Socio-technical analysis result ( Sympy )

|   |  |  |  |  |   |  |   |  |  |  |  | arjs   | 47   |   |   | <i>y</i>   |  | /  |   |  |  |  |   |                   |  |  |  |
|---|--|--|--|--|---|--|---|--|--|--|--|--|--|---|---|--|--|--|---|--|--|--|---|-------------------|--|--|--|
|   | range.date   |  | devs   | ml.only.devs   | code.only.devs  | ml.code.devs   | perc.ml.only.devs   | perc.code.only.devs  | perc.ml.code.devs  | sponsored.devs                                     | ratio.sponsored  | sponsored.core.devs  | ratio.sponsored.core   | num.tz  | core.global.devs  | core.mail.devs   | core.code.devs   | org.silo   | prima.donnas  | radio.silence  | black.cloud  | missing.links  |   | st.congruence     | communicability  | global.turnover  | code.turnover  |
| 1   | 2013-05  | - 2013-08  | 124  | 68   | 38  | 18   | 0.5484  | 0.3065   | 0.1452   | 3  | 0.0242   | 0  | 0.0000   | 1   | 39  | 31   | 18   | 83   | 0   | 31   | 0  | 114  |   | 500               | 0.6308   | 0.0000   | 0.0000   |
| 2   |  | - 2013-11  | 107  | 81   | 16  | 10   | 0.7570  | 0.1495   | 0.0935   | 1  | 0.0093   | 0  | 0.0000   | 1   | 35  | 34   | 6  | 5  | 0   | 47   | 0  | 7  | 0.2   | 222               | 0.8974   | 0.5714   | 0.8780   |
| 3   | 2013-11  | - 2014-02  | 158  | 105  | 39  | 14   | 0.6646  | 0.2468   | 0.0886   | 2  | 0.0127   | 1  | 0.0189   | 1   | 47  | 43   | 11   | 27   | 0   | 58   | 0  | 30   | 0.1   | 176               | 0.8402   | 0.3925   | 0.2278   |
| 4   | 2014-02  | -2014-05   | 195  | 136  | 46  | 13   | 0.6974  | 0.2359   | 0.0667   | 6  | 0.0308   | 0  | 0.0000   | 1   | 52  | 45   | 14   | 48   | 0   | 89   | 0  | 51   | 0.0   | 377               | 0.8116   | 0.5382   | 0.5536   |
| 5   | 2014-05  | - 2014-08  | 114  | 75   | 30  | 9  | 0.6579  | 0.2632   | 0.0789   | 3  | 0.0263   | 1  | 0.0256   | 1   | 34  | 30   | 11   | 33   | 0   | 36   | 0  | 42   | 0.0   | 000               | 0.7271   | 0.9256   | 0.7959   |
| 6   | 2014-08  | - 2014-11  | 104  | 66   | 27  | 11   | 0.6346  | 0.2596   | 0.1058   | 6  | 0.0577   | 1  | 0.0263   | 1   | 33  | 28   | 10   | 33   | 0   | 30   | 0  | 35   | 0.0   | 278               | 0.7317   | 0.6881   | 0.6234   |
| 7   | 2014-11  | - 2015-02  | 159  | 114  | 30  | 15   | 0.7170  | 0.1887   | 0.0943   | 10   | 0.0629   | 1  | 0.0222   | 1   | 51  | 42   | 15   | 79   | 0   | 69   | 0  | 87   | 0.0   | 842               | 0.6302   | 0.4791   | 0.6024   |
| 8   | 2015-02  | - 2015-05  | 125  | 82   | 29  | 14   | 0.6560  | 0.2320   | 0.1120   | 5  | 0.0400   | 1  | 0.0233   | 1   | 37  | 34   | 9  | 22   | 0   | 55   | 1  | 27   | 0.0   | 690               | 0.7979   | 0.7817   | 0.6364   |
| 9   | 2015-05  | - 2015-08  | 112  | 61   | 37  | 14   | 0.5446  | 0.3304   | 0.1250   | 2  | 0.0179   | 1  | 0.0196   | 1   | 32  | 28   | 13   | 17   | 0   | 34   | 0  | 22   | 0.1   | 852               | 0.9027   | 0.6667   | 0.5106   |
| 10  | 2015-08  | - 2015-11  | 98   | 60   | 27  | 11   | 0.6122  | 0.2755   | 0.1122   | 4  | 0.0408   | 0  | 0.0000   | 1   | 26  | 26   | 3  | 4  | 0   | 43   | 0  | 6  | 0.2   | 500               | 0.8816   | 0.7905   | 0.8315   |
| 11  | 2015-11  | - 2016-02  | 134  | 79   | 39  | 16   | 0.5896  | 0.2910   | 0.1194   | 5  | 0.0373   | 0  | 0.0000   | 1   | 40  | 34   | 12   | 25   | 0   | 46   | 1  | 25   | 0.0   | 385               | 0.8357   | 0.5690   | 0.5161   |
| 12  | 2016-02  | - 2016-05  | 196  | 135  | 39  | 22   | 0.6888  | 0.1990   | 0.1122   | 11   | 0.0561   | 3  | 0.0492   | 1   | 53  | 49   | 16   | 24   | 0   | 83   | 1  | 28   | 0.0   | 968               | 0.8715   | 0.4970   | 0.6207   |
|   | core.global.turnover   | l.turnover   | .code.turnover   |  | ratio.smelly.quitters                                       | lly devs   | r)  | ICK  | ¥  | ķ  | .centr   | ***************************************  | tr   |   | pc  |  |  |  | <del></del>   |  |  | ore.devs   | ore.devs                                    | ore.devs          | only.core  | code.only.core   | ml.code.core   |
|   |  | core.mail.   | core.code  |  |   | ratio smelly devs  |   | global.truck   | mail.truck   | code.truck   | closeness.c  | hotmoon poor   |  | )   | global.mod  | )  | mail.mod   |  | code.mod  |  | density  | mail.only.core.devs                                      | code.only.core.devs                         | ml.code.core.devs | ratio.mail   | ratio.   | <br> ratio.ml.c  |
|   | 0.0000   | 0.0000.0   | 0.0000.0   | 0.00   | 000   | 0.540  | 3 0.685   | 55 0.639   | 信<br>田<br>05 0.67  | 36   | closeness<br>0.0185  | 0.3880   | 0.5580   | ) (   | [reqola<br>0.5499   | 0.:  | Hari<br>3663   |  | 016   | 0.05   | 518  | 25   | 12  | 9 ml.code.cc      | ratio.mail   | 0.2791   | 0.1395   |
| $\frac{1}{2}$                               | $0.0000 \\ 0.4595$   | 0.0000<br>0.3385   | 0.0000<br>1.2500   | 0.53   | 000   | 0.5403   | $ \begin{array}{ccc}     & 0.685 \\     & 0.672 \end{array} $   | 55 0.639<br>29 0.626   | ∏<br>E<br>95 0.67<br>64 0.76   | 86<br>92   | Selection of the select | 0.3880   | 0.5580   | ) (   | [reqola<br>]<br>].5499<br>].3223  | 0.3  | 3663<br>1541   | 0.2  | 016<br>346  | 0.05   | 518<br>513   | 25<br>30   | 12<br>2                                     |                   | ratio.mail.  | 0.2791<br>0.0556   | 0.1395<br>0.1111   |
