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Our evidence is primarily submitted in response to the question:

How will the pandemic change the nature of employment? And what will be the long-term impact of this change on towns and cities?

In answering this question, we also consider:

How might this increase, or decrease, inequalities within towns and cities?

How might this increase, or decrease, inequalities between towns and cities?

What action is needed from the UK Government, town and city leaders, and others to mitigate the risk of any change in the nature of employment?

How could the UK Government, town and city leaders, and others use their

Evidence Summary

- The pandemic-induced increase in working-from-home has led to a significant shift in where productive activity takes place. We quantify this change in the geography of productive activity. We refer to this change as the zoomshock.
- The zoomshock moves workers from the densely populated town and city centres to residential neighbourhoods. This leads to a large demand shift for businesses providing locally consumed services, including restaurants, hairdressers, gyms, and retailers. Demand decreases in urban centres, where there are many such businesses, but increases in suburban neighbourhoods, where these services are relatively few.
- This may lead to many businesses offering local services to struggle following the lifting of lockdown restrictions and easing of the job retention scheme. This will disproportionately affect workers in relatively low-paying jobs.
- There is an important role for policy to assist businesses in the locally consumed services industry in transitioning to the new post-pandemic geography of demand. Information provision and flexible infrastructure are key policy tools.

response to the pandemic to reduce inequalities in employment?

1. Who are we and why are we responding?

- 1.1. We are a team of economists who work in labour, public, and health economics. We have many years of research experience, both in economic theory and empirical analysis. This evidence is part of a larger project funded through the Economic and Social Research Council Covid-19 Rapid Response programme. The project looks at the short and longer-term consequences of the pandemic for the Locally Consumed Services (LCS) industry. We define LCS as those businesses that require the simultaneous physical presence of workers and customers, as is the case for bars, restaurants, barbers, retail shops, and the like. Here we discuss the implications of a permanent shift in working from home and the implications that it has for the LCS industry.

2. Where does our evidence come from?

- 2.1. In De Fraja, Matheson and Rockey (2021) we develop a methodology for quantifying the local change in economic activity because of increased working-from-home. Our level of analysis is the Middle Super Output Area (MSOA): these areas reflect real communities and are small enough to capture key local variation. Combining data on the occupations and job types of people who live in a given MSOA, with data on those who work in the MSOA and the likelihood a worker in each occupation and job can work from home, we compute the **‘zoomshock’: the change in the location of economic activity due to an increase in working-from-home.**
- 2.2. The evidence presented here is based on calculations made using the publicly available data provided by the Office for National Statistics via *Nomis*.¹
- 2.3. Here we focus the analysis on the 50 largest cities and towns in England and Wales excluding Greater London, and the core cities of Manchester, Birmingham, Bristol, Cardiff, Leeds, Liverpool, Manchester, Newcastle, Nottingham and Sheffield.²

3. How will the pandemic change the nature of employment? And what will the long-term impact be of this change on towns and cities?

3.1. Background

- 3.1.1. Prior to March 2020, less than 5% of days worked were worked from home in the UK. In a matter of weeks from the start of the pandemic, this number increased to approximately 40%. Once lockdown restrictions are lifted, it is likely that many workers will return to the office. However, it is

¹ Calculations in De Fraja, Matheson and Rockey (2021) are done using secure microdata from the 2017–2019 waves of the Annual Survey of Hours and Earnings, accessed through UK Data Service’s secure data lab. The results obtained using the either data source are very similar and support the same qualitative and quantitative conclusions. MSOA calculations for either data file, and all underlying programme files for the *Nomis* calculations are available from the authors upon request. Contact j.matheson@sheffield.ac.uk.

