

|   | Pairwise path length in reference tree | Jaccard distance over extended gene set | WM distance over summary W2V | WM distance over gene symbols W2V | Cosine distance over over summary W2V | Cosine distance over over NCBI summary W2V | Cosine distance over gene symbols W2V | Cosine distance GO MF description W2V | Cosine distance GO CC description W2V | Cosine distance GO BP description W2V | GO-distance (go_type=MF, measure=Wang, combine=BMA) | GO-distance (go_type=CC, measure=Wang, combine=BMA) | GO-distance (go_type=BP, measure=Wang, combine=BMA) | Overlap distance over genes | Overlap distance over gene traits | Minkowski distance (p=2) over genes | Minkowski distance (p=2) over gene traits | Minkowski distance (p=2) over gene trait frequency | Minkowski distance (p=1) over genes | Minkowski distance (p=1) over gene traits | Minkowski distance (p=1) over gene trait frequency | Kappa distance over genes | Kappa distance over gene traits | Jaccard distance over genes | Jaccard distance over gene traits | Cosine distance over gene trait frequency | Random (uniform, (0,1)) |
|---|--|---|------------------------------|-----------------------------------|---------------------------------------|--|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---|---|---|-----------------------------|-----------------------------------|-------------------------------------|---|--|-------------------------------------|---|--|---------------------------|---------------------------------|-----------------------------|-----------------------------------|---|-------------------------|
|   | 0.018                                  | 0.323                                   | 0.423                        | 0.455                             | 0.383                                 | 0.427                                      | -0.194                                | -0.096                                | -0.188                                | -0.151                                | 0.002   | -0.091  | 0.563   | 0.602                       | 0.303                             | 0.238                               | 0.299                                     | 0.191  | 0.15                                | 0.22                                      | 0.388  | 0.144                     | 0.114                           | 0.434                       | 0.196                             | 0.413                                     | 1.0                     |
|   | -0.041                                 | 0.648                                   | 0.817                        | 0.887                             | 0.772                                 | 0.835                                      | 0.196                                 | 0.285                                 | 0.212                                 | 0.112                                 | 0.377   | 0.324   | 0.639   | 0.714                       | 0.784                             | 0.629                               | 0.684                                     | 0.393  | 0.414                               | 0.462                                     | 0.621  | 0.327                     | 0.258                           | 0.859                       | 0.333                             | 1.0                                       | 0.413                   |
|   | -0.031                                 | 0.301                                   | 0.302                        | 0.335                             | 0.28                                  | 0.329                                      | 0.101                                 | 0.105                                 | 0.131                                 | 0.048                                 | 0.129   | 0.167   | 0.196   | 0.251                       | 0.348                             | 0.33                                | 0.491                                     | 0.255  | 0.253                               | 0.393                                     | 0.347  | 0.221                     | 0.853                           | 0.379                       | 1.0                               | 0.333                                     | 0.196                   |
|   | -0.042                                 | 0.763                                   | 0.908                        | 0.939                             | 0.837                                 | 0.886                                      | 0.179                                 | 0.264                                 | 0.201                                 | 0.112                                 | 0.349   | 0.306   | 0.725   | 0.766                       | 0.854                             | 0.665                               | 0.771                                     | 0.387  | 0.447                               | 0.524                                     | 0.817  | 0.425                     | 0.289                           | 1.0                         | 0.379                             | 0.859                                     | 0.434                   |
|   | -0.002                                 | 0.203                                   | 0.206                        | 0.229                             | 0.185                                 | 0.213                                      | 0.118                                 | 0.107                                 | 0.123                                 | 0.042                                 | 0.102   | 0.127   | 0.084   | 0.128                       | 0.295                             | 0.37                                | 0.47                                      | 0.298  | 0.319                               | 0.461                                     | 0.311  | 0.299                     | 1.0                             | 0.289                       | 0.853                             | 0.258                                     | 0.114                   |
|   | -0.045                                 | 0.189                                   | 0.252                        | 0.292                             | 0.172                                 | 0.22                                       | -0.145                                | -0.139                                | -0.129                                | -0.107                                | -0.127  | -0.129  | 0.22  | 0.262                       | 0.394                             | 0.566                               | 0.461                                     | 0.257  | 0.609                               | 0.563                                     | 0.574  | 1.0                       | 0.299                           | 0.425                       | 0.221                             | 0.327                                     | 0.144                   |
