GPT-4 (DAY WEEK): GREAT BRITAIN EDITION

HOW THE LATEST AI TECHNOLOGY CAN LEAD TO A NATION OF SHORTER HOURS, WITHOUT REDUCTIONS IN LIVELIHOODS OR PRODUCTIVITY

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Autonomy

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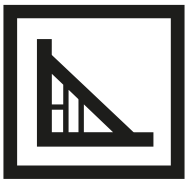

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CONTENTS

EXECUTIVE SUMMARY

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- This paper offers an equitable route for the deployment of AI in the pursuit of greater productivity. It builds upon leading analyses of the potential impacts of new AI technologies (specifically Large Language Models).
- It analyses the potential eligibility for a four-day work week across local authorities in Great Britain, driven by AI-enhanced productivity gains over the next decade.
- Two scenarios are detailed and mapped:
  - In the first, the productivity gains of AI deliver a 20% reduction in working hours, whilst keeping pay the same for workers.
  - Another scenario considers how many workers could be augmented by AI to the extent that their productivity improves by *at least* 10%. This would enable a reduction of 10% of the working weekly working schedule, whilst keeping pay the same.

- The paper finds that, by 2033:
  - A four-day week (32-hours as full-time equivalent) could be achieved within a decade for 8.8 million workers.
    - This represents 28% of the workforce.
  - 27.9 million workers could have working hours reduced by at least 10%, should Large Language Models be introduced into workplaces and used as the basis for increased free time.
    - This amounts to 88% of the workforce.
  - Local authorities with the highest proportion of workers that could work four-day weeks within the next decade include:
    - City of London
    - Kensington and Chelsea
    - Westminster
    - Elmbridge
    - Richmond upon Thames
    - Wandsworth
    - St Albans
    - Wokingham

    All of these local authorities hold the potential for 38% or more of their workforces to move to a four-day week using AI augmentation over the next decade.

- The report thus recommends that public and private sector employers take advantage of this significant opportunity to become world leaders in the take up of workplace AI as well as improve the lives of well over 100 million people.

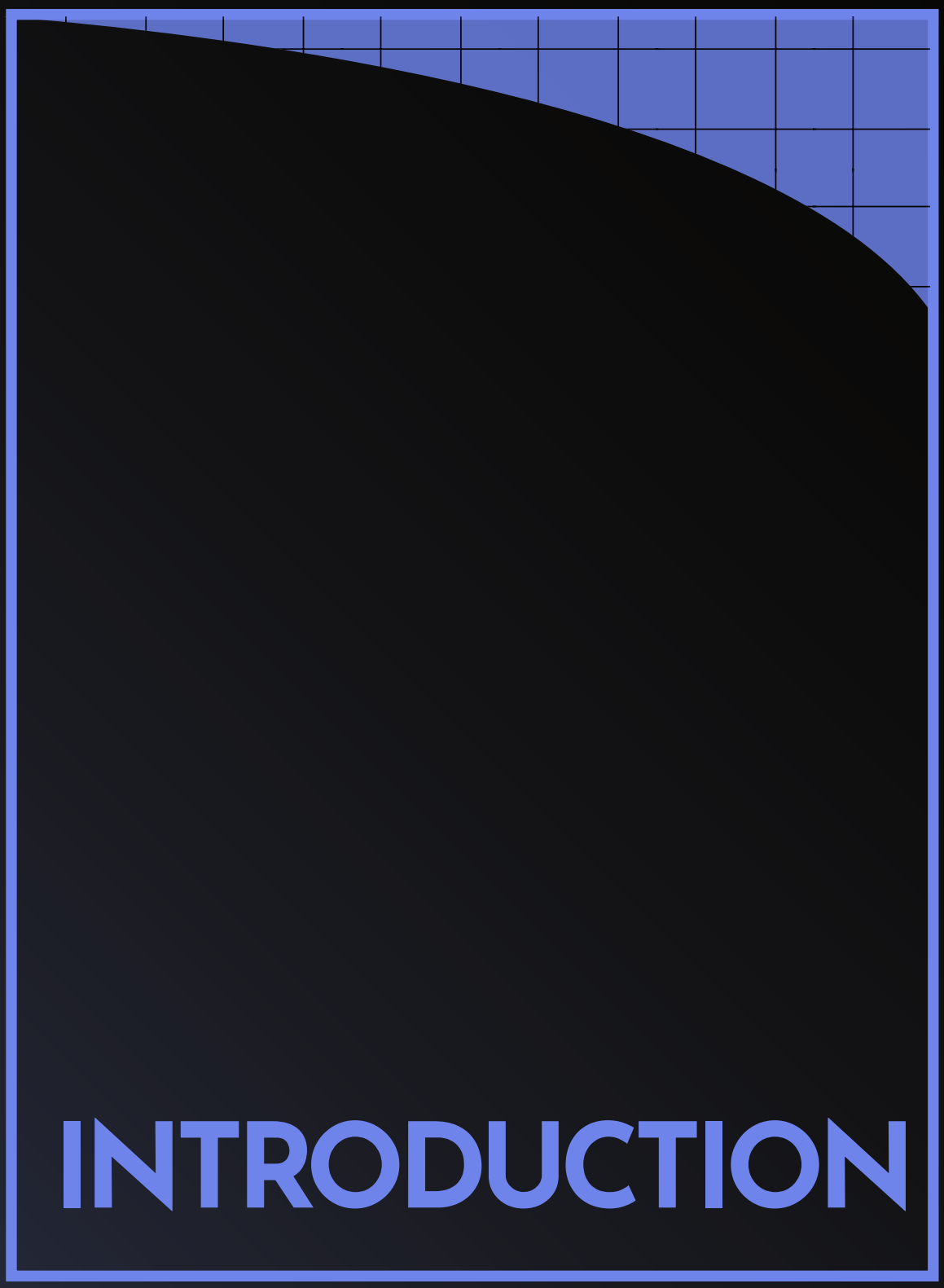
- It also intervenes into debates around 'AI for good' and regulation for positive outcomes. A shorter working week is a way of tangibly delivering benefits to workers whose workflow has been augmented by these new tools.