² The analysis presented here excluded cities in Scotland. This is due to data for Scotland not being available through the publically available *Nomis* data. In De Fraja, Matheson and Rockey (2021) we provide zoomshock calculations for Scotland. These data are available upon request.

also likely that a significant amount of work will continue to be done from home. Initial research suggests that workers who can do their jobs from home plan to work from home 2-3 days per week following the pandemic.³ **This suggests that, post pandemic, 16% to 24% of all work could take place in the home rather than in the office.**

- 3.1.2. We quantify the change in the geography of economic activity, as a result of working-from-home during the pandemic, for neighbourhoods across England and Wales. We refer to this as a **zoomshock**.
- 3.1.3. The magnitude of the zoomshock in large UK cities is substantial. For example, throughout the pandemic the City of London has experienced a 70% reduction in the number of daily workers (De Fraja, Matheson and Rockey; 2021). Comparable magnitudes are found in the centres of Cardiff, Edinburgh, Manchester, Birmingham and other major cities. This may not be surprising; the modern city centre concentrates high-density office work, much of which can be done remotely. Cities also attract large numbers of workers who commute in from other towns and rural areas for work.
- 3.1.4. It is less clear what will be the potential impact of working from home on cities and towns outside of London and the core cities. **This document will focus on the fifty next largest areas within England and Wales.**

3.2. The distribution of employment between cities and towns

- 3.2.1. The zoomshock for a local authority depends on two key factors.
- 3.2.2. The first key factor is the difference between the number of workers who **work** in a local authority and the number of workers who **live** in a local authority. If the former is greater than the latter, the local authority is a net-commuting urban area.
- 3.2.3. A second key factor is the proportion of workers **working in the local authority who can do their job from home**. This varies considerably across local authorities. In Cambridge, Reading, Oxford and Cheltenham more than 40% of all jobs can be done from home. In Stoke-on-Trent, Doncaster and Middlesbrough, this number is closer to 30%.
- 3.2.4. The zoomshock varies considerably by local authority (see appendix Figure 1). Many towns see a negative zoomshock. For example, Cambridge and Norwich experience more than a 15% decrease in productive activity. However, there are some "winners" from this shift in how we work. Wigan, with its large number of commuting residents, experienced an 11% increase in productive activity. These figures may be thought of as maxima: in practice some workers will return to the office. However, even a small increase in the average time spent working-from-home (say one to two days per week) after the pandemic will reflect a very substantial aggregate change in the location of economic activity.
- 3.2.5. The zoomshock should be thought of as a simple reallocation of employment activity; a decrease in work done in one area must be compensated by an increase in work done in another area.

³ For example see Barrero, Bloom, and Davis (2021) and Taneja, Mizen and Bloom (2021).

- 3.2.6. **However, the zoomshock can have real implications for the LCS industry within each of these cities.** This is because many of these businesses rely on the demand for their services from people who work in the local area.
- 3.2.7. In cities experiencing a negative zoomshock there will be a decrease in commuter footfall and therefore a decrease in demand. In cities that experience a positive zoomshock, such as Wigan or Rochdale, the increase in working from home will correspond to an increase in local service demand.
- 3.2.8. We test the relationship between the zoomshock and local services activities using *Google Community Mobility* data for the period starting 4 July 2020 to 5 November 2020, when the lockdown restriction were lifted for most of the UK (this is shown in appendix Figure 2).
- 3.2.9. **Local authorities with a negative zoomshock had an average mobility index 26% lower than in local authorities with a positive zoomshock (-27.8 versus -22.1).** The correlation between the retail mobility index and the zoomshock is statistically significant and suggests that a 10 percentage point increase in employment due to working-from-home is associated with a 5.7 percentage point greater recovery in retail mobility.

3.3. The distribution of employment within towns and cities

- 3.3.1. **The distribution of the zoomshock *within* a local authority is highly unequal.** Some neighbourhoods (MSOAs) experience an increase in economic activity, some neighbourhoods experience a decrease (see appendix Figure 3 for selected cities). This underlines the importance of a granular point of view for the analysis of local changes in economic activity.

- 3.3.2. **Homeworking moves economic activity out of town and city centres to the residential suburbs.** This also means that commuter footfall is moved away from neighbourhoods that are dense in LCS businesses to neighbourhoods in which these businesses are relatively sparse. For example, central Bradford (darkest red area in Figure 3b), which is experiencing a 40% reduction in office workers, has almost 17% of local service employment; neighbourhoods experiencing a positive zoomshock have, on average, less than 1% of local service employment. In central Leicester the two neighbourhoods with the largest negative zoomshocks (40% and 34% of employment) have a combined 35% of the city's local service employment.