|   | -0.046                                 | 0.565                                   | 0.63                         | 0.634                             | 0.494                                 | 0.541                                      | -0.199                                | -0.17                                 | -0.161                                | -0.152                                | -0.123  | -0.122  | 0.603   | 0.619                       | 0.757                             | 0.691                               | 0.755                                     | 0.352  | 0.555                               | 0.672                                     | 1.0  | 0.574                     | 0.311                           | 0.817                       | 0.347                             | 0.621                                     | 0.388                   |
|   | -0.037                                 | 0.357                                   | 0.403                        | 0.418                             | 0.305                                 | 0.327                                      | -0.144                                | -0.133                                | -0.151                                | -0.138                                | -0.104  | -0.141  | 0.327   | 0.385                       | 0.62                              | 0.716                               | 0.837                                     | 0.381  | 0.672                               | 1.0                                       | 0.672  | 0.563                     | 0.461                           | 0.524                       | 0.393                             | 0.462                                     | 0.22                    |
|   | -0.041                                 | 0.207                                   | 0.341                        | 0.36                              | 0.249                                 | 0.269                                      | -0.076                                | -0.038                                | -0.068                                | -0.1                                  | -0.012  | -0.048  | 0.204   | 0.3                         | 0.517                             | 0.872                               | 0.631                                     | 0.231  | 1.0                                 | 0.672                                     | 0.555  | 0.609                     | 0.319                           | 0.447                       | 0.253                             | 0.414                                     | 0.15                    |
|   | -0.029                                 | 0.396                                   | 0.433                        | 0.418                             | 0.391                                 | 0.369                                      | -0.052                                | 0.038                                 | -0.076                                | -0.115                                | 0.097   | -0.031  | 0.436   | 0.398                       | 0.491                             | 0.383                               | 0.37                                      | 1.0  | 0.231                               | 0.381                                     | 0.352  | 0.257                     | 0.298                           | 0.387                       | 0.255                             | 0.393                                     | 0.191                   |
| GO-distance (go_type=MF, measure=Wang, combine=BMA) | -0.044                                 | 0.522                                   | 0.629                        | 0.66                              | 0.536                                 | 0.585                                      | 0.057                                 | 0.115                                 | 0.089                                 | -0.036                                | 0.16  | 0.14  | 0.443   | 0.531                       | 0.833                             | 0.792                               | 1.0                                       | 0.37   | 0.631                               | 0.837                                     | 0.755  | 0.461                     | 0.47                            | 0.771                       | 0.491                             | 0.684                                     | 0.299                   |
| GO-distance (go_type=CC, measure=Wang, combine=BMA) | -0.048                                 | 0.4                                     | 0.541                        | 0.568                             | 0.439                                 | 0.466                                      | 0.036                                 | 0.091                                 | 0.047                                 | -0.023                                | 0.131   | 0.093   | 0.345   | 0.425                       | 0.76                              | 1.0                                 | 0.792                                     | 0.383  | 0.872                               | 0.716                                     | 0.691  | 0.566                     | 0.37                            | 0.665                       | 0.33                              | 0.629                                     | 0.238                   |
| GO-distance (go_type=BP, measure=Wang, combine=BMA) | -0.036                                 | 0.682                                   | 0.802                        | 0.794                             | 0.705                                 | 0.713                                      | 0.1                                   | 0.183                                 | 0.115                                 | 0.007                                 | 0.24  | 0.184   | 0.634   | 0.65                        | 1.0                               | 0.76                                | 0.833                                     | 0.491  | 0.517                               | 0.62                                      | 0.757  | 0.394                     | 0.295                           | 0.854                       | 0.348                             | 0.784                                     | 0.303                   |