- The calculations are based on a 1.5% annual productivity increase, as estimated by Goldman Sachs in their study on the topic.

- The study also uses O*NET's AI exposure evaluations which were utilised by the IMF in their own analysis.

- This study utilised ASPECTT, a unique crosswalk developed by Autonomy, which connects US O*NET codes to UK Standard Occupational Classification (SOC) codes.[1]

1 See more here: https://autonomy.work/adu/



INTRODUCTION

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In his 1930 essay, "Economic Possibilities for our Grandchildren," John Maynard Keynes foresaw a 15-hour workweek due to technological advancements and increased productivity. He thought that wealth and efficiency would allow people more leisure time.[2] Contrary to his prediction, many still work long hours today, a result of economic inequality, a decline in labour union campaigns on the issue and broader societal norms.

Automation technologies have had diverse impacts on job quality, quantity and the aggregate dynamics of the labour market. Today, with the advent of 'generative AI', high-skilled jobs are seen to be at risk of processes previously only thought to affect largely routine manual or cognitive tasks: automation as we have known it. Today, groups such as the International Labour Organization (ILO) are deeply concerned about the potential impacts of such new technology in current economic contexts.[3]

The IMF has found that the US and UK, as advanced economies (AEs), show significant "polarisation" in AI exposure, making them vulnerable to adverse labour market effects.[4] This is due to a high number of jobs in AEs being susceptible - on a task level to AI-augmentation or replacement, putting those workers at risk of displacement or reduced hours. Generative AI Automation looks set to reshape the global labour market and with it the labour force.

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2 Keynes, J. M., *The Collected Writings of John Maynard Keynes. Volume X: Essays in Biography* (first published 1933), ed. by Robinson, A. and Moggridge, D. (Cambridge: Cambridge University Press, 2013).

3 Gmyrek, P., Berg, J., & Bescond, D. (2023). Generative AI and Jobs: A global analysis of potential effects on job quantity and quality (Working Paper No. 96). International Labour Organization. https://www.ilo.org/global/publications/working-papers/WCMS_890761/lang--en/index.htm

4 Panton, A., Tavares, M. M., Cazzaniga, M., & Li, L. (2023). Labor Market Exposure to AI: Cross-country Differences and Distributional Implications (No. 2023/216). International Monetary Fund

ALTERNATIVES ARE POSSIBLE

As ever, alternatives are possible: how productivity gains are to be distributed is a contestable question. Whilst many have focused on the pessimistic - and often deterministic - outlook of job losses and degradation, the prospect of improved productivity for huge swathes of the workforce *also* points to an alternative, more equitable solution: shorter working weeks for all and a four-day week horizon.

This study set out to understand the possibility of productivity enhancing AI being utilised to shorten the working week, whilst maintaining pay and performance. Such a policy offers the possibility of avoiding mass unemployment (and all the social and political effects of this), reducing widespread mental health illnesses as well as physical ailments associated with overwork and creating significant additional free time for democracy, leisure consumption and social cohesion in general.

Crucially, three notes about what we have modelled here:

1) This paper understands the prospects of working time reduction *purely* through the lens of productivity-enhancing AI. There are many other ways of shortening the working week whilst maintaining firm performance - depending on the enterprise.[5]

2) As has been shown in detail in previous studies, a great many kinds of firms simply do not need to spend extra money, or lose productivity, when they shift to shorter hours for their staff - particularly desk-based occupations.[6] The gains of work process reorganisation and evaluation, greater staff health, improved staff loyalty, reduced sick days and greater retention accrued through better work-life balance give a significant boost to performance.

