on a continuous scale.
Source: Cosh & Caselli, CBR.

The picture obtained from employment change data largely supports the conclusions drawn from employment growth data.

After a drop of 45 employees in 2019-20, employment change at 1-9 employee businesses has been positive in 2020-21 (+201 employees). The employment change in the most recent year has originated primarily in KI sectors (+107 employees compared with +63 one year earlier).

Similarly, the employment change in 2020-21 (+3,929 employees) has been larger than employment change in 2019-20 (+2,716 employees) for businesses with 10+ employees. This increase has originated in KI sectors, which have seen employment change going up from +2,475 in 2019-20 to +3,771 in 2020-21. In turn, employment change in non-KI sectors has been +158 in the latest year down from +241 in the previous year.

Overall, corporate employment change to 2021 across all size classes has been +4,130 compared with +2,671 in the year to 2020.

The next section presents an analysis of the new payroll-based employee estimates produced by ONS.

3. ONS estimates of payrolled employees

The results of our June 2022 employment update point to an overall improvement in business performance in the last year, which includes the coming out of Covid lockdowns but not Putin's war. Greater Cambridge corporate employment grew by 5.4% (June 2022 Update), after experiencing a more modest growth of 2.0% in the period covering all three lockdowns (February 2022 Update). These results suggest that corporate employment growth has begun to recover from the worst impacts of the pandemic as businesses learn how to live with Covid.

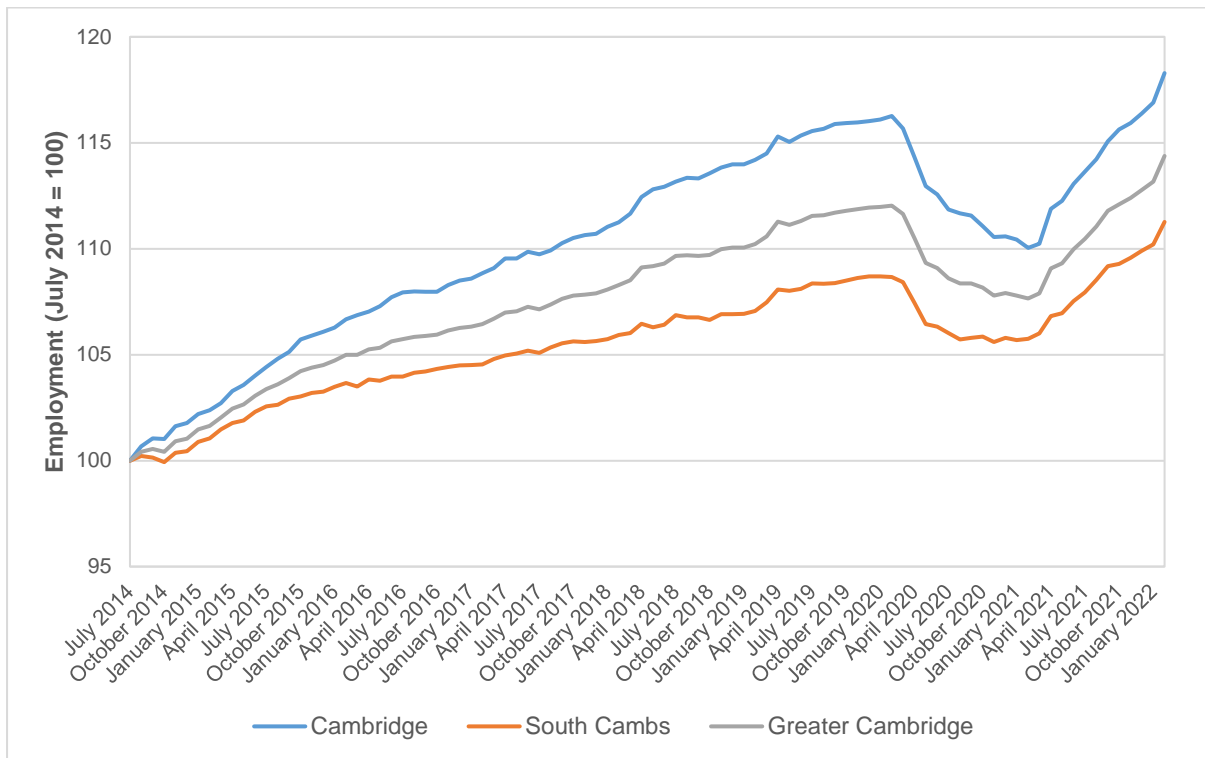
In this section, we examine whether this pattern holds when non-corporate employment is considered along with corporate employment. To this end, we analyse the experimental monthly estimates of payrolled employees from Pay As You Earn (PAYE) Real Time Information (RTI) data, released jointly by HMRC and ONS.

This source uses HMRC's real-time data to produce timely estimates of the number of people paid through a PAYE scheme, with data broken down by local authorities and stretching back to July 2014 (more details about the PAYE RTI measure can be found in Appendix A5, Table A2). It was first introduced in April 2020 to provide further insight into the UK labour market during the pandemic. The latest release available at the time of writing is the May 2022 release, which has local authority-level data through February 2022 and therefore precedes Putin's war. In the view of ONS (May 2022 release), "[t]hese statistics also have the potential to replace some of those based on surveys, which could reduce the burden on businesses needing to fill in statistical surveys".

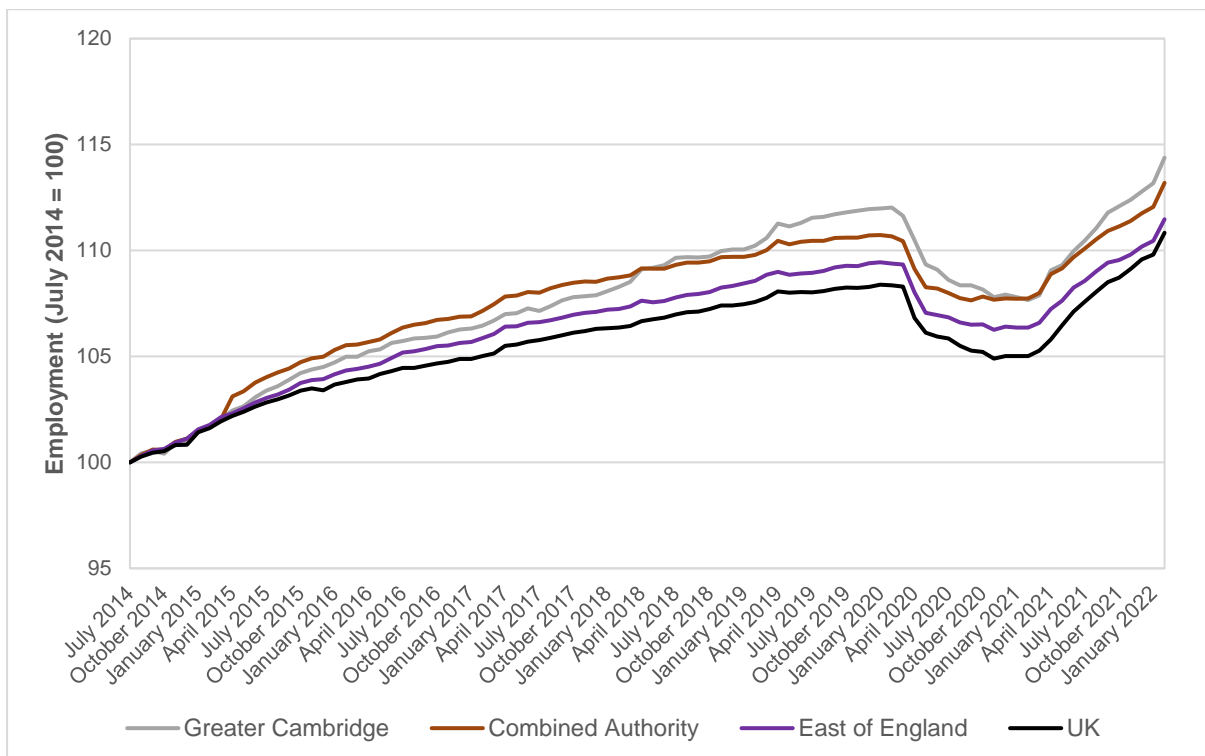
3.1. Analysis of payrolled employees

Figure 10 shows the growth of payrolled employees for selected geographic areas. Part (a) focuses on the Greater Cambridge area, while part (b) looks at Greater Cambridge against the Cambridgeshire and Peterborough Combined Authority area ('Combined Authority' hereinafter), the East of England and the UK. An equivalent chart for the other local authority districts making up the Combined Authority, together with further analysis, is reported in Appendix A5.

Figure 10 Payrolled employees by area



(a) Cambridge, South Cambs and Greater Cambridge



(b) Greater Cambridge, Combined Authority, East of England and UK

Note: Payrolled employees are individuals receiving paid remuneration through Pay As You Earn (PAYE). It includes people who have not done work but are an employee (e.g. those on paid leave), whilst it excludes self-employment.

Source: PAYE RTI (HMRC/ONS).

Part (a) of Figure 10 reveals that the number of payrolled employees in Greater Cambridge increased steadily until February 2020, growing at an annual rate of 2.0% over the previous five years. Payrolled employees started to fall as the pandemic hit the UK in March 2020. This downward trend continued for about one year until March 2021, during which there was a fall of approximately 4,700 employees (-3.4%) despite the furlough scheme.² As Covid restrictions were gradually eased from March 2021, the number of payrolled employees began to recover and reached its pre-pandemic levels around October 2021 (up by over 5,500 people on February 2021). Growth rates have since remained high and appear to have resumed their longer-term trend as the UK labour market continues to recover from the pandemic.

Cambridge and South Cambridgeshire exhibit a similar pattern, yet with some noticeable differences. Payrolled employee growth over the period preceding the Covid outbreak has been significantly faster in Cambridge than in South Cambridgeshire (2.6% pa and 1.5% pa respectively between February 2015 and February 2020). The data also suggest that the pandemic has had a larger impact on Cambridge, as evidenced by the more pronounced drop in Cambridge-based employees during the worst period of Covid compared with South Cambridgeshire (-4.7% and -2.2% respectively in the year to March 2021). Since then, both districts have been growing at a similar pace and are now above their pre-pandemic levels.