| $\begin{array}{c} -1 \\ 2 \\ 3 \end{array}$ | 0.0000<br>0.4595<br>0.3659   | 0.0000<br>0.3385<br>0.4156   | $ \begin{array}{r}                                     $                               | $0.53 \\ 0.55$   | 000<br>303<br>577   | 0.5403<br>0.4860<br>0.4620   | $ \begin{array}{ccc} 3 & 0.685 \\ 0 & 0.672 \\ 0 & 0.702 \end{array} $  | 0.639<br>0.626<br>0.638  | 75 0.676<br>05 0.76<br>05 0.76<br>05 0.79  | 86<br>92<br>25                                     | 0.0185<br>0.0225<br>0.0110   | 0.3880<br>0.5350<br>0.4350   | 0.5580<br>0.6845<br>0.5578   | ) (0<br>5 (0<br>8 (0  | [reqolar<br>0.5499<br>0.3223<br>0.5676  | 0.   | 3663<br>1541<br>3023   | 0.20   | 016<br>346<br>912   | 0.05 $0.02$  | 518<br>513<br>282  | 25<br>30<br>38   | 12<br>2<br>6                                |                   | 0.5814<br>0.8333<br>0.7755   | 0.2791<br>0.0556<br>0.1224   | 0.1395<br>0.1111<br>0.1020   |
|   | 0.0000<br>0.4595<br>0.3659<br>0.4040   | 0.0000<br>0.3385<br>0.4156<br>0.4545   | 0.0000<br>1.2500<br>0.3529<br>0.5600   | $0.53 \\ 0.55 \\ 0.37$   | 000<br>303<br>577<br>789                                    | 0.5403<br>0.4860<br>0.4620<br>0.5840   | 3 0.685<br>0 0.672<br>0 0.702<br>6 0.733  | 0.639<br>0.626<br>0.638<br>0.638<br>0.698  | 95 0.676<br>34 0.76<br>37 0.79<br>80 0.76  | 86<br>92<br>25<br>27                               | 0.0185<br>0.0225<br>0.0110<br>0.0104   | 0.3880 $0.5350$ $0.4350$ $0.3014$  | 0.5580<br>0.6845<br>0.5578<br>0.4457   | ) (0<br>6 (0<br>8 (0  | 7.5499<br>0.3223<br>0.5676<br>0.2917  | 0.   | 3663<br>1541<br>3023<br>2197   | 0.25 $0.5$ $0.3$                                     | 016<br>346<br>912<br>634  | 0.05 $0.02$ $0.02$                                   | 518<br>513<br>282<br>285   | 25<br>30<br>38<br>41                                     | 12<br>2                                     |                   | 0.5814<br>0.8333<br>0.7755<br>0.7455   | 0.2791<br>0.0556<br>0.1224<br>0.1818   | 0.1395<br>0.1111<br>0.1020<br>0.0727   |
|   | 0.0000<br>0.4595<br>0.3659<br>0.4040<br>0.6279   | 0.0000<br>0.3385<br>0.4156<br>0.4545<br>0.5867   | 0.0000<br>1.2500<br>0.3529<br>0.5600<br>0.5600   | 0.53 $0.55$ $0.37$ $0.58$  | 000<br>303<br>577<br>789<br>374                             | 0.5403<br>0.4860<br>0.4620<br>0.5840<br>0.5000   | 3 0.685<br>0 0.672<br>0 0.702<br>6 0.733<br>0 0.701   | 55 0.639<br>29 0.626<br>25 0.638<br>33 0.698<br>8 0.642  | 95 0.676<br>64 0.76<br>87 0.79<br>80 0.76<br>29 0.71   | 86<br>92<br>25<br>27<br>79                         | 0.0185<br>0.0225<br>0.0110<br>0.0104<br>0.0203   | 0.3880<br>0.5350<br>0.4350<br>0.3014<br>0.3025   | 0.5580<br>0.6845<br>0.5578<br>4 0.4457<br>6 0.4096   | 0   | 7.5499<br>0.5499<br>0.3223<br>0.5676<br>0.2917<br>0.5134  | 0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000                                     | 3663<br>1541<br>3023<br>2197<br>2570   | 0.2<br>0.5<br>0.3<br>0.3                             | 016<br>346<br>912<br>634<br>045   | 0.05 $0.02$ $0.02$ $0.04$                            | 518<br>513<br>282<br>285<br>118                                    | 25<br>30<br>38<br>41<br>24                               | 12<br>2<br>6                                |                   | 0.5814<br>0.8333<br>0.7755<br>0.7455<br>0.6857   | 0.2791<br>0.0556<br>0.1224<br>0.1818<br>0.1429   | 0.1395<br>0.1111<br>0.1020<br>0.0727<br>0.1714   |
| 3 4   | 0.0000<br>0.4595<br>0.3659<br>0.4040<br>0.6279<br>0.4179   | 0.0000<br>0.3385<br>0.4156<br>0.4545<br>0.5867<br>0.4138   | 0.0000<br>1.2500<br>0.3529<br>0.5600<br>0.5600<br>0.5714                               | 0.53<br>0.55<br>0.37<br>0.58<br>0.41                                 | 000<br>303<br>577<br>789<br>874                             | 0.5403<br>0.4860<br>0.4620<br>0.5840<br>0.5000<br>0.4904   | 3 0.685<br>0 0.672<br>0 0.702<br>6 0.733<br>0 0.701<br>4 0.682  | 55 0.639<br>29 0.626<br>25 0.638<br>33 0.698<br>8 0.642<br>27 0.636  | 95 0.676<br>64 0.766<br>87 0.796<br>80 0.766<br>99 0.71<br>64 0.73   | 86<br>92<br>25<br>27<br>79                         | 0.0185<br>0.0225<br>0.0110<br>0.0104<br>0.0203<br>0.0211   | 0.3880<br>0.5350<br>0.4350<br>0.3014<br>0.3025<br>0.3258   | 0.5580<br>0.6845<br>0.5578<br>1 0.4457<br>6 0.4096<br>3 0.4987   | 0 0<br>6 0<br>8 0<br>7 0<br>6 0   | 0.5499<br>0.3223<br>0.5676<br>0.2917<br>0.5134<br>0.4729  | 0 0.3<br>0 0.3<br>0 0.3<br>0 0.4<br>0 0.4<br>0 0.5                                     | 3663<br>1541<br>3023<br>2197<br>2570<br>3055                                 | 0.26 $0.56$ $0.36$ $0.36$ $0.36$                     | 016<br>346<br>912<br>634<br>045<br>947                                    | 0.05<br>0.02<br>0.02<br>0.04<br>0.05                 | 518<br>513<br>282<br>285<br>118<br>547                             | 25<br>30<br>38<br>41<br>24<br>25                         | 12<br>2<br>6                                |                   | 0.5814<br>0.8333<br>0.7755<br>0.6857<br>0.7143   | 0.2791<br>0.0556<br>0.1224<br>0.1818<br>0.1429<br>0.2000   | 0.1395<br>0.1111<br>0.1020<br>0.0727<br>0.1714<br>0.0857   |