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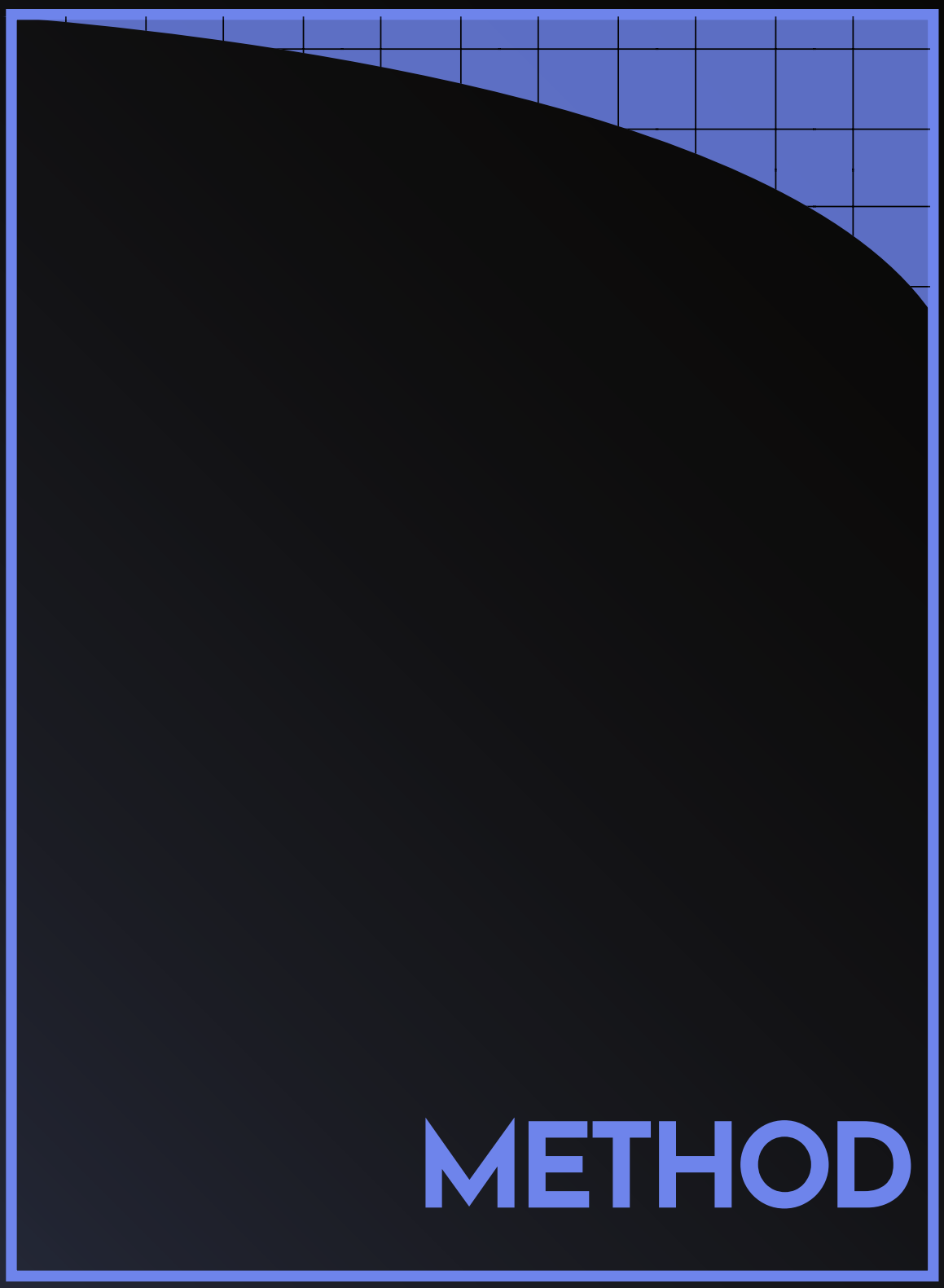
5 See the report on the world's largest four-day week pilot (Autonomy et al., 2023) here: https://autonomy.work/wp-content/uploads/2023/02/The-results-are-in-The-UKs-four-day-week-pilot.pdf; see also Henley Business School (2022) 'The four-day week: The pandemic and the evolution of flexible working' Available here: https://www.henley.ac.uk/the-four-day-week

6 (Autonomy et al., 2023) here: https://autonomy.work/wp-content/uploads/2023/02/The-results-are-in-The-UKs-four-day-week-pilot.pdf; for the broad case for a shorter working week see Harper and Stronge, eds. (2019) *The Shorter Working Week: a radical and pragmatic proposal. Autonomy.* Available here: https://autonomy.work/portfolio/the-shorter-working-week-a-report-from-autonomy-in-collaboration-with-members-of-the-4-day-week-campaign/

In the case of the UK - where work-related stress, anxiety and depression constitute one of the most significant labour market issues today - these wellbeing factors cannot be emphasised enough when it comes to the productivity question.[7] Thus, we can expect a great deal of *extra* productivity-enhancing side effects of the shorter work week, *outside* of the AI-augmentations we have modelled. Thus, this study should be seen as a somewhat conservative estimate.

3) This is a paper that identifies an opportunity and not a destiny. The actual diffusion and adoption of technology is always uneven, driven by a variety of factors: wage levels, government policy, levels of sector monopolisation, trade union density and so on. Needless to say, widespread adoption of these new AI technologies will require a robust industrial strategy that traverses national, federal and municipal levels and that deploys incentives and regulations for the private sector. Most importantly, workplace technologies are social and political technologies and therefore worker voice - those who will be working alongside and in collaboration with these tools - will be essential.

7 HSE (2022) 'Health and safety statistics'. HSE. Available here: https://www.hse.gov.uk/statistics/


METHOD

METHOD

We compiled a comprehensive data set by integrating information from the UK Census (covering England and Wales) and the Annual Population Survey (for Scotland). This dataset was then updated with long-term employment projections for Great Britain, drawing on data from the Department of Education and analyses by the Warwick Institute for Employment Research and Cambridge Econometrics in 2023.[8] Utilising ASPECTT, the occupation database created by Autonomy, we matched the Standard Occupational Classification (SOC) codes for UK occupations with the Artificial Intelligence Exposure Indices (AIOE) built by Felten's data,[9] as utilised by the IMF.[10] This index measures how various occupations are impacted by generative AI.

Briggs & Kodnani (in a study published by Goldman Sachs), forecasts a 1.5% yearly increase in UK labour productivity over ten years, due to generative AI[11]. But the actual effect on productivity could be smaller or larger, based on AI's task complexity and job automation. We adjusted AI exposure indices according to the number of UK workers in each job to estimate potential productivity gains, centering on Briggs & Kodnani annual average.