The pattern observed for Greater Cambridge is similar to that for the wider Combined Authority, the East of England and the UK, as illustrated in Part (b) of Figure 10. However, we can see that payrolled employees in Greater Cambridge rose considerably faster than the other areas prior to Covid, whilst suffering a larger fall during the period of the three Covid lockdowns. Following the lifting of lockdowns from the spring of 2021, Greater Cambridge has again shown higher employee growth than the other areas consistent with its longer-term trend (6.2% in the year to February 2022 against 5.1% for the Combined Authority, 4.8% for the East of England and 5.5% for the UK).

3.2. Differences with employment update results

Taken together, the results from the PAYE RTI measure are broadly in line with the results of our June 2022 Update and previous updates. After slowing down since the onset of the Covid pandemic, employment growth in Greater Cambridge started to recover in 2021 as the local economy came out of lockdowns.

Nevertheless, some important differences exist with respect to the size of this slowdown. Whilst our February 2022 Update showed that Greater Cambridge corporate employment continued to grow in the year to March 2021 – albeit at a slower rate compared with the previous year (2.0% and 4.5%, respectively) – payroll-based data from ONS suggest that employees in the corporate and non-corporate sectors dropped by 3.4% in the same year.

Although a full reconciliation of these two sources is not possible, we identify two main reasons that might explain the differences described above. First, the two sources differ in their coverage of non-corporate employment. Our employment updates include companies and limited partnerships, whilst they exclude sole proprietorship and other forms of unincorporated businesses. By contrast, ONS estimates of payrolled employees cover any individuals paid through PAYE irrespective of their sector. It is possible that the fall in employee numbers during the pandemic was larger for the non-corporate sector. Second,

² Employees who were placed on furlough as part of the Coronavirus Job Retention Scheme (CJRS) are included in the PAYE RTI data insofar as they had their payments reported through this system.

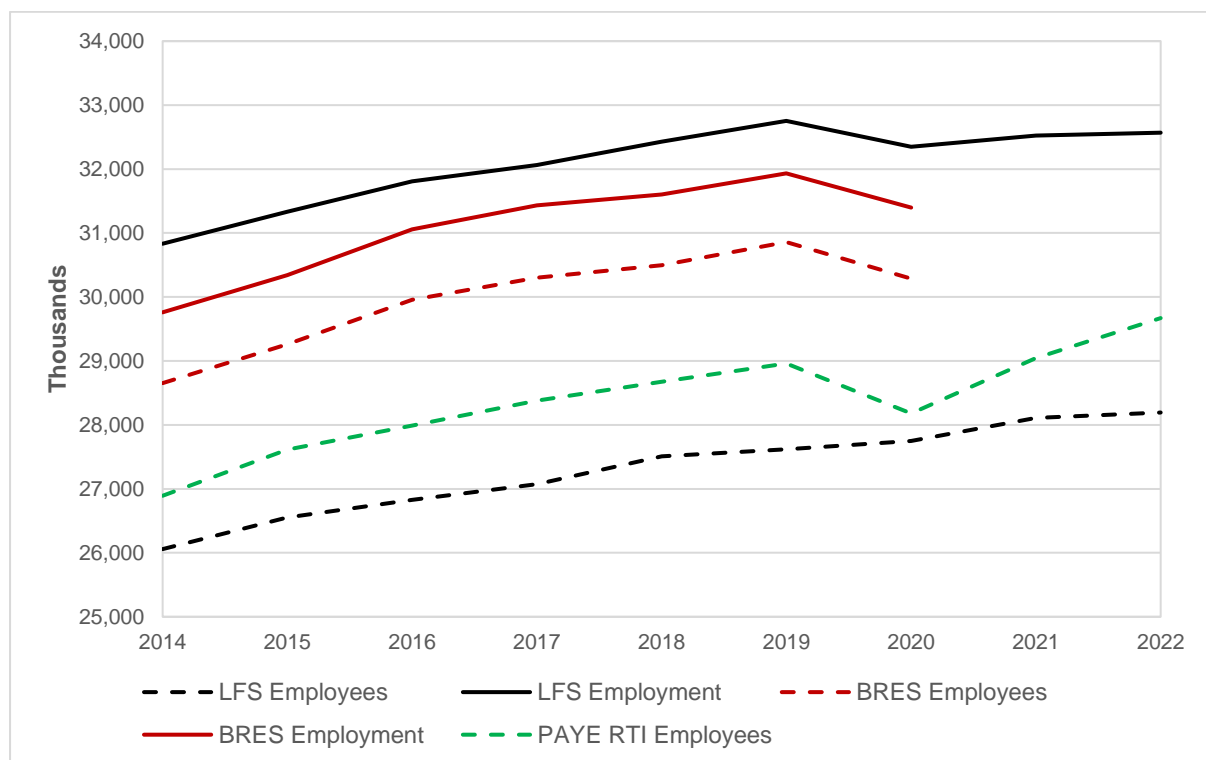
there are important methodological differences between the two sources. The employment data used in our update work is taken from audited company accounts, with companies assigned to their principal location. Conversely, the PAYE RTI measure is based on where employees live and not their place of work. It follows that the ONS measure could potentially underestimate the number of employees working in an area such as Greater Cambridge with relatively high levels of in-commuting.

3.3. Comparison across sources

UK and East of England

In light of these differences, it is instructive to look more closely at the payroll-based measure alongside other labour market statistics maintained by ONS. Figure 11 provides a comparison of employees and employment estimates for the UK across three main data sources: the Labour Force Survey (LFS); the Business Register and Employment Survey (BRES); and PAYE RTI. The comparison is made at the UK level since no local authority breakdown is available from the LFS. The main differences across the three ONS sources are summarised in Appendix A5 (Table A2).

Figure 11 Comparison of employees and employment across sources: UK



Note: LFS data are for July-September each year to facilitate comparison with BRES (except for 2022, which uses January-March as the latest available data). BRES data are available until 2020 on an annual basis and have September as the reference month. PAYE RTI data are for September each year to facilitate comparison with BRES (except for 2022, which uses February as the latest available data).

Source: BRES (ONS); LFS (ONS); PAYE RTI (HMRC/ONS).

Figure 11 shows that the number of payrolled employees from PAYE RTI is consistently higher than LFS employees but lower than BRES employees. At the same time, payrolled employees are substantially lower than both LFS and BRES employment. The gap between the (lower) employee series and the (higher) employment series is largely explained by the

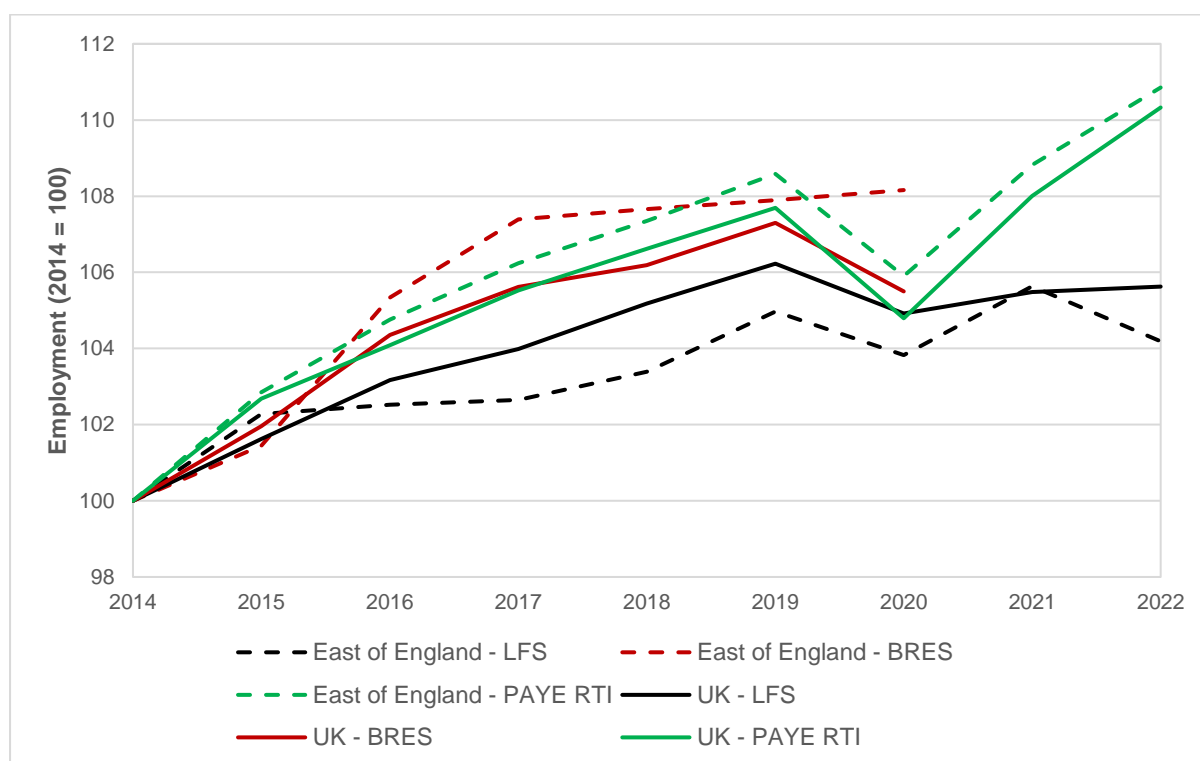
self-employed, who are included in the payroll-based estimates only if their second job is as an employee and paid through PAYE.

We can notice that all but the employee series from the LFS follow a similar trend, growing steadily until 2019 and falling sharply as Covid broke out in 2020 (despite the introduction of the furlough scheme). According to ONS, the different trend between the LFS employee and employment series in the aftermath of the pandemic is explained primarily by the self-employed. Among the effects of Covid-related support packages such as the furlough scheme is the record flows of people moving from a self-employment job into an employee job, even though their job may have remained unchanged. Therefore, the continued increase in LFS employees may be partly the result of people reclassifying themselves from self-employed to employees when completing the survey. Government legislation around off-payroll working, which was initially due to be introduced in April 2020, might have also impacted employee numbers.

