MIDLANDS ENGINE OBSERVATORY ACADEMIC INSIGHTS
R&D Workforce and Skills

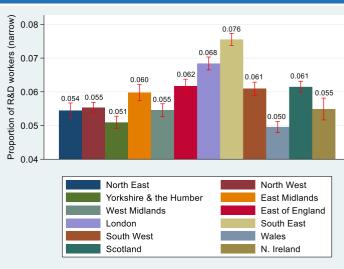**MIDLANDS ENGINE OBSERVATORY**

Theme:

Innovation

Area of Focus:

Identifying trends in workers' likelihood of conducting R&D activities across UK regions

Key Findings:

- Men are significantly more likely than women to be employed in R&D-related occupations, with the UK average shares standing at 8.8% and 3.1%, respectively. The West Midlands sees the lowest proportion of women in the R&D workforce in the country (women: 2.5%, men: 8.2%), while the share in the East Midlands is slightly higher (women: 2.9%, men: 8.9%).

- On average, Chinese (15.0%) and Indian (12.2%) people are more likely than others to be engaged in R&D activities. The West Midlands (19.3%) has the largest percentage of Chinese workers engaged in R&D in the UK (East Midlands: 18.8%). On the contrary, Bangladeshi, Black and Pakistani workers have the lowest chances of being employed in R&D-related jobs.

- The probability of being an R&D worker gradually increases by age until an individual's late 30s. This trend is then reversed, suggesting that age has a diminishing effect on the likelihood of conducting R&D activities amongst older workers.

- Workers' level of education and the industry sector of their main job are two of the most powerful predictors of the probability of performing R&D activities.

- Specifically, 10.1% and 11.1% of workers whose NQF level of highest qualification is "4 and above" are employed in R&D-pertinent professions in the West Midlands and East Midlands, respectively (UK average: 10.4%). These figures are more than double the proportion of those with a highest qualification at "NQF Level 3" and "Trade Apprenticeships". In contrast, the share of R&D workers with lower-level or no qualifications is very small (ranging from 0.9% to 2.1%, in line with the UK average).

- People working in the Information/Communication sectors are the most likely to conduct R&D activities (West Midlands: 29.6%, East Midlands: 27.6%), followed by the Electricity/Gas supply industry (14.8% and 15.8%).

Note: The analysis uses restricted-access pooled data from the Annual Population Survey (July 2012-June 2021) to describe the structure and characteristics of the R&D workforce. The R&D workforce is defined based on 28 four-digit codes of the Standard Occupational Classification and includes researchers, engineers, technology professionals, R&D managers, technicians, higher education teaching professionals, and selected business research professionals (such as actuaries, economists, and statisticians).

The figure shows the proportion of R&D workers in the total workforce by region of residence. The error bars represent the 95% confidence intervals of the proportions.

Midlands Engine Impact:

- The demand for R&D occupations and skills in the Midlands in the post-COVID era will depend on several factors. These include but are not limited to technological developments, the level of adoption of digitalisation, AI and automation by businesses, the implementation of national policy targets (e.g., the increase in R&D expenditure to 2.4% of GDP by 2027 and reaching "net zero" by 2050), and the extent to which the barriers that inhibit business innovation (such as innovation costs, access to finance, EU regulations, and impediments to attracting and retaining international talent) will be addressed.

- Encouraging and facilitating the participation of more Midlands' SMEs in research and innovation activities is likely to increase the demand for R&D workers/skills and stimulate economic growth in the region.

- Further interventions should be developed to foster diversity and equity in the innovation workforce. This would, in turn, help address issues around skills shortages and accelerate economic recovery in the Midlands, given that a diversified workforce is positively associated with productivity, economic growth and increased innovative performance.

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