8 Department for Education (DfE). (2023, March 21). Labour market and skills projections: 2020 to 2035. Retrieved from https://www.gov.uk/government/publications/labour-market-and-skills-projections-2020-to-2035

9 Felten, E., Raj, M., & Seamans, R. (2021). Occupational, industry, and geographic exposure to artificial intelligence: A novel dataset and its potential uses. Strategic Management Journal, 42(12), 2195-2217; Pizzinelli, C., Panton, A., Tavares, M. M., Cazzaniga, M., & Li, L. (2023). Labor Market Exposure to AI: Cross-country Differences and Distributional Implications (No. 2023/216). International Monetary Fund.

10 Pizzinelli, C., Panton, A., Tavares, M. M., Cazzaniga, M., & Li, L. (2023). Labor Market Exposure to AI: Cross-country Differences and Distributional Implications (No. 2023/216). International Monetary Fund.

11 Briggs, & Kodnani. (2023). The Potentially Large Effects of Artificial Intelligence on Economic Growth. Global Economics Analyst. Retrieved from https://www.gspublishing.com/content/research/en/reports/2023/03/27/d64e052b-0f6e-45d7-967b-d7be35fabd16.html

We used this data to consider a shorter work week due to productivity improvements. It's key to note that productivity gains aren't always evenly shared between employers and employees and depend on collective bargaining, plus geographic, demographics, economic cycle, and other intrinsic job market factors. We explored two scenarios: one with enough AI-driven productivity for a 20% shorter work week (a four-day week, (Figure 1). We identified jobs by region that could have over 20% productivity gains as potential candidates for one fewer work day. Another scenario (Figure 2) looked at how many workers could see *at least* a 10% productivity boost from AI, potentially cutting their work week by *at least* 10%. This second scenario doesn't necessarily mean a four-day week for most workers, but it would mark a significant shift in the world of work.

FINDINGS

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- 88% of the labour force in Great Britain could have at least a 10% reduction in work time, due to AI-led productivity gains.
    - This amounts to 27.9 million workers in 2033.
- 28% of the labour force in Great Britain could have a 20% reduction in work time, due to AI-led productivity gain of 20%.
    - This amounts to 8.8 million workers in 2033
- A number of local authorities have the opportunity ahead of them to become the first 'Four Day'. See Figure 3 to see this visualised. These include:
    - 44 local authorities could have at least one third of their labour force eligible for a 4 day work-week by 2033.
- In London,
    - 89% of the labour force in London could have at least a 10% reduction in work time, due to AI-led productivity gains.
        - This amounts to 4 million workers in 2033.

- 33% of the labour force in London could have a 20% reduction in work time, due to AI-led productivity gain of 20%.
    - This amounts to 1.5 million workers in 2033
    - 18 London local authorities could have at least one third of their labour force eligible for a 4 day work-week by 2033. These 'four-day week boroughs' include:
    - The City of London
    - Tower Hamlets
    - Islington
    - Southwark
    - Richmond
    - Camden
    - Wandsworth

The City of London is the only local authority in the UK where over 50% of the workforce could have an AI-led four-day week by 2033 (see Figures 5 and 6)

FIGURES

Below we show two maps, marking two different productivity scenarios. In Figure 3 we can see which local authorities have the highest 'four-day week potential'. Figures 4, 5 and 6 pertain to London's local authorities in particular.

A FOUR-DAY WEEK: THE TEN YEAR MISSION (SCENARIO 1)