Furthermore, Figure 11 suggests that PAYE RTI employees experienced a substantially greater decline during 2020 compared with LFS and BRES employment. For example, whilst payrolled employees dropped by around 781,000 between September 2019 and September 2020, the number of people in employment from the LFS fell by approximately 403,000. According to ONS, this discrepancy is caused at least in part by methodological differences between the two sources. While people who missed two consecutive periods of pay are excluded from the PAYE RTI figures, they remain within the LFS as long as they reported having a job. However, ONS acknowledges that this discrepancy persists even after accounting for people away from jobs and not being paid.

Figure 12 qualifies these results by examining employment growth in the East of England and the UK over the period 2014-2022 across the three sources.

Figure 12 Comparison of employment growth across sources: East of England and UK



Note: LFS data are for July-September each year to facilitate comparison with BRES (except for 2022, which uses January-March as the latest available data). BRES data are available until 2020 on an annual basis and have September as the reference month. PAYE RTI data are for September each year to facilitate comparison with BRES (except for 2022, which uses February as the latest available data).

Source: BRES (ONS); LFS (ONS); PAYE RTI (HMRC/ONS).

As observed above, the three series for the UK labour market follow a similar trend during the period to 2020. After rising steadily until 2019, employment growth fell in the first year of the pandemic – suggesting that the furlough scheme could not fully protect UK employment. However, this fall was significantly more pronounced for the PAYE RTI measure (-2.7%) than for the LFS (-1.2%) and BRES (-1.7%). Although BRES data for 2021 are not yet available (they will be released in September 2022), we can still compare employment growth after 2020 from the LFS and PAYE RTI. Both sources provide evidence of a recovery since 2021, but they disagree over the speed at which this recovery has been taking place. Whilst PAYE RTI suggests that UK employment has increased by 5.3% since 2020 and is now well above its pre-pandemic levels, the LFS reveals a more modest increase of 0.7% with employment still below its 2019 level.

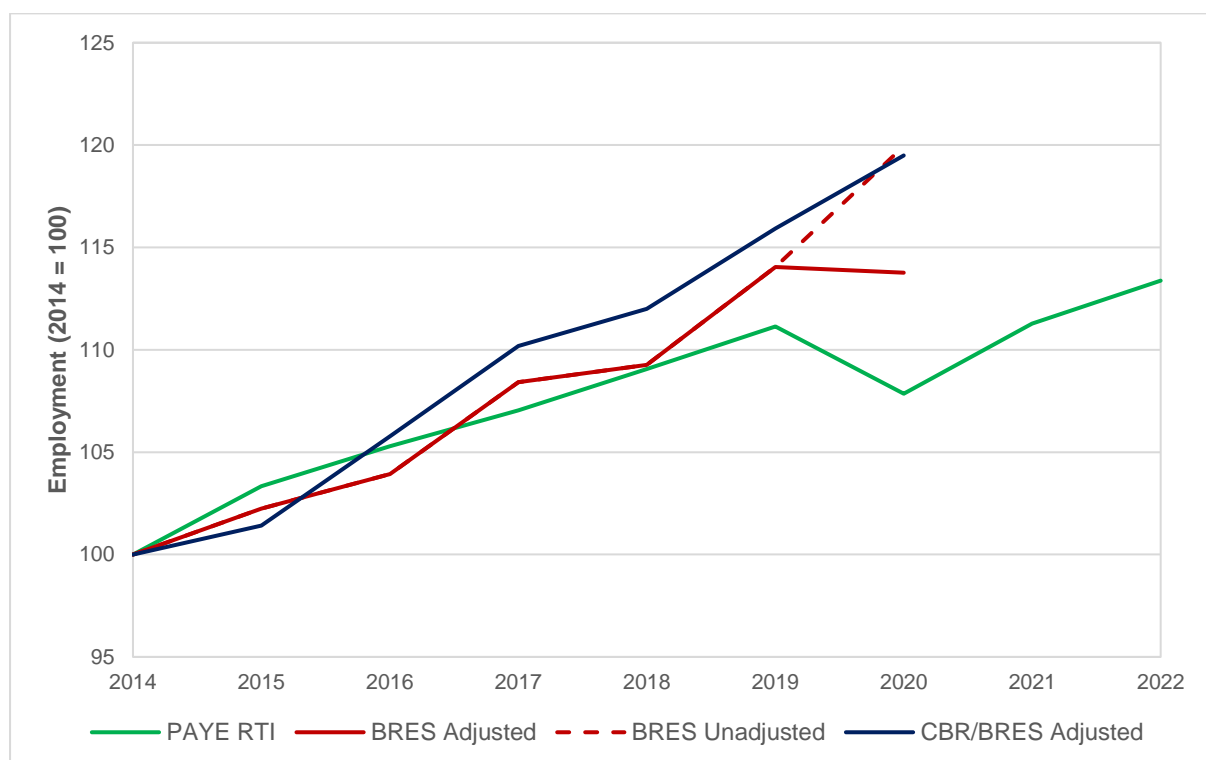
We find a somewhat different picture for the East of England. Employment growth in the period prior to the onset of the pandemic is considerably lower according to the LFS compared with PAYE RTI and BRES. Important differences are found across the three sources also in the period following the outbreak of the pandemic. The PAYE RTI and LFS series show employment falling during 2020 (-2.5% according to PAYE RTI and -1.1% according to LFS), which is at odds with the continued increase in employment according to BRES (up by 0.2% on 2019). The finding that employment in the East of England held up better according to BRES compared with PAYE RTI is consistent with our finding for Greater Cambridge (see the next section). In addition, PAYE RTI and LFS have different views about the most recent growth. PAYE RTI suggests that employment in the East of England has grown remarkably in the past year and is now in line with its longer-term trend, whereas the LFS points to a drop in employment in the first part of 2022 relative to the previous year. The

discrepancy between the two sources and the cyclical pattern shown by the LFS series are puzzling, but we will have to wait for the 2021 BRES data before forming a judgement.

Greater Cambridge

Figure 13 provides a similar comparison, this time focusing on Greater Cambridge. A comparison with the LFS is not possible since no local authority breakdown is available from this source, but we can examine employment growth from PAYE RTI and BRES against our CBR/BRES measure. CBR/BRES is a method of achieving a compromise growth figure, which uses CBR figures for half of the sectors where local corporate employment dominates and BRES figures for the other half of the sectors where non-corporate employment is relatively high. Like BRES, the CBR/BRES series covers the period until 2020.

Figure 13 Comparison of employment growth across sources: Greater Cambridge



Note: BRES data show an increase of 11,000 employees (+44% on the previous year) in the Education sector in Cambridge between 2019 and 2020, which seems erroneous. Therefore, we also report BRES adjusted figures where we assume no change in the Education sector in the latest year.

Source: BRES (ONS); CBR; PAYE RTI (HMRC/ONS).

If we look at the whole period for which comparable data is available (i.e. 2014-2020), we can notice that employment growth according to CBR/BRES (3.0% pa) is higher compared with PAYE RTI (1.3% pa) and BRES (2.2% pa) – see ‘BRES Adjusted’ line in Figure 13, which accounts for an implausible increase of 11,000 employees in the Education sector in Cambridge between 2019 and 2020. The BRES and CBR/BRES series report a similar growth in employment in the years before the pandemic (2.7% pa and 3.0% pa, respectively), whereas they tell two different stories for the year including the first Covid lockdown in England. CBR/BRES suggests a steady increase in employment during 2020, helped by the strong performance of the KI corporate economy and the growth in the health services sector. By contrast, BRES data points to a slowdown in employment in the same

year (-0.2%). However, this slowdown is substantially lower compared with the -2.9% fall in payrolled employees according to PAYE RTI.

In conclusion, our finding that employment growth in Greater Cambridge started to recover in 2021 after slowing down in the aftermath of the pandemic (see Section 2) is largely confirmed by the new payroll-based estimates published by ONS. However, these estimates show some important differences with our data and with other labour market data produced by ONS. Although the new payroll-based method allows for timely information on employment, one of its weaknesses is that it is based on where employees live rather than their place of work. This contrasts with our approach, which looks at where companies are located and is therefore more similar to BRES. The analysis presented in this section suggests that each method has its own strengths and weaknesses, and that comparing this heterogeneous set of estimates may provide useful insights into the performance of the UK labour market during these uncertain times. We will continue to work on this comparison as more data becomes available.

The next section presents the results of the June 2022 Update sample that includes both employment and turnover growth.

4. June 2022 employment and turnover update results

So far we have examined only changes in employment because of better sample coverage, but we have turnover data for a sufficiently large subset of the companies to make turnover analysis worthwhile. We look at Greater Cambridge-based companies with three years of actual turnover and employment data, which gives us a sample of 169 companies (representing over 27% of total employment of the companies analysed in Section 2). Table 1 provides a comparison of employment and turnover growth rates over the past two years for this group of companies.

Table 1 Comparison of employment and turnover growth rates over the past two years in the Greater Cambridge area (June 2022 Update)

Greater Cambridge area Sample of companies with both employment and turnover for the last three years	Turnover growth %pa		Employment growth %pa	
	2020-21	2019-20	2020-21	2019-20
ALL COMPANIES				
Number of companies	169	169	169	169
Totals in 2020 and 2019	£3,428m	£2,938m	22,132	20,804
Median growth	4.0%	-1.9%	0.0%	0.0%
Weighted average growth	16.7%	1.2%	6.4%	5.9%
KI COMPANIES				
Number of companies	53	53	53	53
Totals in 2020 and 2019	£1,952m	£1,676m	11,103	10,086
Median growth	7.8%	0.9%	0.7%	1.4%
Weighted average growth	16.5%	3.6%	10.1%	9.6%
NON-KI COMPANIES				
Number of companies	116	116	116	116
Totals in 2020 and 2019	£1,475m	£1,262m	11,029	10,718
Median growth	3.4%	-2.4%	0.0%	0.0%
Weighted average growth	16.9%	-1.7%	2.9%	2.5%
<i>Note:</i>				
NON-KI (excluding Schools)				
Number of companies	91	91	91	91
Totals in 2020 and 2019	£1,098m	£1,037m	6,284	6,531
Median growth	0.0%	-3.8%	0.0%	0.0%
Weighted average growth	5.9%	-0.6%	-3.8%	2.2%

Source: Cosh & Caselli, CBR.

As was noted earlier, both 2020-21 and 2019-20 had some periods significantly impacted by Covid and some periods without. We are looking to see whether company performance has improved as businesses learn how to live with Covid; and to see what additional insights the turnover comparison can provide.