- 3.3.3. This movement of workers has implications for the locally consumed services industry in both the short and the longer run. **In the short-run, there is a supply and demand mismatch:** when home workers work-from-home they no longer purchase coffees near their offices. In this way large-scale home working moves demand from city-centres, where lots of coffee shops are located, to residential neighbourhoods, where coffee shops are relatively few. Therefore, city centres will experience a decline in demand, relative to pre-Covid levels, while some residential areas may be poorly equipped to meet the new increase in demand due to short-run constraints on capacity.

- 3.3.4. **In the long-run we may expect LCS businesses to relocate to residential and rural areas, following the increased demand. However, there are a number of reasons to believe that the new post-Covid equilibrium will result in fewer LCS businesses and less LCS employment than pre-Covid levels.** For example, this will be the case if the high density of demand found in a city centre is important for supply. When we work-from-home, this same demand is spread out over a considerably larger geographic space.
- 3.3.5. In this way, the geographic movement of economic activity has implications that could be long-lasting once public health restrictions are relaxed.

4. How might this increase, or decrease, inequalities within towns and cities?

- 4.1. A permanent, large-scale, increase in working-from-home might increase inequality within towns and cities through two channels.
- 4.2. **First, this change potentially provides a significant benefit to workers who can do their work from home, but as outlined above, exposes workers in the LCS industry to significant risk of job loss or the need to relocate their employment.** LCS workers are concentrated in lower paid occupations. For example, in 2019 the average worker in food and beverage service earned £8.85 per hour compared to £21.70 per hour for the average worker in a job that can be done from home.⁴
- 4.3. **Second, longer-run benefits from the zoomshock are likely to be disproportionately realised by less deprived neighbourhoods.** This is largely because there is a strong negative relationship between neighbourhood deprivation and the proportion of workers who have a job that can be done from home (see appendix Figure 4). In the longer-run, we expect that LCS businesses will move from urban centres to residential suburbs. Neighbourhoods that see a large increase in homeworking will likely benefit from an increase in local amenities offered by more restaurants, coffee shops and retail shops.

5. What action is needed from the UK Government, town and city leaders, and others to mitigate the risk of any change in the nature of employment?

- 5.1. A significant amount of work is likely to be done from home in the future. A key role for national and local governments is to take actions that will smooth the transition, particularly for LCS businesses and workers, to an economy in which working from home is much more common.
- 5.2. **In the short-run, action is needed to collect more data to improve our understanding of how much work will be done from home once public health restrictions are lifted.** Following our methodology,

⁴ Hourly pay based on data from the 2019 waves of the Quarterly Labour Force Survey. Jobs that can be done from home are assigned using the classifications outlined in De Fraja, Matheson and Rockey (2021).

this information can be used to predict the post-pandemic distribution of economic activity and inform national and local policymaking.

- 5.3. **Information about the post-pandemic distribution of where we work needs to be disseminated to businesses providing local services.** This will provide them with the information required to make informed decisions about whether to relocate.

6. How could the UK Government, town and city leaders, and others use their response to the pandemic to reduce inequalities in employment?

- 6.1. The zoomshock has the potential to benefit those in occupations that may be done (largely) remotely while disadvantaging those who work in LCS industries. These benefits will include both the obvious advantages of reduced commuting time and expense as well as more subtle, but potentially more important, advantages of access to a much wider range of employers. **Solutions to this include improved and re-targeted infrastructure that helps LCS workers commute to the new, more suburban centres of economic activity.** For example, buses that previously emphasised transporting people to and from city centres may be better repurposed transporting workers between more suburban areas.
- 6.2. As demand for office-space in city centres declines, there will be opportunities to repurpose existing space in ways that keep our centres vibrant and encourage inclusive growth. For example, repurposing commercial property as residential accommodation, making city centres more liveable, may serve to increase demand for LCS workers.
- 6.3. A second way in which the government response to the pandemic can work to reduce inequalities is by harnessing the potential incarnate in the zoomshock to 'level-up' depressed towns and villages. Residential property is substantially cheaper in these places than in Greater London and other large cities, but demand is limited by lack of amenities and the composition of the existing housing stock. Re-orientating planning rules to allow the construction of larger single-family dwellings may serve to help address this imbalance.

Research Cited

Barrero, J.M., N. Bloom, S.J. Davis (2021). "Why working from home will stick," Becker Friedman Institute working paper NO. 2020-174. Paper available at <https://bfi.uchicago.edu/working-paper/why-working-from-home-will-stick/>.