| Overlap distance over genes                         | -0.031                                 | 0.67                                    | 0.792                        | 0.813                             | 0.765                                 | 0.813                                      | -0.133                                | 0.029                                 | -0.12                                 | -0.135                                | 0.156   | 0.022   | 0.924   | 1.0                         | 0.65                              | 0.425                               | 0.531                                     | 0.398  | 0.3                                 | 0.385                                     | 0.619  | 0.262                     | 0.128                           | 0.766                       | 0.251                             | 0.714                                     | 0.602                   |
| Overlap distance over gene traits                   | -0.032                                 | 0.742                                   | 0.799                        | 0.762                             | 0.785                                 | 0.759                                      | -0.115                                | 0.036                                 | -0.115                                | -0.108                                | 0.154   | 0.01  | 1.0   | 0.924                       | 0.634                             | 0.345                               | 0.443                                     | 0.436  | 0.204                               | 0.327                                     | 0.603  | 0.22                      | 0.084                           | 0.725                       | 0.196                             | 0.639                                     | 0.563                   |
| Minkowski distance (p=2) over genes                 | 0.032                                  | 0.296                                   | 0.359                        | 0.408                             | 0.507                                 | 0.52                                       | 0.913                                 | 0.929                                 | 0.967                                 | 0.643                                 | 0.908   | 1.0   | 0.01  | 0.022                       | 0.184                             | 0.093                               | 0.14                                      | -0.031   | -0.048                              | -0.141                                    | -0.122   | -0.129                    | 0.127                           | 0.306                       | 0.167                             | 0.324                                     | -0.091                  |
| Minkowski distance (p=2) over gene traits           | 0.042                                  | 0.37                                    | 0.486                        | 0.489                             | 0.622                                 | 0.579                                      | 0.859                                 | 0.968                                 | 0.838                                 | 0.517                                 | 1.0   | 0.908   | 0.154   | 0.156                       | 0.24                              | 0.131                               | 0.16                                      | 0.097  | -0.012                              | -0.104                                    | -0.123   | -0.127                    | 0.102                           | 0.349                       | 0.129                             | 0.377                                     | 0.002                   |
| Minkowski distance (p=2) over gene trait frequency  | 0.046                                  | 0.35                                    | 0.146                        | 0.162                             | 0.242                                 | 0.238                                      | 0.795                                 | 0.555                                 | 0.66                                  | 1.0                                   | 0.517   | 0.643   | -0.108  | -0.135                      | 0.007                             | -0.023                              | -0.036                                    | -0.115   | -0.1                                | -0.138                                    | -0.152   | -0.107                    | 0.042                           | 0.112                       | 0.048                             | 0.112                                     | -0.151                  |
| Minkowski distance (p=1) over genes                 | 0.038                                  | 0.2                                     | 0.242                        | 0.278                             | 0.395                                 | 0.397                                      | 0.944                                 | 0.915                                 | 1.0                                   | 0.66                                  | 0.838   | 0.967   | -0.115  | -0.12                       | 0.115                             | 0.047                               | 0.089                                     | -0.076   | -0.068                              | -0.151                                    | -0.161   | -0.129                    | 0.123                           | 0.201                       | 0.131                             | 0.212                                     | -0.188                  |
| Minkowski distance (p=1) over gene traits           | 0.046                                  | 0.279                                   | 0.381                        | 0.384                             | 0.533                                 | 0.488                                      | 0.926                                 | 1.0                                   | 0.915                                 | 0.555                                 | 0.968   | 0.929   | 0.036   | 0.029                       | 0.183                             | 0.091                               | 0.115                                     | 0.038  | -0.038                              | -0.133                                    | -0.17  | -0.139                    | 0.107                           | 0.264                       | 0.105                             | 0.285                                     | -0.096                  |