Total employment of these 169 companies grew by 6.4% in 2020-21 marginally higher than 5.9% in 2019-20. The increase in total employment growth is in line with the pattern shown earlier for the broader update sample, where employment increased by 5.4% in the latest year relative to 3.6% one year earlier.

Employment growth for these companies providing both employment and turnover data was notably stronger among the 53 KI companies, which saw employment increasing by 10.1% during 2020-21 compared with a 2.9% increase for the 116 non-KI companies. In addition, employment growth was somewhat higher in the latest year than in the previous year for both KI and non-KI sectors.

However, this finding must be qualified due to the undue influence of the Schools sector within non-KI sectors. We pointed out above that a significant part of employment growth observed in the non-KI sectors in 2020-21 was due to the changes in the incorporation of schools. If we remove the 25 schools in the non-KI sample we find that employment growth did not increase in 2020-21, but instead fell. Employment growth in the non-KI sectors fell from 2.2% in 2019-20 to -3.8% in 2020-21 – almost certainly a consequence of the ending of the furlough scheme.

The results presented in Table 1 enable us to investigate what has happened to turnover in the last year. We can see that turnover resumed its pre-pandemic pattern (broken only by the existence of the furlough scheme) of showing a higher growth than employment. The **much** higher growth of turnover than employment shown here, as the economy recovered, is probably due to the take up of the disguised unemployment represented by the furlough scheme.

For example, in the KI sector employment growth rose from 9.6% to 10.1% whilst at the same time turnover growth rose from 3.6% to 16.5% as business recovered. The unusual relationship between employment and turnover growth in these two years is explained by the introduction and subsequent cessation of the furlough scheme.

The non-KI sector appears even more remarkable since employment growth rose from 2.5% to 2.9% whilst at the same time turnover growth rose from -1.7% to 16.9%. On the other hand, if we remove Schools from the non-KI sample we find a more understandable result – employment growth fell from 2.2% to -3.8% whilst at the same time turnover growth increased from -0.6% to 5.9%. The cessation of the furlough scheme has unmasked the impact of the pandemic on non-KI employment. This is consistent with the findings of the broader update sample, discussed in Section 2, which found that two-thirds of the non-KI sectors had a decline in employment in 2020-21 and that non-KI employment growth was negative once Schools are removed from the sample.

We now turn to the results of the June 2022 snapshot.

5. June 2022 snapshot results

This section summarises the results of the June 2022 snapshot. The data are little changed since our last report since no new interim accounts have been issued. Having seen in Section 4 the results for employment and turnover data, this section uses just the fourteen companies that have presented interim results for the six-month periods ending between May 2021 and December 2021. The companies are all knowledge intensive and together employ about 6,700 employees. Only turnover data is available from the interim reports and together they represent a combined annual turnover of about £1.2bn. For each company we look at turnover in the same six months period in 2019, 2020 and 2021. The first year was before the pandemic struck the UK; the second year had the first and second lockdowns; and the latest year includes the recovery from the worst impacts of the pandemic.

5.1. Turnover growth

Total turnover for these six-months periods was £1,093m in 2020 down from £1,095m in 2019 – showing the impact of the pandemic even on these fast-growing KI companies. Turnover rose from £1,093m to £1,347m in the 2021 recovery – a rise of 23%. The interim reports do not give us information on employment levels so we cannot see the furlough effect for this group.

An alternative view of growth comes from looking at the median turnover growth rate of these fourteen companies which was 31% in 2021 compared with 4% in the previous year. Eleven of the fourteen companies improved their sales growth in 2021 compared with the same period the previous year. The reason for the differences between the total weighted average growth and the median is caused by the larger companies exhibiting lower growth performance.

These growth findings are consistent with those in the previous section and show even higher turnover growth in 2021. This is because they focus on the latest six months of the accounting years in question and so have a higher proportion of months during the recovery period.

Whichever way we measure it, these companies are performing better during 2021 than they were during 2020. This is partly due to demand for their products returning and partly due to companies learning how to manage the effects of the pandemic. Putin's war began after the periods covered above. The impending substantial disruption to both supply and demand and associated unprecedented decline in living standards will further delay any return to normality.

5.2. Companies' comments on the impact of the Covid-19 pandemic

We report below some comments from the companies' latest reports. They offer some further insights into the impact of the Covid-19 pandemic on their business. We noted above that the impact of Covid has varied across businesses in different sectors. These reports, published in recent months, appear to show a marked improvement in business confidence compared with a year ago. However, some businesses already show their concern about current global issues.

Our unique Self-Learning AI technology is what sets us apart at Darktrace. We are the only cyber security company using this kind of AI to solve real-world problems at scale. Constantly evolving, it augments the security team and can act autonomously on behalf of humans. Darktrace continued to demonstrate the power of its business model, delivering significant growth over the first six months of its financial year. The Group ended 1H FY 2022 [six months ended 31st December 2021] with 6,531 customers, having grown its customer base by 39.6% year-over-year.

Darktrace: Global leader in cyber security AI

As with many companies, there have been challenges which impacted our business during the period. The year started with further Covid-19 lockdowns and ongoing component shortages, which resulted in higher costs and longer lead times. Nevertheless, we have been able to continue manufacturing and shipping our products to meet customer requirements on time.

CyanConnode Holdings PLC: Delivers mesh-based flexible wireless solutions for utility metering and lighting control

In summary, Science Group has reported another year of excellent results with all three divisions performing well, leading to the Board upgrading Group profit forecasts several times. The outstanding performance over the past two years, during a global pandemic, is due to the commitment and dedication of the Group's operating managers and employees. While inflation, geopolitical instability and potential further disruption from the pandemic are being closely monitored, Science Group's strategy and operational execution have demonstrated resilience.

Science Group PLC: Science and technology consultants

We are seeing increasing demand for our specialist technology outsource solutions following the recovery in our end markets. This has led to a strong improvement in trading in 2021, with revenues reaching pre-pandemic levels in the second half of the year. Demand in the first quarter of 2022 has remained strong, with order intake ahead of current year revenues and prior year order book. As with all technology businesses, supply chain issues have been a challenge and have impacted margins, however we have demonstrated resilience in 2021 through close customer and supplier management and deployment of our cash to enable strategic stock purchases. While we expect these challenges to persist, our financial strength and global supply network positions us well to manage these through 2022. There are no structural reasons why our margins will be compromised in the long-term.

Quixant PLC: Makes products for the global gaming and broadcast industries

As lab activity recovers, quarterly revenue is returning to trend. Growth accelerated across all product categories and geographic areas.

Abcam PLC: Provides biological and tools for drug discovery

Today, IQGeo is a stronger, more focused and more successful company than it was before it entered the recent pandemic. We have exceeded our financial forecasts, delivered on our client commitments, and made impressive investments into both our products and our organisation. Together, these achievements mean that IQGeo enters 2022 with a clear sense of purpose and confidence in its ability to achieve its goals.

IQGeo Group PLC: Provides geospatial software for the telecoms and utilities

Whilst we are conscious of the continuing risks arising from the economic consequences of wider global issues, and COVID-19 continues to be a risk to economic disruption, particularly in Asia, we remain on track to return the business to profitable growth and look forward to the future with confidence.

Xaar PLC: Digital inkjet printing technology

In 2021 Quartix was impacted by the global supply shortage in component parts increasing the equipment costs. Given this shortage, the Company took the decision to terminate the supply of new installations for its main insurance client in order to prioritise its fleet operations. Under a new agreement Quartix will only continue to provide tracking systems for the customer's existing policy holders and will provide data and warranty services for a contractually agreed monthly service fee until September 2022. It is anticipated that the profits of the insurance segment will continue to decline. The Group has made a strong start to the year, with fleet new unit subscriptions growth of 25% for the first two months, in line with our expectations. Given the success that Quartix has achieved in its core fleet markets, and considering the broader market opportunity available to it, the Group intends to continue to invest a proportion of its profits on sales and marketing to capitalise further on the profitable subscription platform it has created by accelerating growth in its fleet subscription base.

Quartix Technologies PLC: Vehicle GPS tracking

Despite the disruption to hangar and manufacturing operations caused by the pandemic and the implementation of our new IFS systems, profits of £3.2m from our Aerospace and Defence businesses are ahead of those reported at this time last year (2020 – loss £0.1m). The impact of some operational inefficiency has been offset by overhead cost savings delivered through a restructuring programme completed in the final months of 2020.

Marshall Aerospace and Defence: Servicing and parts manufacture for aircraft and military vehicles

Overall, the Group traded well during 2021 with both revenue and recurring revenue up and continued improvement in earnings quality and visibility. In short, we have more visibility today than ever before as evidenced by our exit run rate ARR. Having commenced our targeted M&A programme to capitalise on the convergence of Pay TV and streaming, the integration of Nordija has been completed and we continue to evaluate a good pipeline of potential acquisition opportunities.

Aferian (Amino Technologies) PLC: Global media and entertainment technology

Once again, Bango delivered revenue growth ahead of expectations. The transactional payments business continues to grow, as we added new telco routes and mobile wallets and our merchant customers delivered new products and services. Just as exciting is the accelerating adoption of the Bango platform licensing solution by tier 1 telcos and utility providers for all of their 3rd party bundling. In 2021 we have seen our platform licensed by market leaders including BT and Verizon and the pipeline of opportunities is impressive. The recurring revenue this business brings to Bango is incremental and is expected to accelerate our growth in the coming years.

Bango PLC: Technology and services helping global businesses to grow

We continue to make significant progress towards becoming a leading US hospital pharmaceutical company. During the first half, our team has done an exceptional job executing on our corporate objectives, despite the challenging operating environment posed by the global pandemic. The commercial launches of both Barhemsys and Byfavo are making excellent progress in terms of formulary access, the most important measure of success in this early phase of their commercialization. Given this strong performance, we remain on track to meet our annual formulary goals for both products.

Acacia Pharma Group: Develops products to help patients having invasive treatment

The Company had a strong and profitable first half, delivering revenues of £4.5 million, a 50% year-on-year growth. Order intake was above the Board's expectations at £8.6 million and this included two substantial orders outside the Company's core area of focus that totalled £3.6 million. The Company is now delivering more clinical trial contracts than at any time in its history, which is reflected in a contracted order book at 30 June 2021 of £15.2 million, up 36% from 31 December 2020 and more than double the value at 30 June 2020.

