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The UK Longitudinal Linkage Collaboration: the Trusted Research Environment for data linkage in longitudinal population research

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We have created an unprecedented interdisciplinary infrastructure integrating data from UK-wide LPS linked to participants' health (NHS), administrative (DWP, HMRC) and place-based records (e.g. environmental pollutants, proximity to healthy assets). Researchers can apply to access all these data via a single application. This organisation is a collaboration of over 25 of the UK's most established LPS with over 425,000 participant records. With new LPS joining, the resource will comprise more than 2 million linked participant's records by 2027. The UK LLC enables integrated and curated data for pooled analysis within a functionally anonymous Digital Economy Act and ISO 27001 accredited TRE. Initially this resource was only available to UK researchers, will be open to international researchers in 2026. This data flow is enabled by: (1) a model where a Trusted Third Party processes participant identifiers for many different data owners; (2) creation of a novel longitudinal data pipeline, enabling linkage, data extraction and update of records over time; (3) an access framework where a Linked Data Access Panel considers applications on behalf of data owners (e.g., the NHS), with review by a public panel and distributing applications to LPS for approval. UK LLC provides a simple-to-access strategic research-ready platform for longitudinal research to investigate cross-cutting themes such as understanding health and social inequalities, health-social-environmental interactions. The greater availability of large scale, diverse linked data will help provide the numbers for researchers to study rarer outcomes and seldom-reached populations.

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