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The Linkmaster's Dilemma: A Boardgame-Based Approach to Teaching Data Linkage and Bias Management

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This abstract propose an introduction and live demonstration of an educational resource, *The Linkmaster's Dilemma*, a boardgame designed to enhance understanding of data linkage concepts and the critical role of data accuracy, population representativeness and bias management.

Set against the backdrop of *Dataopolis*—a city destabilized by the disruptive influence of misaligned data—players assume the roles of *Linkmasters* tasked with restoring order by constructing accurate and comprehensive population cohorts. The game mechanics require players to strategically match records across disparate systems, thereby simulating real-world challenges in data integration and quality assurance. Success is determined by the dual metrics of population size and linkage accuracy; however, an undisclosed threshold of cumulative bias serves as a critical counterbalance, introducing a hidden risk that compels players to carefully manage the trade-offs inherent in data linkage processes.

By incorporating competitive elements with rigorous decision-making scenarios, the boardgame not only fosters critical analytical skills and collaborative problem-solving but also serves as a practical tool for illustrating complex theoretical constructs in data science.

Preliminary playtest within a team of university-based data analysts suggest that *The Linkmaster's Dilemma* encourages conversations around linkage bias and methods in an interactive way. It helps bring attention to the gap between abstract data management principles, five safe principles, public engagement and involvement and other elements of processes involved in the linkage process, offering promising implications for educational practices in training the next generations of data linkers and analysts.