Cambridge Cognition Hldgs PLC: Digital solutions to assess brain health

Our established portfolio of genre-leading games, supported by our nurturing approach to post-release development, delivered record financial results in FY21, through continued strong engagement with our games and our downloadable content on new and existing platforms.

Frontier Developments PLC: Developer and publisher of videogames

6. Concluding remarks

The June 2022 Update is the sixth of a series of updates that provide timely data on corporate employment changes in the Greater Cambridge area. The findings in this report are drawn from a sample of over 6,000 Greater Cambridge-based companies with accounting year ends between April 2021 and December 2021. This sample, which covers more than two-thirds of corporate employment in the area, has a modal year end of August 2021. Therefore, it captures the impact of the second and third Covid lockdowns in England as well as the coming out of lockdowns. We compare this period with the previous year, which includes the first lockdown.

The picture that emerges is one of continued and faster employment growth in Greater Cambridge as businesses learn how to live with Covid. This faster employment growth was driven by a strong performance of KI sectors, whilst non-KI sectors showed more modest growth. Life Sciences and ICT, the two largest KI sectors in the area, saw employment growth accelerating in the year preceding Putin's war despite the uncertainty over the unfolding of the pandemic. By contrast, we find that employment growth in the last year fell in six of the nine non-KI sectors, with 'Other services' – e.g. hotels, pubs and restaurants – suffering a considerable decline. The finding that employment growth in Greater Cambridge has started to recover from the worst impacts of Covid is confirmed by the new ONS payroll-based estimates, which we analysed for the first time in this report.

We complement these findings by studying the performance of a smaller sample of companies for which we have both employment and turnover data over the past three years. Our analysis reveals that turnover resumed its pre-pandemic pattern, broken only by the furlough scheme, of showing a higher growth than employment. After falling from 9.1% to 0.2% during the three Covid lockdowns (February 2022 Update), turnover growth rose from 1.2% to 16.7% in the last year compared with a rise from 5.9% to 6.4% for employment. The much higher growth of turnover than employment, as the economy recovered, is probably due to the take up of the disguised unemployment represented by the furlough scheme. The end of this support package has uncovered the impact of Covid on non-KI employment.

Finally, we qualify the results for turnover by providing a snapshot for companies with interim accounts ending between May 2021 and December 2021. These companies are all knowledge intensive and showed robust turnover growth during the 2021 recovery, after experiencing a drop during the first and second lockdowns. The perusal of their interim reports points to an overall improvement in business confidence compared with a year ago. Whichever way we measure it, these companies performed better during 2021 than they did during 2020. This optimism is now offset by Putin's war. The impending substantial disruption to both supply and demand and associated unprecedented decline in living standards will further delay any return to normality, raising concerns over the pace of the recovery from the pandemic.

We hope that our next update will enable us to contrast three years: the first largely unaffected by Covid; the second including the bulk of the Covid impact; and the third looking at post-Covid performance. This would allow not only our adjacent year comparisons, but also a comparison of the latest performance with what was happening before Covid struck.

Andy Cosh

Giorgio Caselli

Centre for Business Research, University of Cambridge

June 2022

Appendix A1. Employment growth by sector in the Greater Cambridge area

June 2022 Update	Number of companies	Total empl 2020-21	Total empl 2019-20	% of GC total 2019-20	Empl growth 2020-21	Empl growth 2019-20
KNOWLEDGE INTENSIVE SECTORS						
Information technology and telecoms	874	13,058	11,756	66.7%	11.1%	9.6%
Life science and healthcare	270	18,737	16,075	86.5%	16.6%	10.8%
High-tech manufacturing	224	6,630	6,700	79.6%	-1.0%	-2.7%
Knowledge intensive services	266	5,237	5,253	77.0%	-0.3%	2.5%
TOTAL KI SECTORS	1,634	43,662	39,784	77.3%	9.7%	6.8%
OTHER SECTORS						
Primary	146	947	990	37.4%	-4.3%	1.7%
Manufacturing	245	2,669	2,694	70.8%	-0.9%	-2.4%
Wholesale and retail distribution	442	3,977	4,116	63.7%	-3.4%	-1.0%
Construction and utilities	560	2,961	2,934	59.6%	0.9%	-0.9%
Transport and travel	110	1,291	1,423	78.1%	-9.3%	2.7%
Property and finance	774	3,581	3,530	58.6%	1.4%	0.9%
Other business services	1,090	6,193	6,385	53.1%	-3.0%	2.0%
Other services	660	4,864	5,134	58.7%	-5.3%	-1.6%
Education, arts, charities, social care	374	11,097	10,122	79.4%	9.6%	1.4%
TOTAL NON-KI SECTORS	4,401	37,580	37,328	63.0%	0.7%	0.4%
TOTAL ALL SECTORS	6,035	81,242	77,112	69.7%	5.4%	3.6%

Source: Cosh & Caselli, CBR.

Appendix A2. Employment growth by sector in Cambridge

June 2022 Update	Number of companies	Total empl 2020-21	Total empl 2019-20	% of Camb total 2019-20	Empl growth 2020-21	Empl growth 2019-20
KNOWLEDGE INTENSIVE SECTORS						
Information technology and telecoms	386	5,457	4,917	52.7%	11.0%	8.4%
Life science and healthcare	99	7,111	6,016	87.0%	18.2%	15.2%
High-tech manufacturing	33	1,041	1,048	80.7%	-0.7%	5.5%
Knowledge intensive services	112	1,431	1,366	71.7%	4.8%	4.1%
TOTAL KI SECTORS	630	15,040	13,347	68.6%	12.7%	10.6%
OTHER SECTORS						
Primary	22	153	156	74.6%	-1.9%	6.1%
Manufacturing	84	644	654	88.9%	-1.5%	0.3%
Wholesale and retail distribution	149	1,116	1,146	43.7%	-2.6%	-2.0%
Construction and utilities	148	531	538	57.9%	-1.3%	-5.6%
Transport and travel	33	288	348	67.4%	-17.2%	5.1%
Property and finance	366	2,095	2,055	62.9%	1.9%	0.8%
Other business services	475	3,540	3,646	56.1%	-2.9%	2.4%
Other services	289	2,358	2,524	65.1%	-6.6%	-3.3%
Education, arts, charities, social care	218	6,693	6,293	83.7%	6.4%	0.4%
TOTAL NON-KI SECTORS	1,784	17,418	17,360	66.3%	0.3%	0.1%
TOTAL ALL SECTORS	2,414	32,458	30,707	67.3%	5.7%	4.4%

Source: Cosh & Caselli, CBR.

Appendix A3. Employment growth by sector in South Cambridgeshire

June 2022 Update	Number of companies	Total empl 2020-21	Total empl 2019-20	% of S Cambs total 2019-20	Empl growth 2020-21	Empl growth 2019-20
KNOWLEDGE INTENSIVE SECTORS						
Information technology and telecoms	488	7,601	6,839	82.5%	11.1%	10.5%
Life science and healthcare	171	11,626	10,059	86.2%	15.6%	8.3%
High-tech manufacturing	191	5,589	5,652	79.3%	-1.1%	-4.1%
Knowledge intensive services	154	3,806	3,887	79.0%	-2.1%	1.9%
TOTAL KI SECTORS	1,004	28,622	26,437	82.6%	8.3%	5.0%
OTHER SECTORS						
Primary	124	794	834	34.2%	-4.8%	1.0%
Manufacturing	161	2,025	2,040	66.4%	-0.7%	-3.2%
Wholesale and retail distribution	293	2,861	2,970	77.4%	-3.7%	-0.6%
Construction and utilities	412	2,430	2,396	60.0%	1.4%	0.3%
Transport and travel	77	1,003	1,075	82.4%	-6.7%	1.9%
Property and finance	408	1,486	1,475	53.6%	0.7%	1.0%
Other business services	615	2,653	2,739	49.5%	-3.1%	1.5%
Other services	371	2,506	2,610	53.7%	-4.0%	0.1%
Education, arts, charities, social care	156	4,404	3,829	73.2%	15.0%	3.0%
TOTAL NON-KI SECTORS	2,617	20,162	19,968	60.5%	1.0%	0.6%
TOTAL ALL SECTORS	3,621	48,784	46,405	71.4%	5.1%	3.0%

Source: Cosh & Caselli, CBR.

Appendix A4. Greater Cambridge Employment Update methodology

This appendix describes the purpose and methodology of regular updates of the corporate database.

Annual draw

Dr Cosh and Dr Caselli at the CBR hold a corporate database of local companies with data going back eleven years. The current database goes from 2010-11 to 2020-21 audited company data and covers the accounting periods of companies ending in the 2020-21 financial year. The results of the 2020-21 annual draw were made available at the beginning of March 2022. The reasons for the delay in publication relative to the accounting periods are:

- The need to wait until most companies have filed their accounts at Companies House.
- The incorporation of all company births and deaths.
- The careful checking of any changes in ownership, or corporate structure.
- The investigation of changes of location by companies into and out of the area.

This yields a comprehensive picture each year of the total employment of all companies that are based in the Cambridgeshire and Peterborough Combined Authority, Greater Cambridge, or Cambridge Ahead (Cambridge City Region) areas. It enables us to analyse the composition of growth split into growth of continuing businesses, less the decline due to companies dying or moving out of the area, plus the contribution to growth of company births and businesses moving into the area.

A full description of the methodology used can be found at:

<https://www.cambridgeahead.co.uk/media/2033/cbr-database-methodology-2022.pdf>

Various analyses can be found at:

<https://www.cbr.cam.ac.uk/research/research-projects/the-cambridge-corporate-database-regional-growth/#item2>

Updates

Timings

The current circumstances for business make it important to attempt to have more timely data. This can be achieved by using a sampling approach drawing upon the most recently published accounts.

We carry out an update every four months, spread evenly over the year and this can be seen in Table A1. If we look at 2022, we propose February, June and October updates which will yield estimates of growth for the years to end March 2021, August 2021 and early December 2021. These periods will capture: the effects of all three Covid lockdowns in England (February update); and the impact of coming out of lockdowns and any further developments (June and October updates). However, it must be remembered that the update takes no account of births or deaths, or of changes in location.