| 3<br>4<br>5                                 | 0.0000<br>0.4595<br>0.3659<br>0.4040<br>0.6279<br>0.4179<br>0.2143                               | 0.0000<br>0.3385<br>0.4156<br>0.4545<br>0.5867<br>0.4138<br>0.2286   | 0.0000<br>1.2500<br>0.3529<br>0.5600<br>0.5714<br>0.4000                               | 0.53<br>0.55<br>0.37<br>0.58<br>0.41<br>0.50                         | 000<br>303<br>577<br>789<br>374<br>133                      | 0.5403<br>0.4860<br>0.4620<br>0.5840<br>0.5000<br>0.4904<br>0.6103                               | 3 0.685<br>0 0.672<br>0 0.702<br>6 0.733<br>0 0.701<br>4 0.682<br>1 0.679   | 5 0.639<br>29 0.620<br>25 0.638<br>33 0.698<br>8 0.642<br>27 0.630<br>92 0.674   | 95 0.676<br>64 0.76<br>87 0.79<br>80 0.76<br>29 0.71<br>64 0.66  | 86<br>92<br>25<br>27<br>79<br>38                   | 0.0185<br>0.0225<br>0.0110<br>0.0104<br>0.0203<br>0.0211<br>0.0347   | 0.3880<br>0.5350<br>0.4350<br>0.3014<br>0.3028<br>0.3258<br>0.4059                               | 0.5580<br>0.6845<br>0.5578<br>4 0.4457<br>6 0.4096<br>3 0.4987<br>0 0.4544   | 0 0<br>6 0<br>8 0<br>7 0<br>6 0<br>7 0  |   | 0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3                                     | 3663<br>1541<br>3023<br>2197<br>2570<br>3055<br>1767                         | 0.20<br>0.50<br>0.30<br>0.30<br>0.30<br>0.31         | 016<br>346<br>912<br>634<br>045<br>947<br>264                             | 0.05<br>0.02<br>0.02<br>0.04<br>0.05<br>0.03         | 518<br>513<br>282<br>285<br>518<br>547<br>330                      | 25<br>30<br>38<br>41<br>24<br>25<br>36                   | 12<br>2<br>6                                |                   | 0.5814<br>0.8333<br>0.7755<br>0.7455<br>0.6857<br>0.7143<br>0.7059                               | 0.2791<br>0.0556<br>0.1224<br>0.1818<br>0.1429<br>0.2000<br>0.1765                               | 0.1395<br>0.1111<br>0.1020<br>0.0727<br>0.1714<br>0.0857<br>0.1176                               |
| 3<br>4<br>5                                 | 0.0000<br>0.4595<br>0.3659<br>0.4040<br>0.6279<br>0.4179<br>0.2143<br>0.6591                     | 0.0000<br>0.3385<br>0.4156<br>0.4545<br>0.5867<br>0.4138<br>0.2286<br>0.6316                               | 0.0000<br>1.2500<br>0.3529<br>0.5600<br>0.5714<br>0.4000<br>0.8333                     | 0.53<br>0.55<br>0.37<br>0.58<br>0.41<br>0.50                         | 000<br>303<br>577<br>789<br>374<br>133<br>079               | 0.5403<br>0.4860<br>0.4620<br>0.5840<br>0.5000<br>0.4904<br>0.6103<br>0.5520                     | 3 0.685<br>0 0.672<br>0 0.702<br>6 0.733<br>0 0.701<br>4 0.682<br>1 0.679<br>0 0.704                                  | 55 0.639<br>99 0.620<br>95 0.638<br>33 0.698<br>8 0.642<br>17 0.630<br>10 0.644<br>10 0.644                                      | 0.676<br>  0.766<br>  0.766<br>  0.766<br>  0.766<br>  0.766<br>  0.736<br>  0.666<br>  0.796  | 86<br>92<br>25<br>27<br>79<br>38<br>37             | 0.0185<br>0.0225<br>0.0110<br>0.0104<br>0.0203<br>0.0211<br>0.0347<br>0.0156   | 0.3880<br>0.5350<br>0.4350<br>0.3014<br>0.3025<br>0.3258<br>0.4059<br>0.2390                     | 0.5580<br>0.6845<br>0.5578<br>4 0.4457<br>6 0.4096<br>3 0.4987<br>0 0.4544<br>0 0.4135                                   | 0 0<br>6 0<br>8 0<br>7 0<br>6 0<br>7 0  | .5499<br>0.5499<br>0.5676<br>0.2917<br>0.5134<br>0.4729<br>0.3702                               | 0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3                   | 3663<br>1541<br>3023<br>2197<br>2570<br>3055<br>1767<br>1628                 | 0.26<br>0.56<br>0.36<br>0.36<br>0.36<br>0.32         | 016<br>346<br>912<br>634<br>045<br>947<br>264<br>159                      | 0.05<br>0.02<br>0.02<br>0.04<br>0.05<br>0.03         | 518<br>513<br>282<br>285<br>418<br>547<br>330<br>381               | 25<br>30<br>38<br>41<br>24<br>25<br>36<br>29             | 12<br>2<br>6<br>10<br>5<br>7                |                   | 0.5814<br>0.8333<br>0.7755<br>0.7455<br>0.6857<br>0.7143<br>0.7059<br>0.7632                     | 0.2791<br>0.0556<br>0.1224<br>0.1818<br>0.1429<br>0.2000<br>0.1765<br>0.1053                     | 0.1395<br>0.1111<br>0.1020<br>0.0727<br>0.1714<br>0.0857<br>0.1176<br>0.1316                     |
| 3<br>4<br>5<br>6<br>7                       | 0.0000<br>0.4595<br>0.3659<br>0.4040<br>0.6279<br>0.4179<br>0.2143<br>0.6591<br>0.5217           | 0.0000<br>0.3385<br>0.4156<br>0.4545<br>0.5867<br>0.4138<br>0.2286<br>0.6316<br>0.5161                     | 0.0000<br>1.2500<br>0.3529<br>0.5600<br>0.5714<br>0.4000<br>0.8333<br>0.3636           | 0.53<br>0.55<br>0.37<br>0.58<br>0.41<br>0.50<br>0.59                 | 000<br>303<br>577<br>789<br>374<br>133<br>079<br>946        | 0.5403<br>0.4860<br>0.4620<br>0.5840<br>0.5000<br>0.4904<br>0.6103<br>0.5520<br>0.4733           | 3 0.685<br>0 0.672<br>0 0.702<br>6 0.733<br>0 0.701<br>4 0.682<br>1 0.679<br>0 0.704<br>2 0.714                       | 0.639<br>0.620<br>0.630<br>0.630<br>0.642<br>0.642<br>0.644<br>0.644<br>0.643  | 0.676<br>  0.766<br>  0.766<br>  0.766<br>  0.766<br>  0.766<br>  0.736<br>  0.666<br>  0.796<br>  0.744   | 86<br>92<br>25<br>27<br>79<br>68<br>67<br>77       | 0.0185<br>0.0225<br>0.0110<br>0.0104<br>0.0203<br>0.0211<br>0.0347<br>0.0156<br>0.0141   | 0.3880<br>0.5350<br>0.4350<br>0.3014<br>0.3028<br>0.3258<br>0.4059<br>0.2390<br>0.2291           | 0.5580<br>0.6845<br>0.5578<br>4 0.4457<br>6 0.4096<br>8 0.4987<br>0 0.4544<br>0 0.4135<br>0.3460                         | 0 0<br>6 0<br>8 0<br>6 0<br>6 0<br>4 0<br>6 0   | .3702<br>0.5499<br>0.3223<br>0.5676<br>0.2917<br>0.5134<br>0.4729<br>0.3702<br>0.3312<br>0.4516 | 0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3          | 3663<br>1541<br>3023<br>2197<br>2570<br>3055<br>1767<br>1628<br>1318         | 0.2<br>0.5<br>0.3<br>0.3<br>0.3<br>0.3<br>0.2<br>0.2 | 016<br>346<br>912<br>634<br>045<br>947<br>264<br>159<br>342               | 0.05<br>0.02<br>0.02<br>0.04<br>0.05<br>0.03<br>0.03 | 518<br>513<br>282<br>285<br>418<br>547<br>330<br>381<br>323        | 25<br>30<br>38<br>41<br>24<br>25<br>36<br>29<br>21       | 12<br>2<br>6<br>10<br>5<br>7<br>9           |                   | 0.5814<br>0.5814<br>0.8333<br>0.7755<br>0.7455<br>0.6857<br>0.7143<br>0.7059<br>0.7632<br>0.6176 | 0.2791<br>0.0556<br>0.1224<br>0.1818<br>0.1429<br>0.2000<br>0.1765<br>0.1053<br>0.1765           | 0.1395<br>0.1111<br>0.1020<br>0.0727<br>0.1714<br>0.0857<br>0.1176<br>0.1316<br>0.2059           |
| 3<br>4<br>5<br>6<br>7<br>8                  | 0.0000<br>0.4595<br>0.3659<br>0.4040<br>0.6279<br>0.4179<br>0.2143<br>0.6591<br>0.5217<br>0.5862 | 0.0000<br>0.3385<br>0.4156<br>0.4545<br>0.5867<br>0.4138<br>0.2286<br>0.6316<br>0.5161<br>0.4815           | 0.0000<br>1.2500<br>0.3529<br>0.5600<br>0.5714<br>0.4000<br>0.8333<br>0.3636<br>1.3750 | 0.53<br>0.55<br>0.37<br>0.58<br>0.41<br>0.50<br>0.59<br>0.51<br>0.40 | 000<br>803<br>577<br>789<br>874<br>133<br>079<br>946<br>190 | 0.5403<br>0.4860<br>0.4620<br>0.5840<br>0.5000<br>0.4904<br>0.6103<br>0.5520<br>0.4732<br>0.4790 | 3 0.685<br>0 0.672<br>0 0.702<br>6 0.733<br>0 0.701<br>4 0.682<br>1 0.679<br>0 0.704<br>2 0.714<br>6 0.734            | 0.639<br>0.620<br>0.5 0.638<br>0.642<br>0.638<br>0.642<br>0.674<br>0.634<br>0.620<br>0.634<br>0.636                              | Section   Sect | 86<br>92<br>25<br>27<br>79<br>68<br>67<br>77<br>51 | 0.0185<br>0.0225<br>0.0110<br>0.0104<br>0.0203<br>0.0211<br>0.0347<br>0.0156<br>0.0141<br>0.0158   | 0.3880<br>0.5350<br>0.4350<br>0.3014<br>0.3029<br>0.3258<br>0.4059<br>0.2390<br>0.2297<br>0.3589 | 0.5580<br>0.6845<br>0.5578<br>1.04457<br>2.04457<br>2.04096<br>3.04987<br>0.4135<br>0.3460<br>0.4807                     |   | 2.5<br>0.5499<br>0.3223<br>0.5676<br>0.2917<br>0.5134<br>0.4729<br>0.3702<br>0.4516<br>0.3318   | 0.5<br>0.5<br>0.5<br>0.5<br>0.5<br>0.5<br>0.5<br>0.5<br>0.5<br>0.5                     | 3663<br>1541<br>3023<br>2197<br>2570<br>3055<br>1767<br>1628<br>1318<br>2132 | 0.2<br>0.5<br>0.3<br>0.3<br>0.3<br>0.3<br>0.2<br>0.2 | 016<br>346<br>912<br>634<br>045<br>947<br>264<br>159<br>342               | 0.05<br>0.02<br>0.02<br>0.04<br>0.05<br>0.03         | 518<br>513<br>282<br>285<br>418<br>547<br>330<br>381<br>323        | 25<br>30<br>38<br>41<br>24<br>25<br>36<br>29<br>21<br>23 | 12<br>2<br>6<br>10<br>5<br>7<br>9<br>4      |                   | 0.5814<br>0.8333<br>0.7755<br>0.7455<br>0.6857<br>0.7143<br>0.7059<br>0.7632<br>0.6176<br>0.8846 | 0.2791<br>0.0556<br>0.1224<br>0.1818<br>0.1429<br>0.2000<br>0.1765<br>0.1053<br>0.1765<br>0.0000 | 0.1395<br>0.1111<br>0.1020<br>0.0727<br>0.1714<br>0.0857<br>0.1176<br>0.1316<br>0.2059<br>0.1154 |
| 3<br>4<br>5<br>6<br>7<br>8<br>9             | 0.0000<br>0.4595<br>0.3659<br>0.4040<br>0.6279<br>0.4179<br>0.2143<br>0.6591<br>0.5217           | 0.0000<br>0.3385<br>0.4156<br>0.4545<br>0.5867<br>0.4138<br>0.2286<br>0.6316<br>0.5161<br>0.4815<br>0.3667 | 0.0000<br>1.2500<br>0.3529<br>0.5600<br>0.5714<br>0.4000<br>0.8333<br>0.3636           | 0.53<br>0.55<br>0.37<br>0.58<br>0.41<br>0.50<br>0.59                 | 000<br>803<br>577<br>789<br>874<br>133<br>079<br>946<br>190 | 0.5403<br>0.4860<br>0.4620<br>0.5840<br>0.5000<br>0.4904<br>0.6103<br>0.5520<br>0.4733           | 3 0.685<br>0 0.672<br>0 0.702<br>6 0.733<br>0 0.701<br>4 0.682<br>1 0.679<br>0 0.704<br>2 0.714<br>6 0.734<br>1 0.701 | 55 0.633<br>29 0.620<br>55 0.633<br>33 0.698<br>88 0.642<br>27 0.636<br>02 0.674<br>40 0.644<br>43 0.620<br>47 0.633<br>55 0.642 | Section   Sect | 86<br>92<br>25<br>27<br>79<br>68<br>67<br>07<br>51 | 0.0185<br>0.0225<br>0.0110<br>0.0104<br>0.0203<br>0.0211<br>0.0347<br>0.0156<br>0.0141<br>0.0158<br>0.0133   | 0.3880<br>0.5350<br>0.4350<br>0.3014<br>0.3028<br>0.3258<br>0.4059<br>0.2390<br>0.2291           | 0.5580<br>0.6845<br>0.5578<br>1.04457<br>2.04096<br>3.04987<br>0.4135<br>0.3460<br>0.4807<br>1.0580<br>0.4987<br>0.44301 | ) (0<br>6 (0<br>6 (0<br>6 (0) (0<br>7 (0) (0<br>7 (0) (0) (0) (0) (0) (0) (0) (0) (0) (0) | .3702<br>0.5499<br>0.3223<br>0.5676<br>0.2917<br>0.5134<br>0.4729<br>0.3702<br>0.3312<br>0.4516 | 0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3<br>0 0.3 | 3663<br>1541<br>3023<br>2197<br>2570<br>3055<br>1767<br>1628<br>1318         | 0.2<br>0.5<br>0.3<br>0.3<br>0.3<br>0.3<br>0.2<br>0.2 | 016<br>346<br>912<br>634<br>045<br>947<br>264<br>159<br>342<br>007<br>763 | 0.05<br>0.02<br>0.02<br>0.04<br>0.05<br>0.03<br>0.03 | 518<br>513<br>282<br>285<br>418<br>547<br>330<br>381<br>323<br>347 | 25<br>30<br>38<br>41<br>24<br>25<br>36<br>29<br>21       | 12<br>2<br>6<br>10<br>5<br>7<br>9<br>4<br>6 |                   | 0.5814<br>0.5814<br>0.8333<br>0.7755<br>0.7455<br>0.6857<br>0.7143<br>0.7059<br>0.7632<br>0.6176 | 0.2791<br>0.0556<br>0.1224<br>0.1818<br>0.1429<br>0.2000<br>0.1765<br>0.1053<br>0.1765           | 0.1395<br>0.1111<br>0.1020<br>0.0727<br>0.1714<br>0.0857<br>0.1176<br>0.1316<br>0.2059           |