De Fraja, G., J. Matheson, J. Rockey, (2021). "Zoomshock: The Geography and Local Labour Market Consequences of Working from Home", *Covid Economics*, Issue 64, 13 January 2021, 1-41. Paper available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3752977

Taneja, S., P. Mizen and N. Bloom (2021). "Working from home is revolutionising the UK labour market", *VoxEU*, 15 March. Available at <https://voxeu.org/article/working-home-revolutionising-uk-labour-market>, (Accessed 29 June 2021).

Appendix: Figures

Figure 1: The change in economic activity when we work-from-home

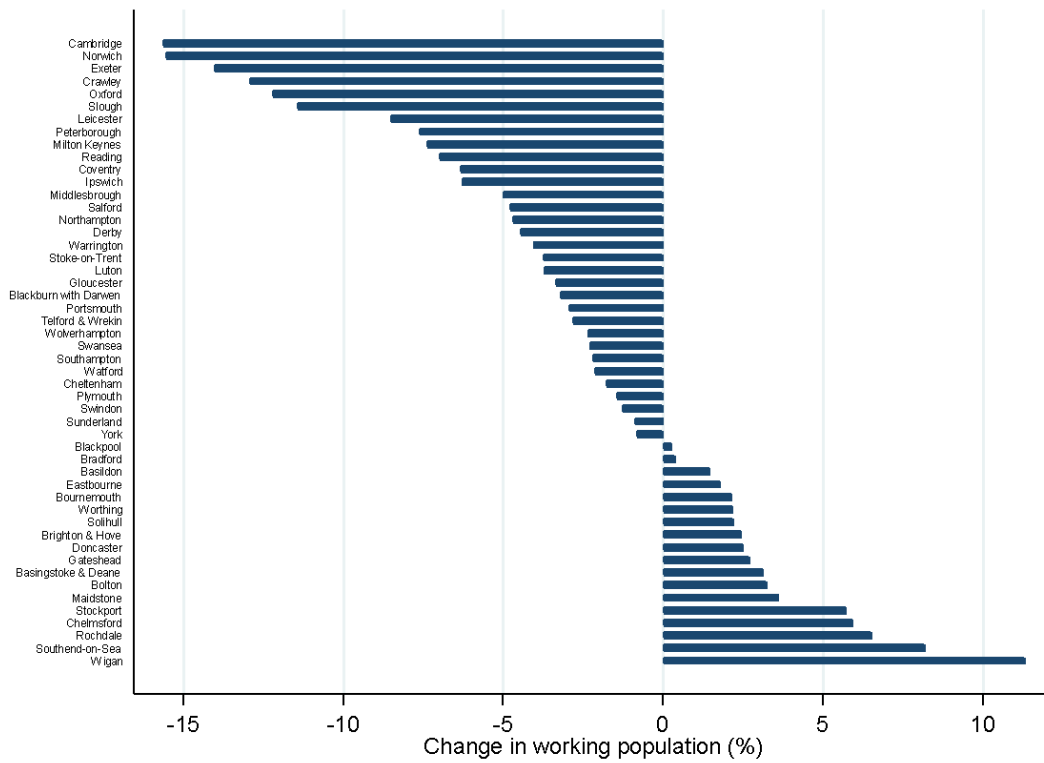
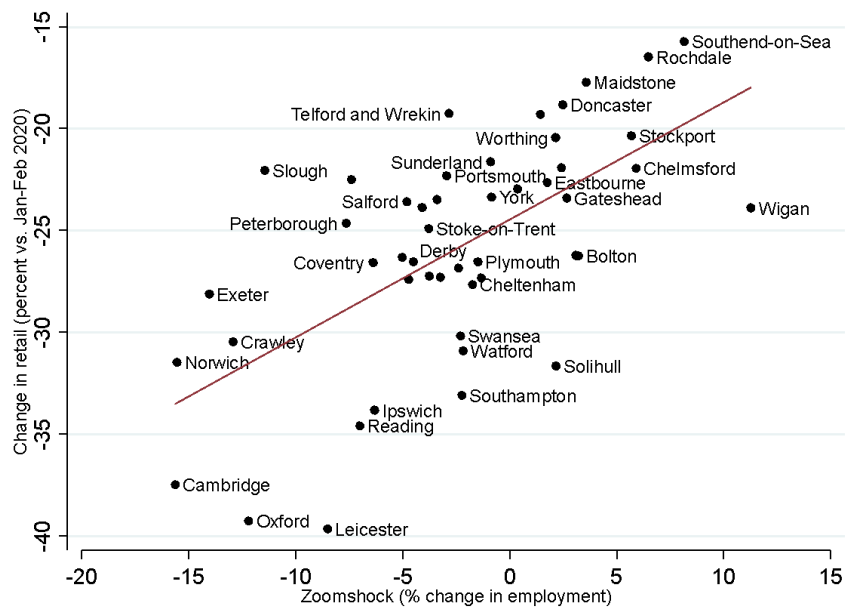
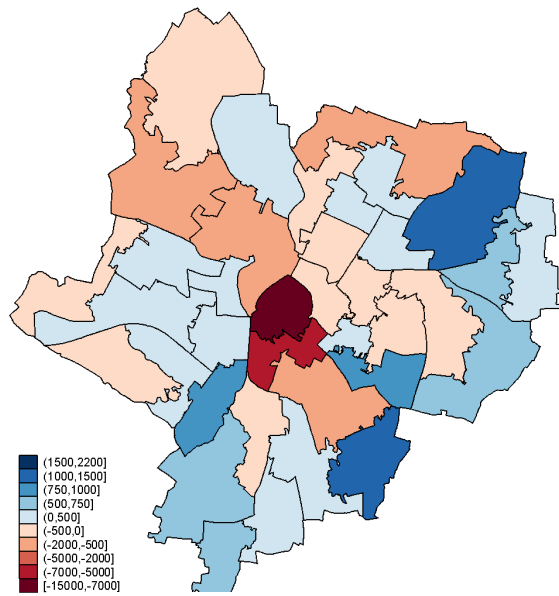