Table A1 Summary of Greater Cambridge Employment Updates

Draw Name	Sample or All	Accounting year ends within:	Median growth period	Release date	Relation to Covid
<i>Annual draw 2020-21*</i>	All companies	6 th April 2020 to 5 th April 2021	Year to early December 2020	February 2022	Impact of 1 st and 2 nd lockdowns
<i>Update February 2022**</i>	Sample	December 2020 to April 2021	Year to end March 2021	March 2022	Impact of all three lockdowns
<i>Update June 2022**</i>	Sample	April 2021 to December 2021	Year to August 2021	July 2022	Impact of coming out of lockdowns
<i>Update October 2022**</i>	Sample	October 2021 to April 2022	Year to early December 2021	November 2022	Impact of coming out of lockdowns

Notes: * commissioned and sponsored by Cambridge Ahead, Arm, Marshall of Cambridge and the Cambridgeshire and Peterborough Combined Authority;
 ** commissioned and sponsored by the Greater Cambridge Partnership and Cambridge Ahead.

Update Sample (using June 2022 update example)

We download data from FAME for any company in Cambridge, South Cambridgeshire, Huntingdonshire, or East Cambridgeshire that has available Accounts for the periods ending between April 2021 and December 2021. We then check 2019-20 and 2020-21 employment data against the existing figures on the database. Differences can occur for a number of reasons and are corrected to ensure that consistency and accuracy are maintained across the years under review.

We eliminate companies from the update sample that do not have actual employment data for the last two years. Finally, we create a file with the following information for those remaining in the update sample (**5,396** companies this time representing total employment of **60,227**):

- Company name
- Company registration number
- LA District
- Sector
- KI or non-KI
- Size class in 2019-20 – 1 = 1 employee, 2 = 2-9 employees, 3 = 10 or more employees
- Latest employment 2020-21 (on average August 2021)
- Employment 2019-20 (on average August 2020)
- % change in employment over last year (i.e. on average to August 2021)

Next, we produce a table showing the number of companies in each of the four KI sectors and nine non-KI sectors and their total employment in the latest and previous year. This table is then reproduced separately for our three size classes.

We then create three measures of growth over the latest year: the unweighted arithmetic mean, the median and the weighted mean. The first suffers from extreme values and also attaches the same importance to a large company as that for a small company. The second will often have the values of zero since a large proportion of companies do not change size. Therefore, it is the latter that we use for the next stage of the work.

Updating the corporate database for the Greater Cambridge area

We take from our corporate database all companies currently alive that are based in Cambridge or South Cambridgeshire. We select a sample of those companies that have accounting periods ending between April 2021 and December 2021 (whether, or not, they have yet reported). For companies that were included in the update sample we enter their employment data for the last three years. For the remaining companies that have not yet reported in 2020-21 we next download the latest FAME data and check employment data for the last three years against the existing figures on the database. Following this, we create a file with all the companies based in the Greater Cambridge area (**6,035** companies representing total employment of **81,242**) with the following information:

- Company name
- Company registration number
- Local Authority District
- Sector
- KI or non-KI

- Size class in 2019-20 (as above)
- Employment 2019-20
- Employment 2020-21
- % change in employment over this year

We now use the estimates of growth by size and sector from the update sample to create an estimate of the size of each company and sector in 2020-21. This allows us to compare the most recent growth of each sector and size class over the most recent year 2020-21 in comparison with the year 2019-20 for this sample of companies. The resulting sample is shown in Appendices A1-A3 and these tables highlight how significant these companies are, representing 70% of corporate employment in Greater Cambridge.

The sample has a high coverage of total employment in this update because many large businesses have a December year end and so are captured in this update.

We include only companies that have a reporting date between April 2021 and December 2021, with their performance in the latest year reflecting the impact of the second and third national lockdowns as well as the coming out of lockdowns. Since Covid-related restrictions started to be lifted during spring 2021, companies with a December year end have had a higher proportion of months during the recovery period compared to companies with an April year end.

Analyses

Using the methodology described above we can compare the performance of our sectors over time and identify those sectors most impacted by Covid. A powerful tool for doing this is one that has as the horizontal axis the sector's employment growth rate in the year 2019-20 and as the vertical axis the annual growth shown in the update sample for 2020-21 – see Figure 4 above for an example. The position of the sector marker relative to the 45° line shows those growing more or less fast than last year. Sectors with positive growth in 2020-21 are found above the horizontal axis and those with positive growth in 2019-20 appear to the right of the vertical axis. This can be shown more informatively by having the size of the marker related to the total employment in that sector.

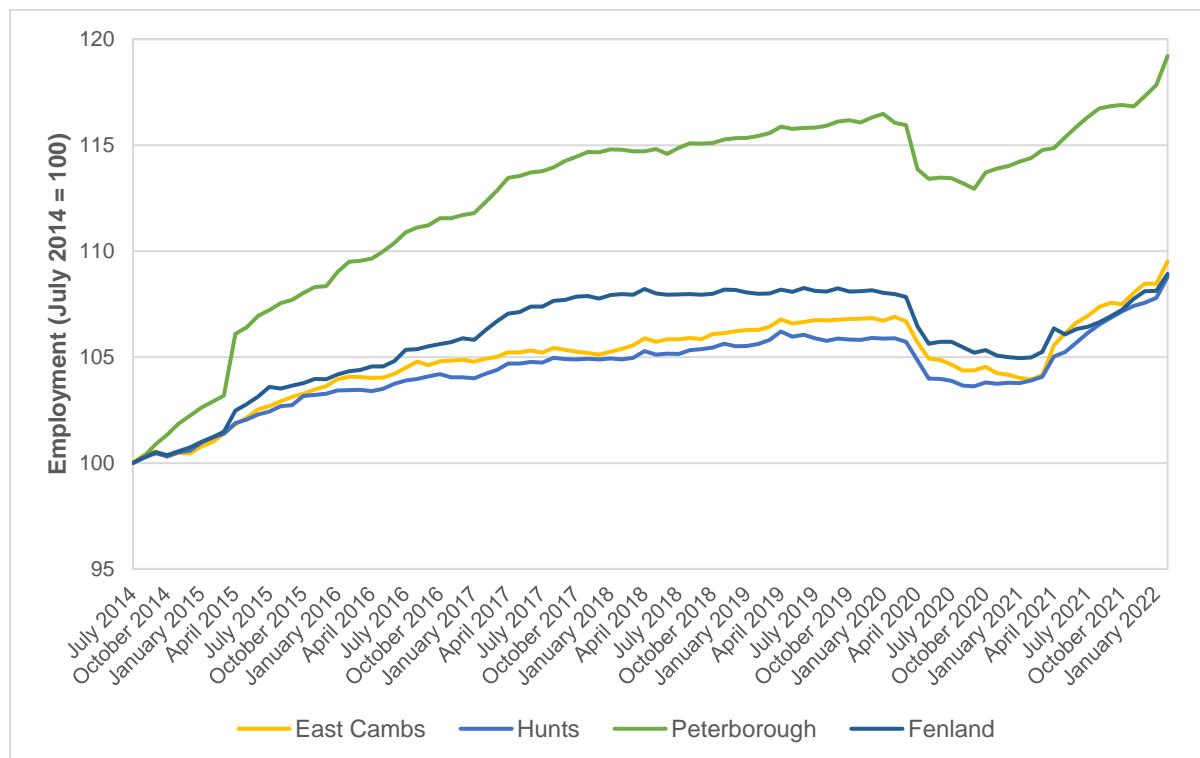
This type of chart can be used to examine different sectors, company sizes or districts. It is reinforced by an appendix that provides detailed tables (see Appendices A1-A3).

Appendix A5. ONS estimates of payrolled employees: additional analysis

This appendix includes further graphical analysis of the new payroll-based employee estimates that was excluded from the main text (Figures A1-A7), along with a comparison of the definitions and methods of the three ONS labour market data sources that were reviewed in this report (Table A2).

Figure A1 shows the growth of payrolled employees for the four local authority districts that, together with Cambridge and South Cambridgeshire, make up the Cambridgeshire and Peterborough Combined Authority area.

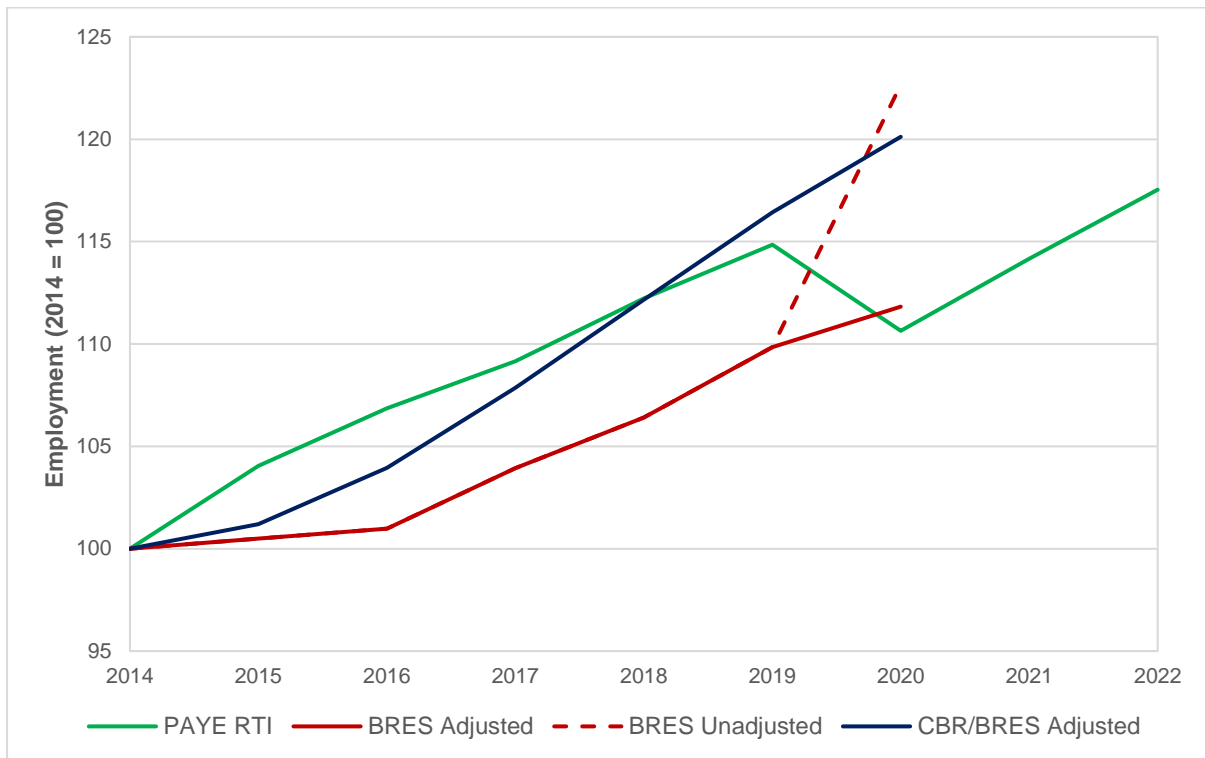
Figure A1 Payrolled employees by area: East Cambs, Hunts, Peterborough and Fenland



Note: Payrolled employees are individuals receiving paid remuneration through Pay As You Earn (PAYE).
Source: PAYE RTI (HMRC/ONS).