|               |                 |                      |                        |              | (                 | Comr                | nunit             | ty sr          | nells           | : Pe                | arson                | 's                | corr             | elati          | on (           | Sym      | рy           | )             |             |               |                      |                      |                    |                       |
|---------------|-----------------|----------------------|------------------------|--------------|-------------------|---------------------|-------------------|----------------|-----------------|---------------------|----------------------|-------------------|------------------|----------------|----------------|----------|--------------|---------------|-------------|---------------|----------------------|----------------------|--------------------|-----------------------|
|               | devs            | ml.only.devs         | ${\rm code.only.devs}$ | ml.code.devs | perc.ml.only.devs | perc.code.only.devs | perc.ml.code.devs | sponsored.devs | ratio.sponsored | sponsored.core.devs | ratio.sponsored.core | num.tz            | core.global.devs | core.mail.devs | core.code.devs | org.silo | prima.donnas | radio.silence | black.cloud | missing.links | st.congruence        | communicability      | global.turnover    | ${\rm code.turnover}$ |
| org.silo      | 0.33            | 0.26                 | 0.36                   | 0.34         | -0.08             | 0.07                | 0.10              | 0.35           | 0.28            | -0.07               | -0.04                | -                 | 0.48             | 0.25           | 0.76           | -        | -            | 0.12          | -0.16       | 0.98          | -0.56                | -0.89                | -0.32              | -0.28                 |
| prima.donnas  | -               | -                    | -                      | -            | -                 | -                   | -                 | -              | -               | -                   | -                    | -                 | -                | -              | -              | -        | -            | -             | -           | -             | -                    | -                    | -                  | -                     |
| radio.silence | 0.91            | 0.96                 | 0.43                   | 0.41         | 0.61              | -0.56               | -0.50             | 0.63           | 0.28            | 0.35                | 0.23                 | -                 | 0.85             | 0.91           | 0.28           | 0.12     | -            | -             | 0.25        | 0.02          | -0.09                | 0.14                 | -0.59              | -0.24                 |
| black.cloud   | 0.27            | 0.19                 | 0.23                   | 0.68         | -0.12             | -0.03               | 0.49              | 0.40           | 0.31            | 0.38                | 0.30                 | -                 | 0.23             | 0.27           | 0.24           | -0.16    | -            | 0.25          | -           | -0.17         | -0.27                | 0.18                 | -0.05              | -0.10                 |
| missing.links | 0.24            | 0.16                 | 0.33                   | 0.35         | -0.17             | 0.13                | 0.21              | 0.25           | 0.19            | -0.09               | -0.07                | -                 | 0.39             | 0.16           | 0.75           | 0.98     | -            | 0.02          | -0.17       | -             | -0.51                | -0.89                | -0.26              | -0.25                 |
|               |                 | core.global.turnover | gore mail furnower     |              | core.code.tu      | ratio.smelly.d      | globa             |                | '               |                     | closeness.cen        | Detweemiess.centr | degree.centr     | global.mod     | mail.mod       | code.mod | density      | ) -           | эроэ        | ml.c          | ratio.mail.only.core | ratio.code.only.core | ratio.ml.code.core | _                     |
|               | $_{ m rg.silo}$ | -0.60                | -0.41                  | -0.5         | 0.0-              | 8 0.67              | -0.34             | 0.40           | -0.7            | 4 	 0.4             | 5  0.06              | 4 -               | -0.02            | 0.27           | 0.29           | 0.45     | 0.14         | 4 0.19        | 9 0.80      | 0.32          | -0.62                | 0.75                 | -0.07              |                       |
| prima.d       | onnas           | -                    | -                      |              | -                 |                     | -                 | -              |                 | -                   | -                    | -                 | -                | -              | -              | -        |              | -             |             | -             | -                    | -                    | -                  |                       |