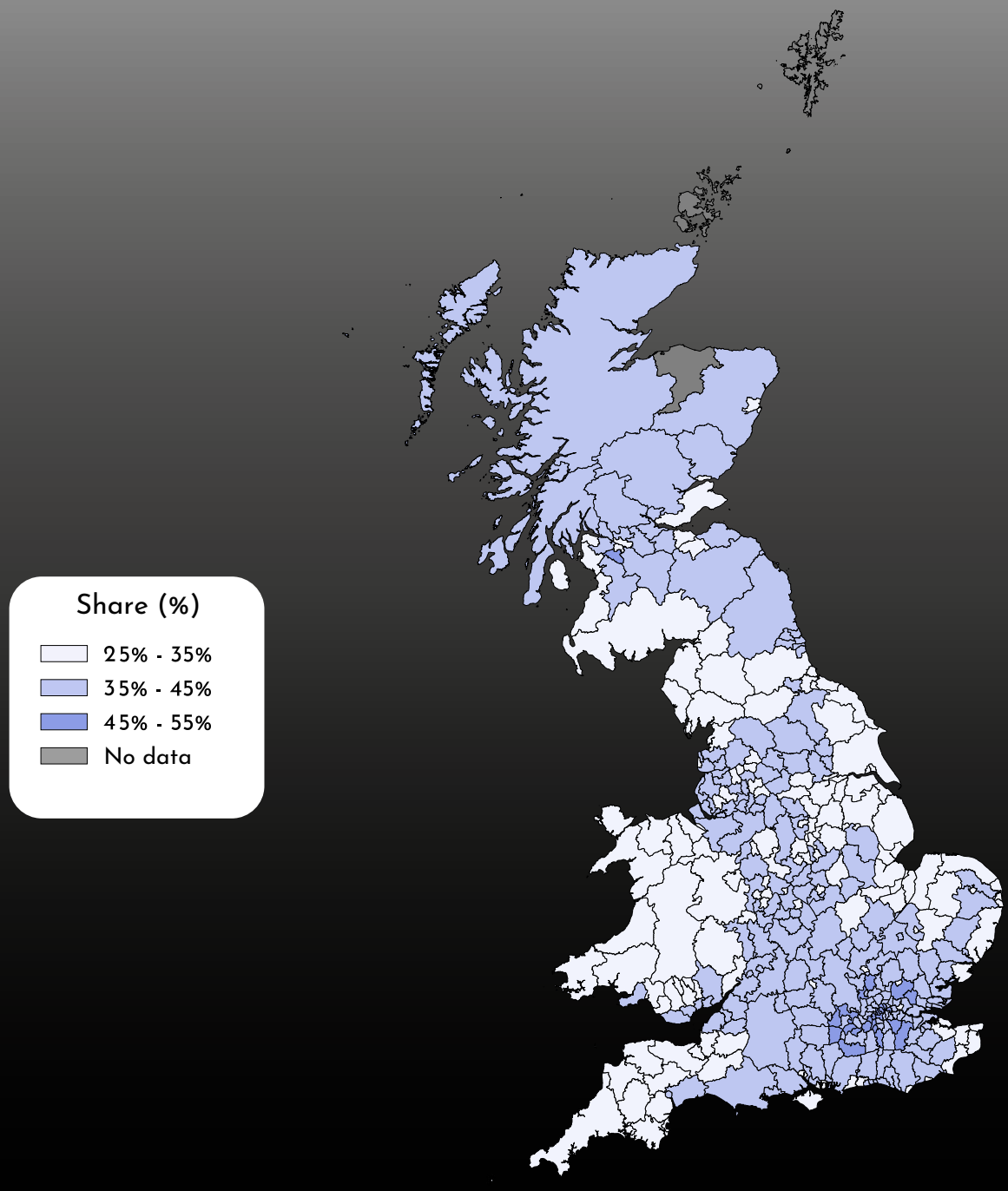

Figure 1: *this map uses data that tracks Goldman Sachs' estimates of a 1.5% year on year improvement in productivity driven by AI, which is complemented by an equivalent reduction in working hours so as to deliver 20% reductions for workforces over ten years. Source: Autonomy calculations combining the ASPECTT, Department for Education (2023), UK Census and Annual Population Survey,Briggs, & Kodnani. (2023) and Felten (2021) data sets.*

WORKING TIME REDUCTION: 10% AND OVER (SCENARIO 2)

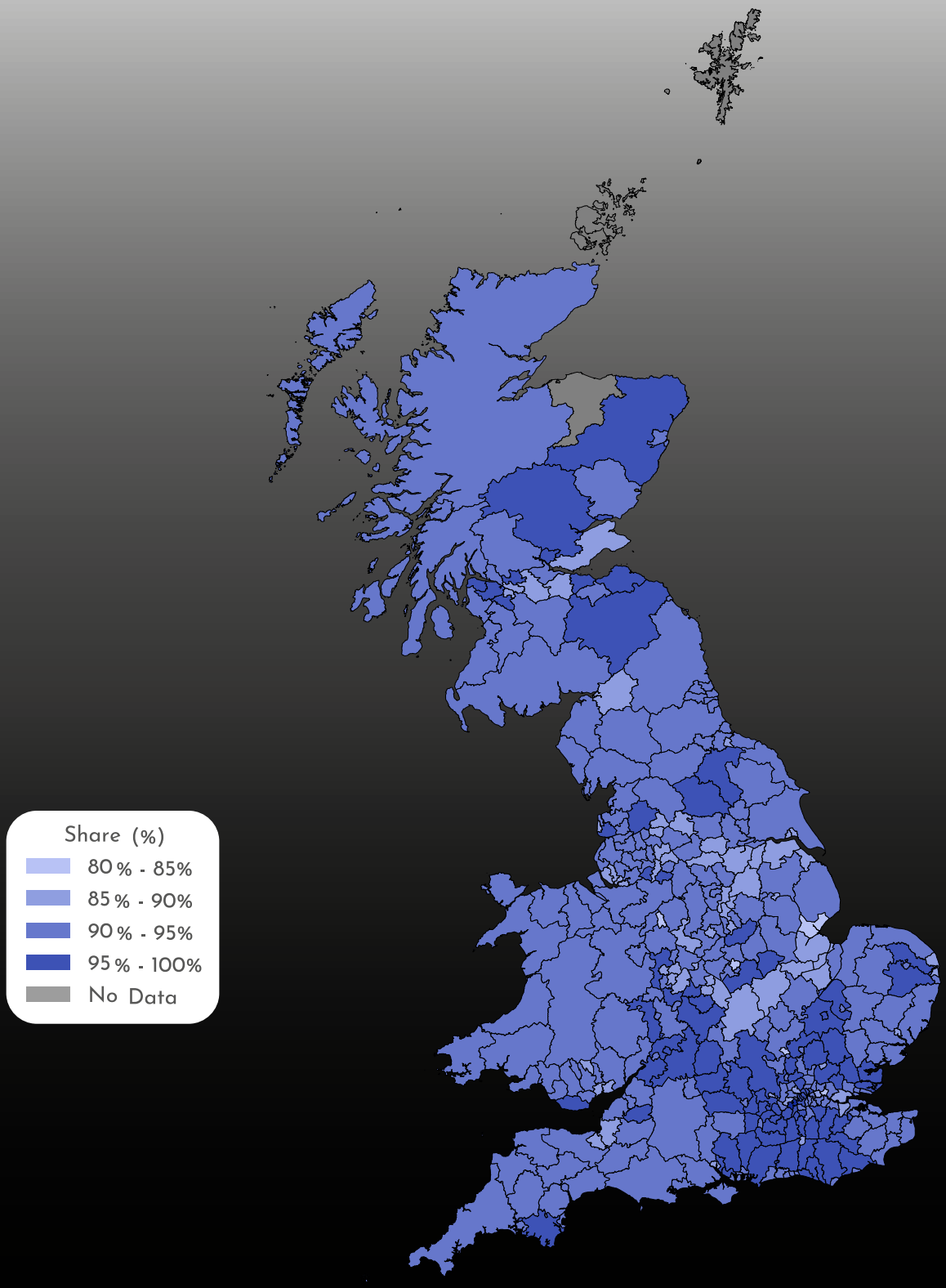

Figure 2: *this map uses data that tracks Goldman Sachs' estimates of a 1.5% year on year improvement in productivity driven by AI, which is complemented by an equivalent in working time reduction. It asks the question: how many workers could achieve at least 10% reduction in working hours over a decade, should the productivity potential of AI be realised? Source: Autonomy calculations combining the ASPECTT, UK Census and Annual Population Survey, Department for Education (2023), O*NET, Briggs, & Kodnani. (2023) and Felten (2021) data sets.*