| Minkowski distance (p=1) over gene trait frequency  | 0.052                                  | 0.271                                   | 0.258                        | 0.268                             | 0.405                                 | 0.37                                       | 1.0                                   | 0.926                                 | 0.944                                 | 0.795                                 | 0.859   | 0.913   | -0.115  | -0.133                      | 0.1                               | 0.036                               | 0.057                                     | -0.052   | -0.076                              | -0.144                                    | -0.199   | -0.145                    | 0.118                           | 0.179                       | 0.101                             | 0.196                                     | -0.194                  |
| Kappa distance over genes                           | -0.015                                 | 0.77                                    | 0.922                        | 0.967                             | 0.954                                 | 1.0  | 0.37                                  | 0.488                                 | 0.397                                 | 0.238                                 | 0.579   | 0.52  | 0.759   | 0.813                       | 0.713                             | 0.466                               | 0.585                                     | 0.369  | 0.269                               | 0.327                                     | 0.541  | 0.22                      | 0.213                           | 0.886                       | 0.329                             | 0.835                                     | 0.427                   |
| Kappa distance over gene traits                     | 0.005                                  | 0.808                                   | 0.955                        | 0.923                             | 1.0                                   | 0.954                                      | 0.405                                 | 0.533                                 | 0.395                                 | 0.242                                 | 0.622   | 0.507   | 0.785   | 0.765                       | 0.705                             | 0.439                               | 0.536                                     | 0.391  | 0.249                               | 0.305                                     | 0.494  | 0.172                     | 0.185                           | 0.837                       | 0.28                              | 0.772                                     | 0.383                   |
| Jaccard distance over genes                         | -0.032                                 | 0.786                                   | 0.956                        | 1.0                               | 0.923                                 | 0.967                                      | 0.268                                 | 0.384                                 | 0.278                                 | 0.162                                 | 0.489   | 0.408   | 0.762   | 0.813                       | 0.794                             | 0.568                               | 0.66                                      | 0.418  | 0.36                                | 0.418                                     | 0.634  | 0.292                     | 0.229                           | 0.939                       | 0.335                             | 0.887                                     | 0.455                   |
| Jaccard distance over gene traits                   | -0.014                                 | 0.839                                   | 1.0                          | 0.956                             | 0.955                                 | 0.922                                      | 0.258                                 | 0.381                                 | 0.242                                 | 0.146                                 | 0.486   | 0.359   | 0.799   | 0.792                       | 0.802                             | 0.541                               | 0.629                                     | 0.433  | 0.341                               | 0.403                                     | 0.63   | 0.252                     | 0.206                           | 0.908                       | 0.302                             | 0.817                                     | 0.423                   |
| Cosine distance over gene trait frequency           | -0.003                                 | 1.0                                     | 0.839                        | 0.786                             | 0.808                                 | 0.77                                       | 0.271                                 | 0.279                                 | 0.2                                   | 0.35                                  | 0.37  | 0.296   | 0.742   | 0.67                        | 0.682                             | 0.4                                 | 0.522                                     | 0.396  | 0.207                               | 0.357                                     | 0.565  | 0.189                     | 0.203                           | 0.763                       | 0.301                             | 0.648                                     | 0.323                   |
| Random (uniform, (0,1))                             | 1.0                                    | -0.003                                  | -0.014                       | -0.032                            | 0.005                                 | -0.015                                     | 0.052                                 | 0.046                                 | 0.038                                 | 0.046                                 | 0.042   | 0.032   | -0.032  | -0.031                      | -0.036                            | -0.048                              | -0.044                                    | -0.029   | -0.041                              | -0.037                                    | -0.046   | -0.045                    | -0.002                          | -0.042                      | -0.031                            | -0.041                                    | 0.018                   |