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Leveraging Administrative Data to Identify Spatial Inequalities in Educational Attainment across Wales

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Objectives

To identify spatial clustering of educational attainment using administrative GCSE data and explore relationships with socioeconomic factors derived from linked census and administrative pupil data, informing targeted interventions to address geographical educational inequalities.

of place-based interventions alongside individual-targeted support and demonstrate how administrative data can inform targeted educational policy.

Methods

We employed spatial autocorrelation techniques using administrative data from the 2011 GCSE cohort - 31,295 pupils. The Core Subject Indicator (CSI) achievement rates were aggregated at Lower Layer Super Output Areas (LSOAs). Global Moran's I assessed overall spatial clustering, while Local Indicators of Spatial Association (LISA) identified high and low attainment clusters. Bivariate spatial association measures examined relationships between educational outcomes and socioeconomic indicators including free school meal eligibility (eFSM), Special Education needs (SEN), ethnicity, household deprivation measures, household social grade, household qualifications, and family structure.

Results

Our analysis revealed important spatial autocorrelation in educational attainment across Wales, indicating spatial clustering beyond random distribution. LISA analysis identified distinct spatial patterns with clusters of high achievement and clusters of low achievement across the LSOAs in Wales. Bivariate spatial analysis demonstrated relationships between educational outcomes and socioeconomic factors, with varying strength of association across different indicators. Indeed, the proportion of pupils eligible for eFSM and pupils with SEN showed particularly notable spatial correlation with educational attainment.

Conclusion

Spatial analysis of administrative education data reveals important spatial patterns of educational outcomes linked to socioeconomic factors. These findings highlight the importance



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