Most and least susceptible local authorities to an AI-driven four-day week, over a ten year period

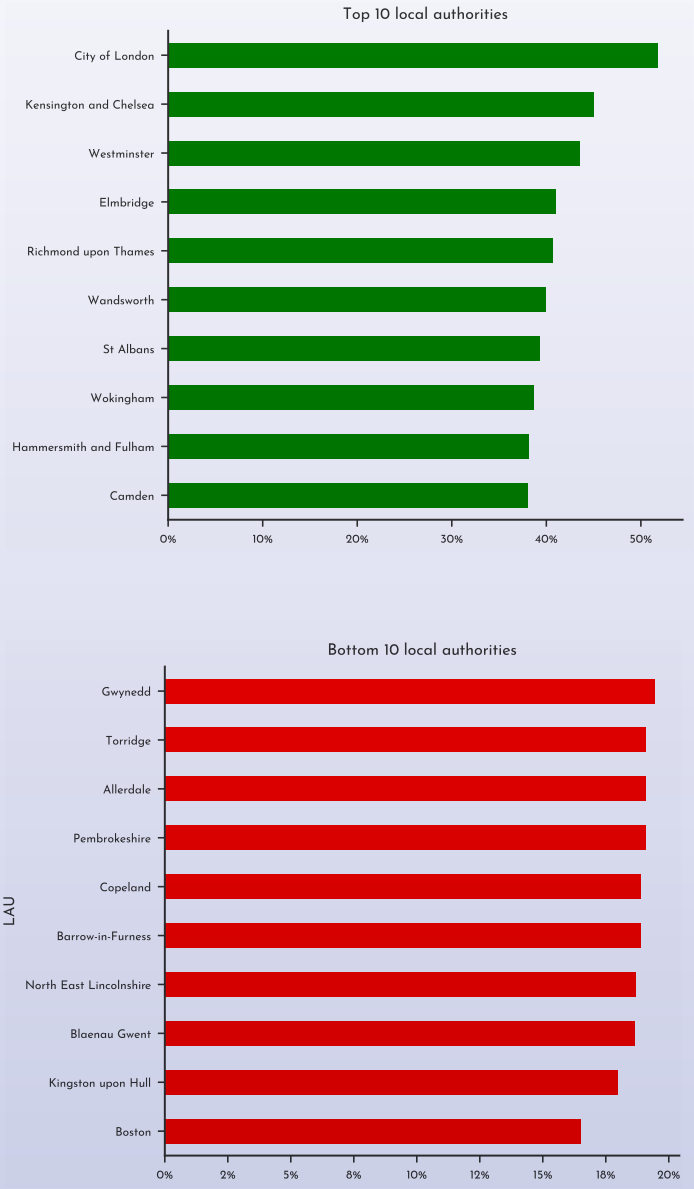

Figure 3: *the local authorities with the largest shares of the labour force that will be eligible for an AI-driven four-day week over the next decade (top) and those with the lowest shares (bottom). Source: Autonomy calculations combining the ASPECTT, UK Census and Annual Population Survey, Department for Education (2023), O*NET, Briggs, & Kodnani. (2023) and Felten (2021) data sets..*

