

Surname complex network for Brazil and Portugal

G.D. Ferreira, G.M. Viswanathan, **L.R. da Silva**, H.J. Herrmann

We present a study of social networks based on the analysis of Brazilian and Portuguese family names (surnames). We construct networks whose nodes are names of families and whose edges represent parental relations between two families. From these networks we extract the connectivity distribution, clustering coefficient, shortest path. We find that the connectivity distribution follows an approximate power law. We associate the number of hubs and entropy to the degree of miscegenation in the societies in both countries. Our results show that Portuguese society has a higher miscegenation degree than Brazilian society. All networks analyzed lead to approximate inverse square power laws in the degree distribution. We conclude that the thermodynamic limit is reached for small networks (3 or 4 thousand nodes). The assortative mixing of all networks is negative, showing that the more connected vertices are connected to vertices with lower connectivity. Finally, the network of surnames presents some small world characteristics.