radio.silence

black.cloud

missing.links

-0.46

0.01

-0.54

-0.33

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-0.36

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-0.35 0.30

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-0.45

-0.08

0.03

## Community smells: Pearson's correlation - p-values ( Sympy )

|             |           |      |                      |                |              | IIII (AI              |                     |                   |                |                 |                     |                      |        | auro             |                | ٠٠ ٢     | AI GO          | ~ ( ~                    | $J \cdots P$        | J                   |                   |                      |                      |                    |               |
|-------------|-----------|------|----------------------|----------------|--------------|-----------------------|---------------------|-------------------|----------------|-----------------|---------------------|----------------------|--------|------------------|----------------|----------|----------------|--------------------------|---------------------|---------------------|-------------------|----------------------|----------------------|--------------------|---------------|
|             |           | devs | ml.only.devs         | code.only.devs | ml.code.devs | perc.ml.only.devs     | perc.code.only.devs | perc.ml.code.devs | sponsored.devs | ratio.sponsored | sponsored.core.devs | ratio.sponsored.core | num.tz | core.global.devs | core.mail.devs | -        | core.code.devs | org.silo<br>prima.donnas | radio.silence       | black.cloud         | missing.links     | st.congruence        | communicability      | global.turnover    | code.turnover |
| org.s       | silo 0.   | .30  | 0.42                 | 0.25           | 0.28         | 0.80                  | 0.84                | 0.76              | 0.27           | 0.38            | 0.83                | 0.91                 | -      | 0.11             | 0.44           | 0.0      | 0              |                          | 0.70                | 0.64                | 0.00              | 0.06                 | 0.00                 | 0.34               | 0.40          |
| prima.donr  | nas       | -    | -                    | -              | -            | -                     | -                   | -                 | -              | -               | -                   | -                    | -      | -                | -              |          | -              |                          | -                   | -                   | -                 | -                    | -                    | -                  | -             |
| radio.siler | nce $0$ . | .00  | 0.00                 | 0.17           | 0.18         | 0.04                  | 0.06                | 0.09              | 0.03           | 0.37            | 0.27                | 0.47                 | -      | 0.00             | 0.00           | 0.3      | 7 0.           | 70 -                     | -                   | 0.45                | 0.95              | 0.78                 | 0.67                 | 0.06               | 0.48          |
| black.clo   | 0.        | 42   | 0.57                 | 0.49           | 0.02         | 0.72                  | 0.93                | 0.12              | 0.22           | 0.35            | 0.25                | 0.37                 | -      | 0.50             | 0.42           | 0.4      | 8 0.0          | 64 -                     | 0.45                | -                   | 0.61              | 0.43                 | 0.60                 | 0.89               | 0.78          |
| missing.lir | nks 0.    | 45   | 0.62                 | 0.30           | 0.26         | 0.59                  | 0.68                | 0.52              | 0.44           | 0.56            | 0.77                | 0.83                 | -      | 0.21             | 0.63           | 0.0      | 1 0.           | - 00                     | 0.95                | 0.61                | -                 | 0.09                 | 0.00                 | 0.44               | 0.47          |
|             |           |      | core.global.turnover |                |              | ratio.smelly.quitters | m ratio.smelly.devs | global.truck      | mail.truck     | code.truck      | closeness.centr     |                      |        | degree.centr     | global.mod     | mail.mod | code.mod       | density                  | mail.only.core.devs | code.only.core.devs | ml.code.core.devs | ratio.mail.only.core | ratio.code.only.core | ratio.ml.code.core |               |
|             | org.      |      | 0.05                 | 0.21           | 0.12         | 0.82                  | 0.02                | 0.28              | 0.20           | 0.01            | 0.14                | 0.91                 | 0.     | 95 0             | .40            | 0.36     | 0.15           | 0.67                     | 0.55                | 0.00                | 0.31              | 0.03                 | 0.01                 | 0.84               |               |
| _           | ima.don   |      | -                    | -              | -            | -                     | -                   | -                 | -              | -               | -                   | -                    |        | -                | -              | -        | -              | -                        | -                   | -                   | -                 | -                    | -                    | -                  |               |
|             | adio.sile |      | 0.16                 | 0.32           | 0.76         | 0.60                  | 0.02                | 0.15              | 0.00           | 0.94            | 0.55                | 0.85                 | 0.     |                  |                | ).87     | 0.74           | 0.02                     | 0.00                | 0.36                | 0.67              | 0.41                 | 0.83                 | 0.14               |               |
|             | black.cl  |      | 0.98                 | 0.78           | 0.46         | 0.59                  | 0.58                | 0.56              | 0.52           | 0.90            | 0.29                | 0.47                 | 0.     |                  |                | 0.31     | 0.17           | 0.26                     | 0.46                | 0.54                | 0.58              | 0.83                 | 0.69                 | 0.81               |               |
| m:          | issing.li | nks  | 0.09                 | 0.28           | 0.13         | 0.99                  | 0.04                | 0.27              | 0.34           | 0.01            | 0.19                | 0.90                 | 0.     | 95 0             | .30            | 0.30     | 0.16           | 0.50                     | 0.77                | 0.00                | 0.25              | 0.02                 | 0.01                 | 0.92               |               |