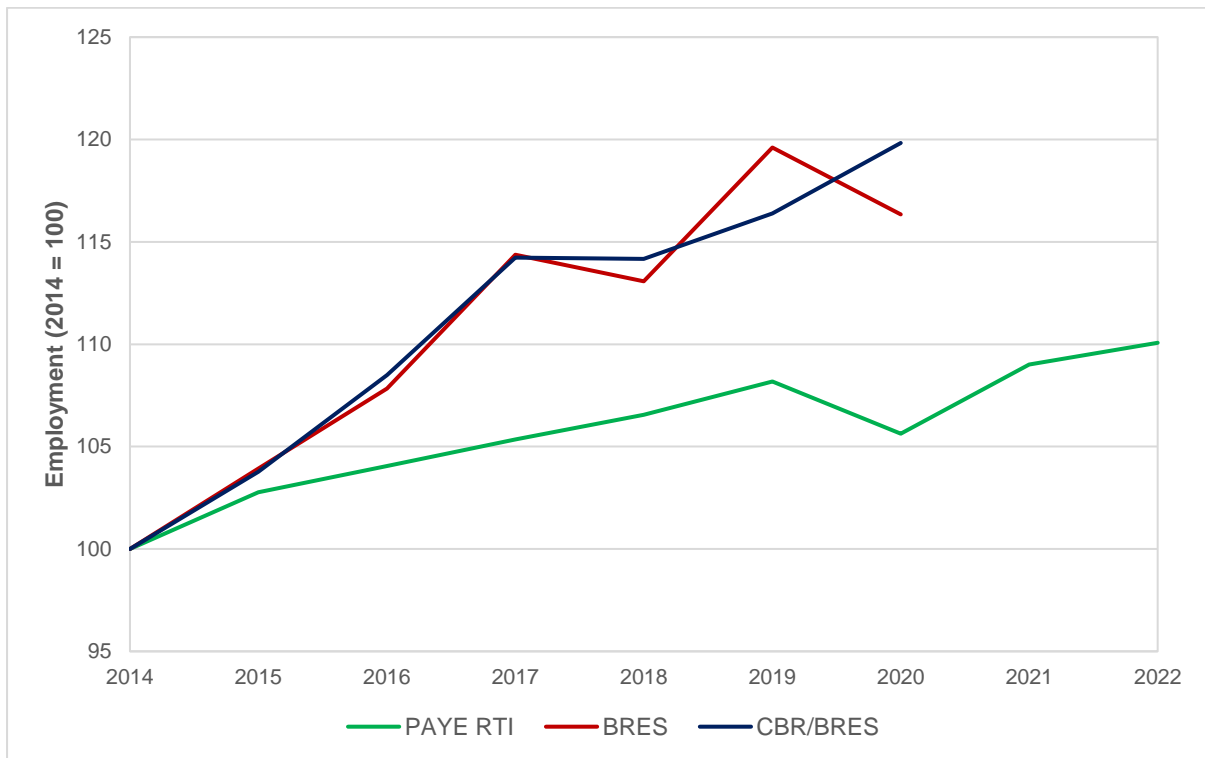
Figures A2-A7 provide a comparison of employment growth for the six local authority districts making up the Combined Authority across three main data sources: PAYE RTI; BRES; and CBR/BRES. As explained in Section 3.3, CBR/BRES is a method of achieving a compromise growth figure. It uses CBR figures for half of the sectors where local corporate employment dominates and BRES figures for the other half of the sectors where non-corporate employment is relatively high.

Figure A2 Comparison of employment growth across sources: Cambridge



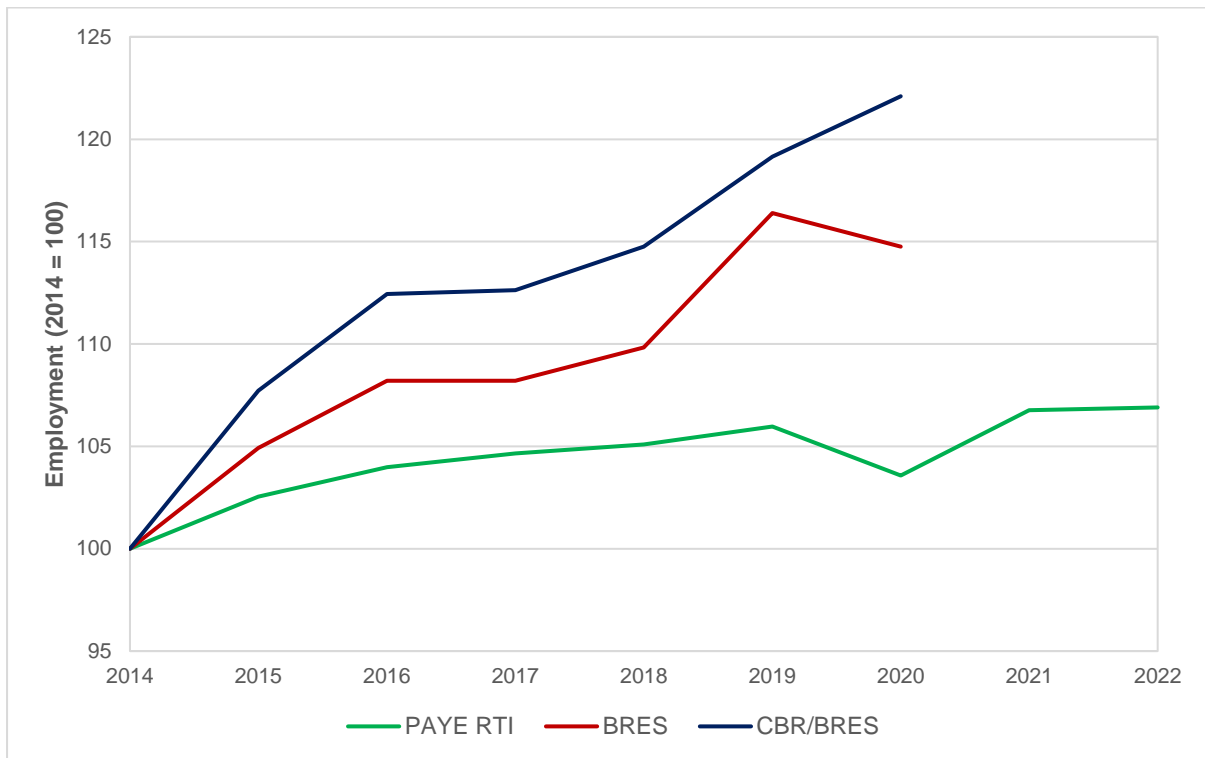
Note: BRES data show an increase of 11,000 employees (+44% on the previous year) in the Education sector in Cambridge between 2019 and 2020, which seems erroneous. Therefore, we also report BRES adjusted figures where we assume no change in the Education sector in the latest year.
Source: BRES (ONS); CBR; PAYE RTI (HMRC/ONS).

Figure A3 Comparison of employment growth across sources: South Cambs



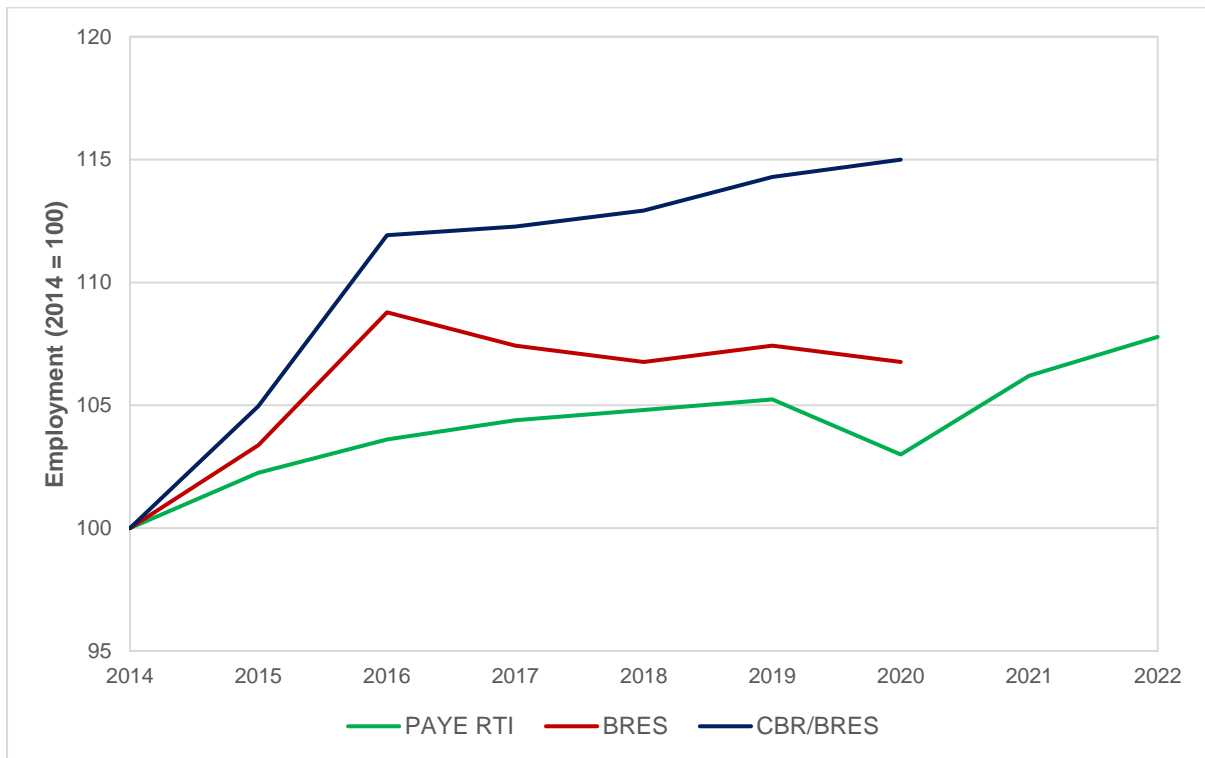
Source: BRES (ONS); CBR; PAYE RTI (HMRC/ONS).

