Stability in human interaction networks: primitive typology of vertex, prominence of measures and time activity statistics, SUPPORTING INFORMATION

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This is the supporting information of the article that reports interaction networks stability by means of three quantitative criteria: activity distribution in time and among participants; a sound classification of vertices in peripheral, intermediary and hub sectors; the combination of basic measures into principal components with greater variance.

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These results were produced with the Gmane public domain data and an open python package designed for attaining these, and related, results. The interested reader should follow Appendix C to access both data and rotines. Inline are results for 4 emails lists: LAD, LAU, MET and CPP, as described in Section II. Similar results can be reproduced for any number of (Gmane) email lists. To avoid repeating text of each table for each list, the text is given inline.

I. TIME TABLES IN DIFFERENT SCALES

Theory presented in Section III A and results exposed in Section IV A of the paper[1].

A. Circular measures

The rescaled circular mean θ'_μ, the standard deviation $S(z)$, the variance $Var(z)$, the circular dispersion $\delta(z)$ and the relation of maximum and minimum incidence at each time unit $\frac{max(incidence}{min(incidence}$. Also, $\mu_{\frac{max(incidence')}{min(incidence')}}$ and $\sigma_{\frac{max(incidence')}{min(incidence')}}$ are given for 1000 uniform distribution simulations within the same number of bins and with the same number of samples. Section III A describes the theoretical background of directional (or circular) statistics.

B. Histograms

II. FRACTION OF PARTICIPANTS IN EACH ERDÖS SECTOR ALONG THE TIMELINE

A. LAD

B. CPP

III. FRACTION OF PARTICIPANTS IN EACH ERDÖS SECTOR ALONG THE TIMELINE

A. Betweenness, clustering and degree

B. Betweenness, clustering, degrees and strengths

C. Betweenness, clustering, degrees, strengths and symmetry measures

[1] R. Fabbri, "Stability in human interaction networks: vertices sectorialization, prominence of topological measures and time activity statistics," arXiv preprint arXiv:1310.7769. http://arxiv.org/abs/1310.7769.

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TABLE I. LAD circular measures

scale	θ'_μ	$S(z)$	$Var(z)$	$\delta(z)$	$\frac{max(incidence)}{min(incidence)}$	$\mu_{\frac{max(incidence')}{min(incidence')}}$	$\sigma_{\frac{max(incidence')}{min(incidence')}}$
seconds	$-//-$	3.13	0.99	9070.17	1.28	1.29	0.05
minutes	$-//-$	3.60	1.00	205489.40	1.22	1.29	0.05
hours	-9.61	1.52	0.68	4.36	9.77	1.15	0.03
weekdays	-0.03	2.03	0.87	29.28	1.72	1.05	0.02
month days	-0.07	2.94	0.99	2754.16	2.21	1.17	0.03
months	-0.56	2.14	0.90	44.00	2.25	1.09	0.02