

# The Development of Centrality Measures in Longitudinal Networks

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| <b>Research Question:</b> | What is the nature of the evolution of centrality measures in longitudinal networks? Do they adhere to a specific distribution? What patterns emerge from this analysis?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Background:</b>        | By employing a generic definition of temporal networks, it is possible to monitor the evolution of centrality measures, such as degree and betweenness centrality [1]. While the random generation of random networks (scale-free or small-world networks) appears to exhibit patterns [2], the manner in which real-world networks change over time remains uncertain.                                                                                                                                                                                                                                                                                            |
| <b>Data:</b>              | Several inhouse/external knowledge graphs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Literature:</b>        | <p>[1]  J. Dörpinghaus, V. Weil, M. W. Sommer. Modeling and analysis of longitudinal social networks. <i>Applied Network Science</i>, <b>9</b>, 52 (2024)</p> <p>[2]  M. P. Mangroliya, J. Dörpinghaus, R. Rockenfeller. Towards the analysis of errors in centrality measures in perpetuated networks. <i>Proceedings of the 19th Conference on Computer Science and Intelligence Systems</i>, M. Ganzha, L. Maciaszek, M. Paprzycki, D. Ślęzak (eds). ACSIS, Vol. 39, pages 417–428 (2024)</p> |
| <b>Requirements:</b>      | Coding (Python)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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