Figure A4 Comparison of employment growth across sources: East Cambs



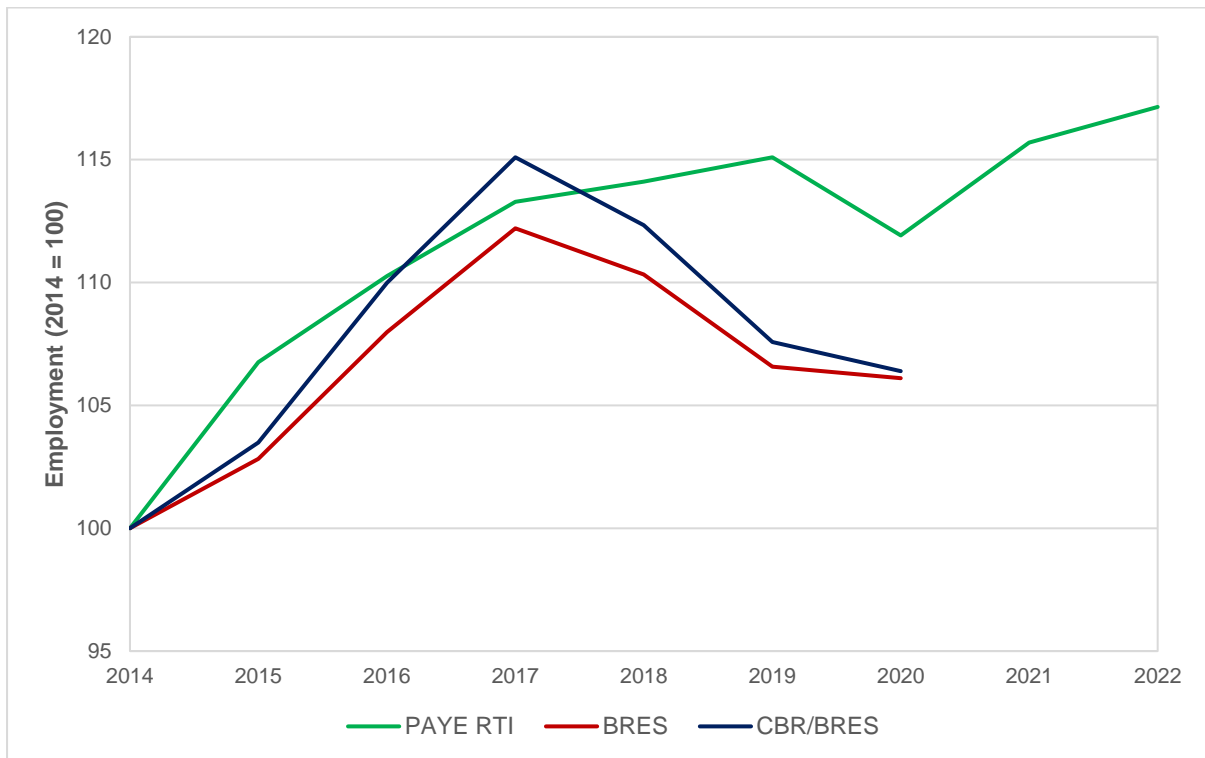
Source: BRES (ONS); CBR; PAYE RTI (HMRC/ONS).

Figure A5 Comparison of employment growth across sources: Hunts



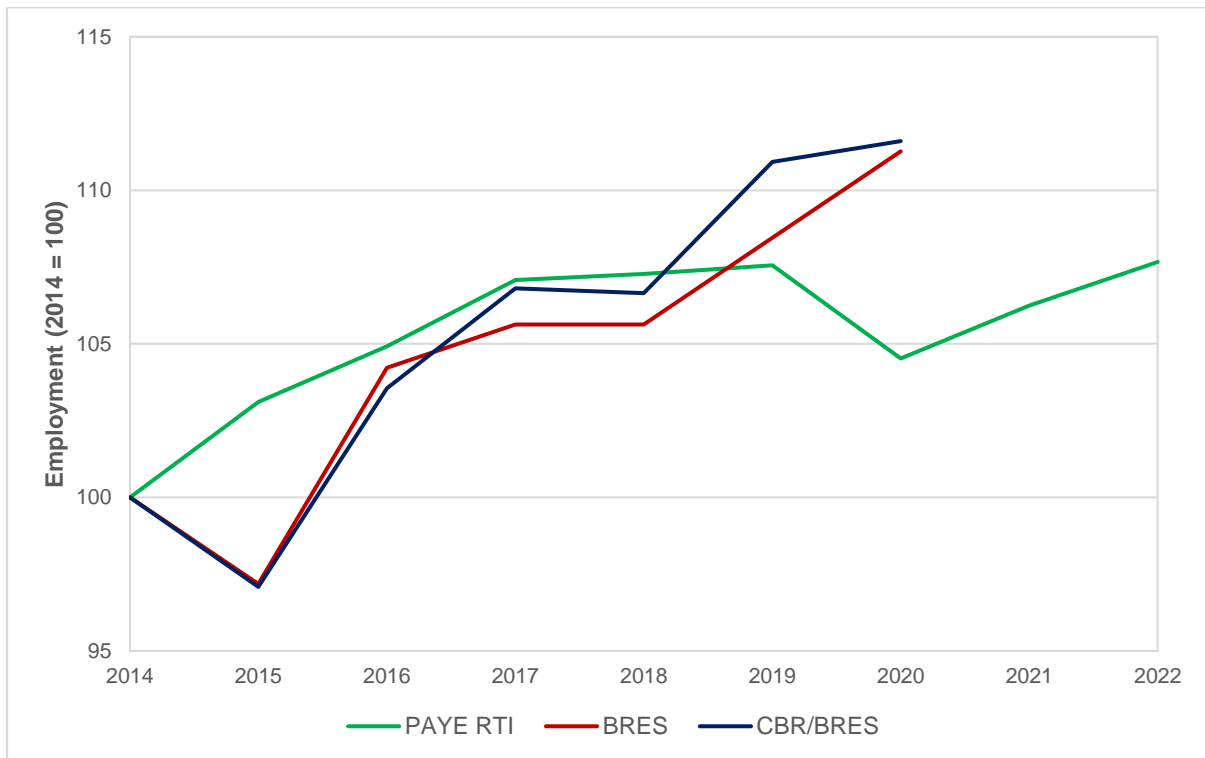
Source: BRES (ONS); CBR; PAYE RTI (HMRC/ONS).

Figure A6 Comparison of employment growth across sources: Peterborough



Source: BRES (ONS); CBR; PAYE RTI (HMRC/ONS).

Figure A7 Comparison of employment growth across sources: Fenland



Source: BRES (ONS); CBR; PAYE RTI (HMRC/ONS).

Table A2 summarises the key differences across the LFS, BRES and PAYE RTI.

Table A2 Comparison of ONS employment sources

	LFS	BRES	PAYE RTI
Timeliness	Monthly	Annual	Monthly
Employment definition	Anyone aged 16 years and over in paid work and those who had a job that they were temporarily away from in the reference week.	Anyone aged 16 years or over paid directly from the payroll, in return for carrying out a full-time or part-time job or being on a training scheme.	Anyone who has a paid employee job during the reference period.
Inclusions	<p>UK resident population in private households;</p> <p>Some communal establishments (e.g. NHS accommodation);</p> <p>Young people living in a student hall of residence or similar during term time;</p> <p>Family workers who were employed but not paid (undeclared economy);</p> <p>Government-supported trainees;</p> <p>Those earning below PAYE threshold;</p> <p>Self-employed.</p>	<p>All workers paid from the business' payroll;</p> <p>Employees on a training scheme if paid through payroll;</p> <p>Organisations not on PAYE but registered for VAT;</p> <p>Those temporarily absent but still being paid (e.g. maternity leave);</p> <p>Those earning below PAYE threshold;</p> <p>Working owners (e.g. sole traders, sole proprietors and partners) who are not paid via PAYE.</p>	<p>All individuals receiving pay through a PAYE scheme;</p> <p>People living in communal establishments;</p> <p>Some foreign residents;</p> <p>People aged under 16 years;</p> <p>Those temporarily absent but still being paid (e.g. maternity leave);</p> <p>People whose main job is self-employed, but whose second job is as an employee and paid through PAYE.</p>
Exclusions	<p>People aged under 16 years;</p> <p>Other communal establishments (e.g. residential care homes);</p> <p>Temporary foreign workers;</p> <p>Employees not paid during the reference period (e.g. seasonal workers).</p>	<p>People aged under 16 years;</p> <p>Agency workers paid directly from the agency payroll;</p> <p>Voluntary workers and unpaid family workers.</p>	<p>Employed individuals in the undeclared economy whose income is not reported to HMRC via PAYE;</p> <p>Members of PAYE schemes where no employee earns above the Lower Earning Limit for National Insurance;</p> <p>Self-employed.</p>
Method	Survey of households	Survey of businesses	Real Time Information
Frequency of data	Three-month rolling average	Annual	Monthly
First period of data	Mar-May 1992	2009	July 2014
LAD breakdown	No	Yes	Yes
Industry breakdown	Yes, but not for LADs	Yes, also for LADs	Yes, but not for LADs
When to use	UK-level long-term time series and breakdowns	Detailed analysis of region and/or industry	Timely estimate of payrolled employees

Sources: HMRC; ONS.