## Community smells: Spearman's correlation (Sympy)

|               |        |                      |                    |                    |                     | <b>711111</b>       | uming             | SIII           | CIID.           | SPC.                | <b>41 1110</b>       | LII K             |                  | ···            | 01011          | $(D_{J})$ | пру          | ,             |             |                    |                      |                 |                 |                          |
|---------------|--------|----------------------|--------------------|--------------------|---------------------|---------------------|-------------------|----------------|-----------------|---------------------|----------------------|-------------------|------------------|----------------|----------------|-----------|--------------|---------------|-------------|--------------------|----------------------|-----------------|-----------------|--------------------------|
|               | devs   | ml.only.devs         | code.only.devs     | m ml.code.devs     | m perc.ml.only.devs | perc.code.only.devs | perc.ml.code.devs | sponsored.devs | ratio.sponsored | sponsored.core.devs | ratio.sponsored.core | num.tz            | core.global.devs | core.mail.devs | core.code.devs | org.silo  | prima.donnas | radio.silence | black.cloud | missing.links      | ${ m st.congruence}$ | communicability | global.turnover | code.turnover            |
| org.silo      | 0.44   | 0.32                 | 0.42               | 0.27               | 0.10                | 0.03                | -0.20             | 0.35           | 0.19            | 0.02                | 0.08                 | -                 | 0.48             | 0.28           | 0.66           | -         | -            | 0.02          | -0.19       | 0.98               | -0.70                | -0.85           | -0.38           | -0.36                    |
| prima.donnas  | -      | -                    | -                  | -                  | -                   | -                   | -                 | -              | _               | -                   | -                    | -                 | -                | -              | -              | -         | -            | -             | -           | -                  | -                    | -               | -               | -                        |
| radio.silence | 0.80   | 0.91                 | 0.46               | 0.25               | 0.73                | -0.69               | -0.47             | 0.40           | 0.13            | 0.14                | -0.01                | -                 | 0.79             | 0.88           | 0.21           | 0.02      | -            | -             | 0.26        | 0.08               | 0.16                 | 0.08            | -0.70           | -0.22                    |
| black.cloud   | 0.39   | 0.26                 | 0.26               | 0.65               | -0.19               | -0.06               | 0.49              | 0.39           | 0.26            | 0.22                | 0.23                 | -                 | 0.39             | 0.33           | 0.19           | -0.19     | -            | 0.26          | -           | -0.19              | -0.13                | 0.00            | -0.06           | -0.06                    |
| missing.links | 0.47   | 0.38                 | 0.39               | 0.25               | 0.17                | -0.06               | -0.25             | 0.37           | 0.20            | 0.14                | 0.19                 | -                 | 0.50             | 0.32           | 0.67           | 0.98      | -            | 0.08          | -0.19       | -                  | -0.66                | -0.85           | -0.35           | -0.28                    |
|               |        | core.global.turnover | core.mail.turnover | core.code.turnover |                     | ratio.smelly.devs   | global.truck      | mail.truck     | code truck      |                     |                      | Detweetmess.centr | degree.centr     | global.mod     | mail.mod       | code.mod  | density      |               |             | code.omy.core.devs |                      | ratio.code.onlv |                 | Tagio, IIII. code. coi e |
|               | g.silo | -0.48                | -0.21              | -0.49              | -0.13               | 0.54                | -0.34             | 0.53           | -0.70           | 0.09                | 0.0'                 | 7                 | 0.07             | 0.36           | 0.48           | 0.73      | 0.13         | 0.2'          | 7 0.7       | 9 0.19             | 9 -0.59              | 0.72            | 2 -0.11         | L                        |
| prima.do      |        | _                    | -                  | -                  | _                   |                     | -                 | _              |                 |                     | _                    | -                 | <u>-</u>         | _              | _              | -         |              |               | _           |                    |                      |                 |                 | -                        |
| radio.sil     |        | -0.48                | -0.35              | -0.06              |                     |                     | 0.29              | 0.65           | 0.20            |                     |                      |                   | 0.04             | -0.53          | -0.06          | 0.01      | -0.71        |               |             |                    |                      |                 |                 |                          |
| black.c       |        | -0.13                | 0.00               |                    |                     |                     | 0.13              | 0.39           | 0.19            |                     |                      |                   | 0.26             | -0.13          | 0.26           | -0.52     | -0.36        |               |             |                    |                      |                 |                 |                          |
| missing.      | links  | -0.37                | -0.14              | -0.36              | -0.03               | 0.62                | -0.27             | 0.59           | -0.73           | 0.10                | 0.03                 | 2                 | 0.06             | 0.33           | 0.46           | 0.76      | 0.13         | 0.29          | 9 	 0.7     | 5  0.29            | 9 -0.57              | 0.62            | 0.00            | )                        |