A FOUR-DAY WEEK IN LONDON

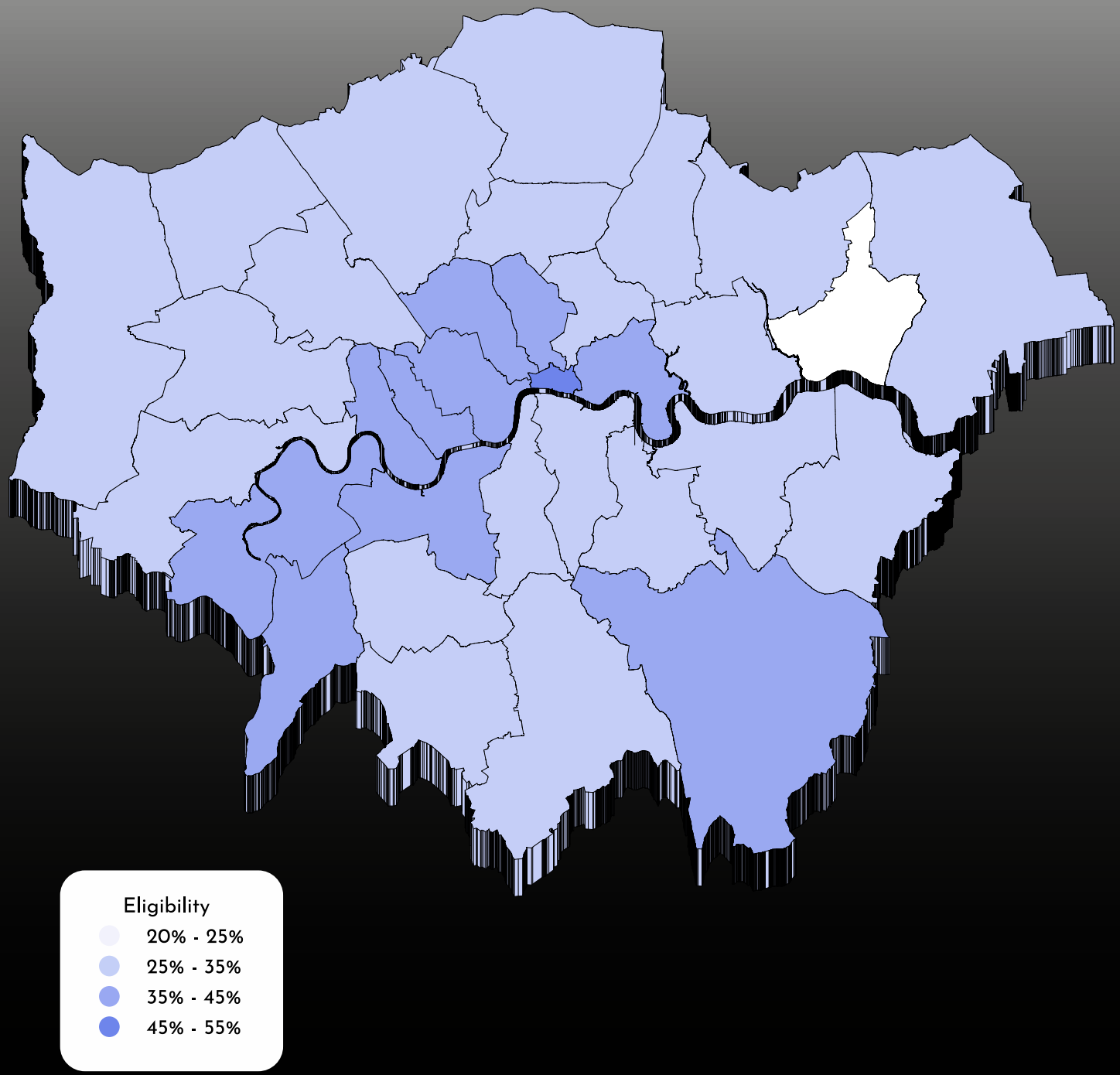

Figure 4: *the local authorities within London with the largest shares of the labour force that will be eligible for an AI-driven four-day week over the next decade. Source: Autonomy calculations combining the ASPECTT, UK Census and Annual Population Survey, Department for Education (2023), O*NET, Briggs, & Kodnani. (2023) and Felten (2021) data sets.*