Figure 2: Retail and recreation activity, July–November 2020

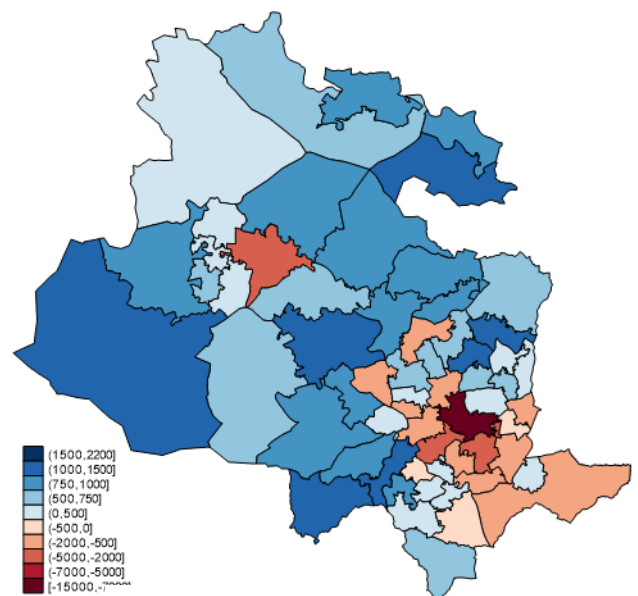


Notes: Figure does not include Blackpool. The zoomshock is the potential change in local employment. Retail and recreation activity is the average value of Google mobility index for the period 04 July to 05 November, 2020. Index reflects the change in mobility trends relative to baseline for restaurants, cafes, shopping centres, theme parks, museums, libraries, and movie theatres. The baseline is the median value, for the corresponding day of the week, during the 5-week period Jan 3–Feb 6, 2020. Google data available from <https://www.google.com/covid19/mobility/>.