## Community smells: Spearman's correlation - p-values ( Sympy )

|            |         |         |                      | •                  | <b>JO1111</b>      | .iiuii                | ity S.              | 111011            | 2. DI          | , car           | man                 | 5 00                 | 11(    | JICCUI           | OII            | P-       | varu           | cs (                     | $\mathcal{O}_{\mathbf{y}}$ $\mathbf{m}$ | $\mathbf{P}\mathbf{y}$ |                   |                      |                      |                    |               |
|------------|---------|---------|----------------------|--------------------|--------------------|-----------------------|---------------------|-------------------|----------------|-----------------|---------------------|----------------------|--------|------------------|----------------|----------|----------------|--------------------------|---|------------------------|-------------------|----------------------|----------------------|--------------------|---------------|
|            |         | devs    | ml.only.devs         | code.only.devs     | ml.code.devs       | perc.ml.only.devs     | perc.code.only.devs | perc.ml.code.devs | sponsored.devs | ratio.sponsored | sponsored.core.devs | ratio.sponsored.core | num.tz | core.global.devs | core mail devs |          | core.code.devs | org.silo<br>prima.donnas | radio.silence                           | black.cloud            | missing.links     | st.congruence        | communicability      | global.turnover    | code.turnover |
| org.s      | silo    | 0.15    | 0.31                 | 0.18               | 0.40               | 0.76                  | 0.92                | 0.53              | 0.26           | 0.56            | 0.94                | 0.80                 | _      | 0.11             | 0.38           | 0.0      |                |                          | 0.94                                    | 0.57                   | 0.00              | 0.01                 | 0.00                 | 0.25               | 0.27          |
| prima.don  |         | _       | _                    | _                  | _                  | _                     | _                   | _                 | _              | _               | _                   | _                    | _      | _                | _              |          | _              |                          | _                                       | _                      | _                 | _                    | _                    | _                  | _             |
| radio.sile |         | 0.00    | 0.00                 | 0.13               | 0.43               | 0.01                  | 0.02                | 0.12              | 0.19           | 0.68            | 0.66                | 0.98                 | -      | 0.00             | 0.00           | 0.5      | 0 0.           | 94 -                     | _                                       | 0.44                   | 0.80              | 0.62                 | 0.82                 | 0.02               | 0.52          |
| black.clc  | oud     | 0.24    | 0.44                 | 0.44               | 0.03               | 0.57                  | 0.85                | 0.13              | 0.24           | 0.44            | 0.52                | 0.49                 | -      | 0.24             | 0.33           | 0.5      | 7 0.           | 57 -                     | 0.44                                    | -                      | 0.57              | 0.71                 | 1.00                 | 0.85               | 0.85          |
| missing.li | nks     | 0.13    | 0.23                 | 0.22               | 0.43               | 0.60                  | 0.87                | 0.44              | 0.24           | 0.54            | 0.67                | 0.56                 | -      | 0.10             | 0.31           | 0.0      | 2 0.           | - 00                     | 0.80                                    | 0.57                   | -                 | 0.02                 | 0.00                 | 0.30               | 0.40          |
|            |         |         | core.global.turnover | core.mail.turnover | core.code.turnover | ratio.smelly.quitters | ratio.smelly.devs   | global.truck      | mail.truck     | code.truck      | closeness.centr     | betweenness.centr    |        | degree.centr     | global.mod     | mail.mod | code.mod       | density                  | mail.only.core.devs                     | code.only.core.devs    | ml.code.core.devs | ratio.mail.only.core | ratio.code.only.core | ratio.ml.code.core |               |
|            | Ol      | rg.silo | 0.13                 | 0.53               | 0.13               | 0.70                  | 0.07                | 0.28              | 0.07           | 0.01            | 0.77                | 0.84                 | 0.     | 82 (             | 0.25           | 0.11     | 0.01           | 0.69                     | 0.39                                    | 0.00                   | 0.56              | 0.04                 | 0.01                 | 0.74               |               |
| -          |         | onnas   | -                    | -                  | -                  | -                     | -                   | -                 | -              | -               | -                   | -                    |        | -                | -              | -        | -              | -                        | -                                       | -                      | -                 | -                    | -                    | -                  |               |
|            |         | ilence  | 0.14                 |                    | 0.86               | 0.82                  | 0.13                | 0.37              | 0.03           | 0.53            | 0.15                | 0.70                 |        |                  |                | 0.87     | 0.97           | 0.01                     | 0.00                                    | 0.53                   | 0.70              | 0.15                 | 0.36                 | 0.33               |               |
|            | black.  |         | 0.71                 | 1.00               | 0.92               | 0.71                  | 0.57                | 0.71              | 0.24           | 0.57            | 0.33                | 0.57                 | 0.     |                  |                | 0.44     | 0.10           | 0.28                     | 0.39                                    | 0.63                   | 0.56              | 0.92                 | 0.85                 | 0.71               |               |
| _ m        | nissing | g.links | 0.26                 | 0.69               | 0.28               | 0.95                  | 0.03                | 0.39              | 0.05           | 0.01            | 0.77                | 0.96                 | 0.     | 85 (             | 0.30           | 0.13     | 0.01           | 0.68                     | 0.36                                    | 0.00                   | 0.37              | 0.05                 | 0.03                 | 1.00               |               |