LONDON'S 'FOUR-DAY WEEK' LOCAL AUTHORITIES

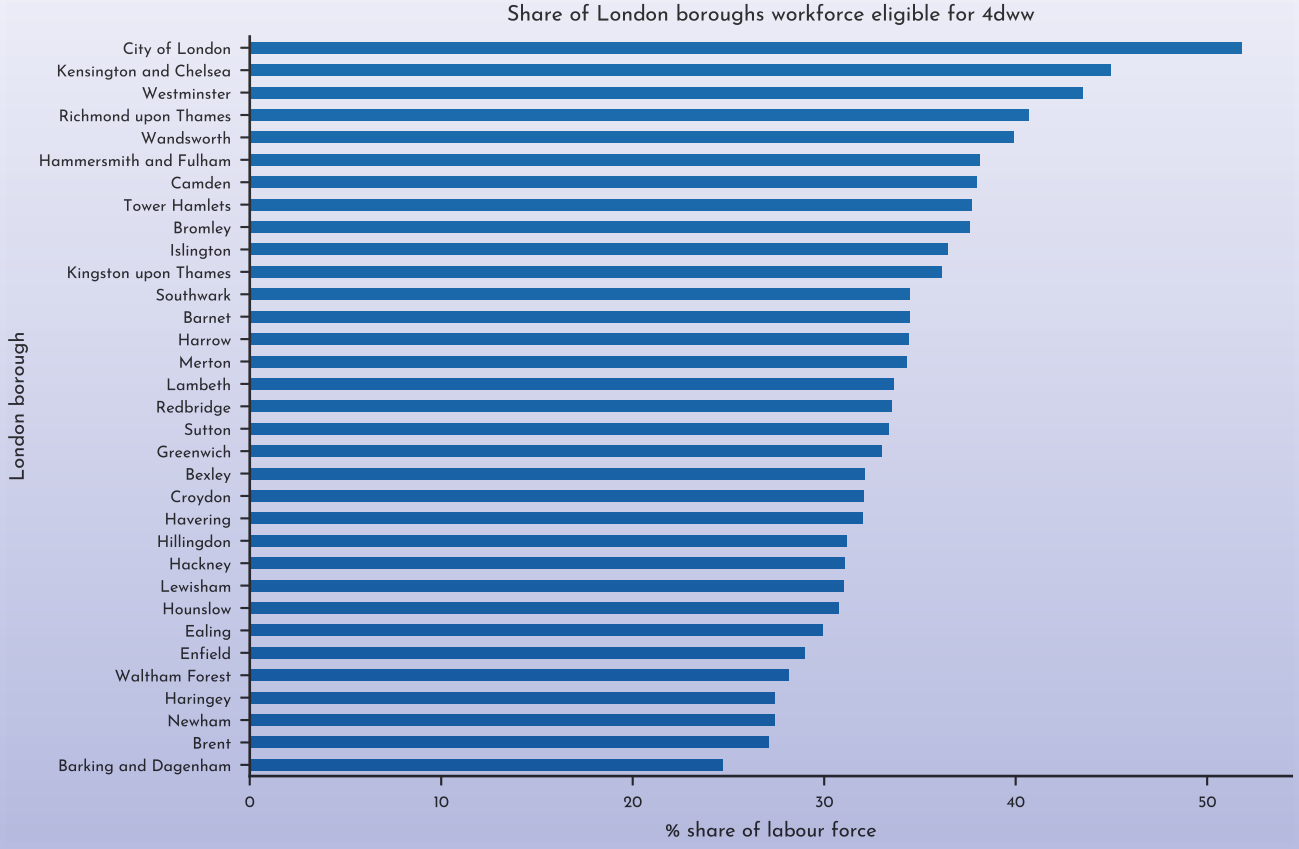

Figure 5: the local authorities within London with the largest shares of the labour force that will be eligible for an AI-driven four-day week over the next decade. *Source: Autonomy calculations combining the ASPECTT, UK Census and Annual Population Survey, Department for Education (2023), O*NET, Briggs, & Kodnani. (2023) and Felten (2021) data sets.*

LONDON'S 'FOUR-DAY WEEK' LOCAL AUTHORITIES CONTINUED

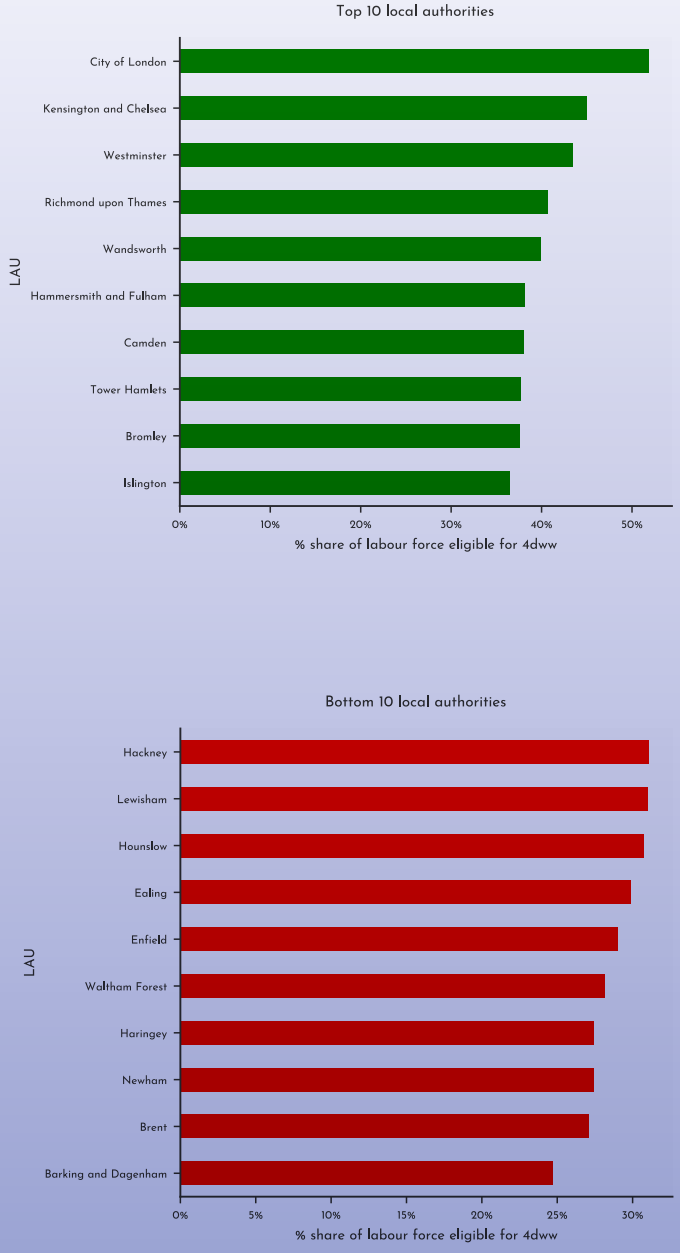

Figure 6: the local authorities within London with the largest shares of the labour force that will be eligible for an AI-driven four-day week over the next decade (top) and those with the lowest potential (bottom). *Source: Autonomy calculations combining the ASPECTT, UK Census and Annual Population Survey, Department for Education (2023), O*NET, Briggs, & Kodnani. (2023) and Felten (2021) data sets.*

MOVING FORWARD

MOVING FORWARD

This represents a huge opportunity for policymakers, trade unions and of course the millions of workers who are likely to be affected in some or another by these new AI technologies. The present paper merely identifies this opportunity, but below we also note an institutional direction by which such an opportunity can be capitalised on.

SET UP 'AUTOMATION HUBS' FOR CROSS-STAKEHOLDER COLLABORATION

These would have as their purpose to boost adoption and ensure, through trade union and industry agreements, that LLM deployment is equitable and that working time reduction is achieved.[12] These hubs would also aim to increase adoption in sectors that have seen low-investment - through whichever financial and incentives are made available. These hubs could have branches for each employment sector and each branch - perhaps at local authority level - would have specific expertise regarding the nature of the work in question and the AI technology that is most relevant.

12 A similar idea was proposed in our 2019 paper on shorter working hours cited above (2019). Available here: https://autonomy.work/portfolio/the-shorter-working-week-a-report-from-autonomy-in-collaboration-with-members-of-the-4-day-week-campaign/; see also: Lawrence, M. and King, L., Roberts, C., (2017) Managing automation: Employment, inequality and ethics in the digital age, London. IPPR. Available at: http://www.ippr.org/publications/managing-automation

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