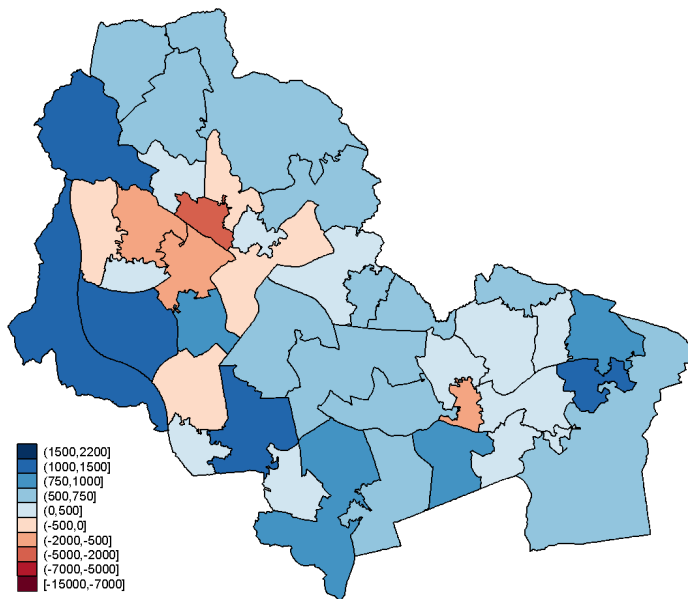
Figure 3: Zoomshock within selected local authorities



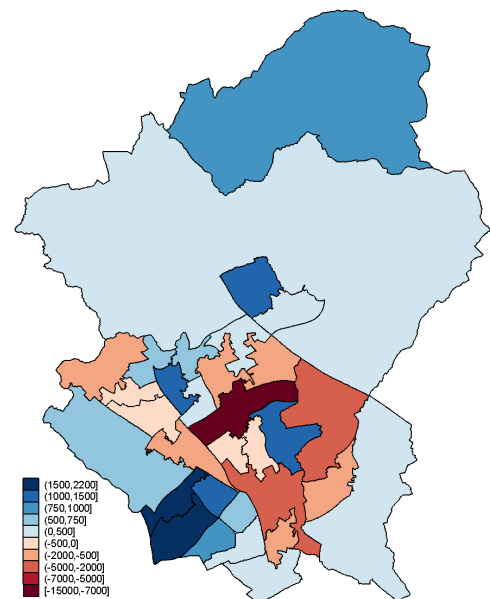
3a. Leicester



3b. Bradford



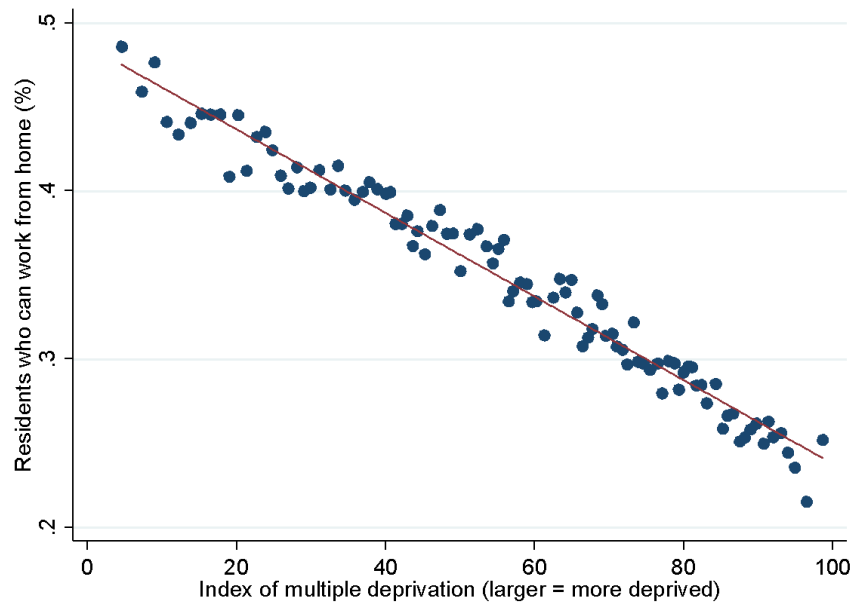
3c. Wigan



3d. Milton Keynes

Notes: This figure shows the estimated change in the number of workers, due to working-from-home for each MSOA. Red areas show a decrease, blue areas show an increase.

Figure 4: Working from home and neighbourhood deprivation index



Notes: This binscatter plot shows the average proportion of residents who can work from home for different deciles of neighbourhood deprivation. Each point represents the average for around 70 MSOAs. Deprivation is measured by the multiple deprivation index, normalised to take values between 0 and 100.

6 July 2021