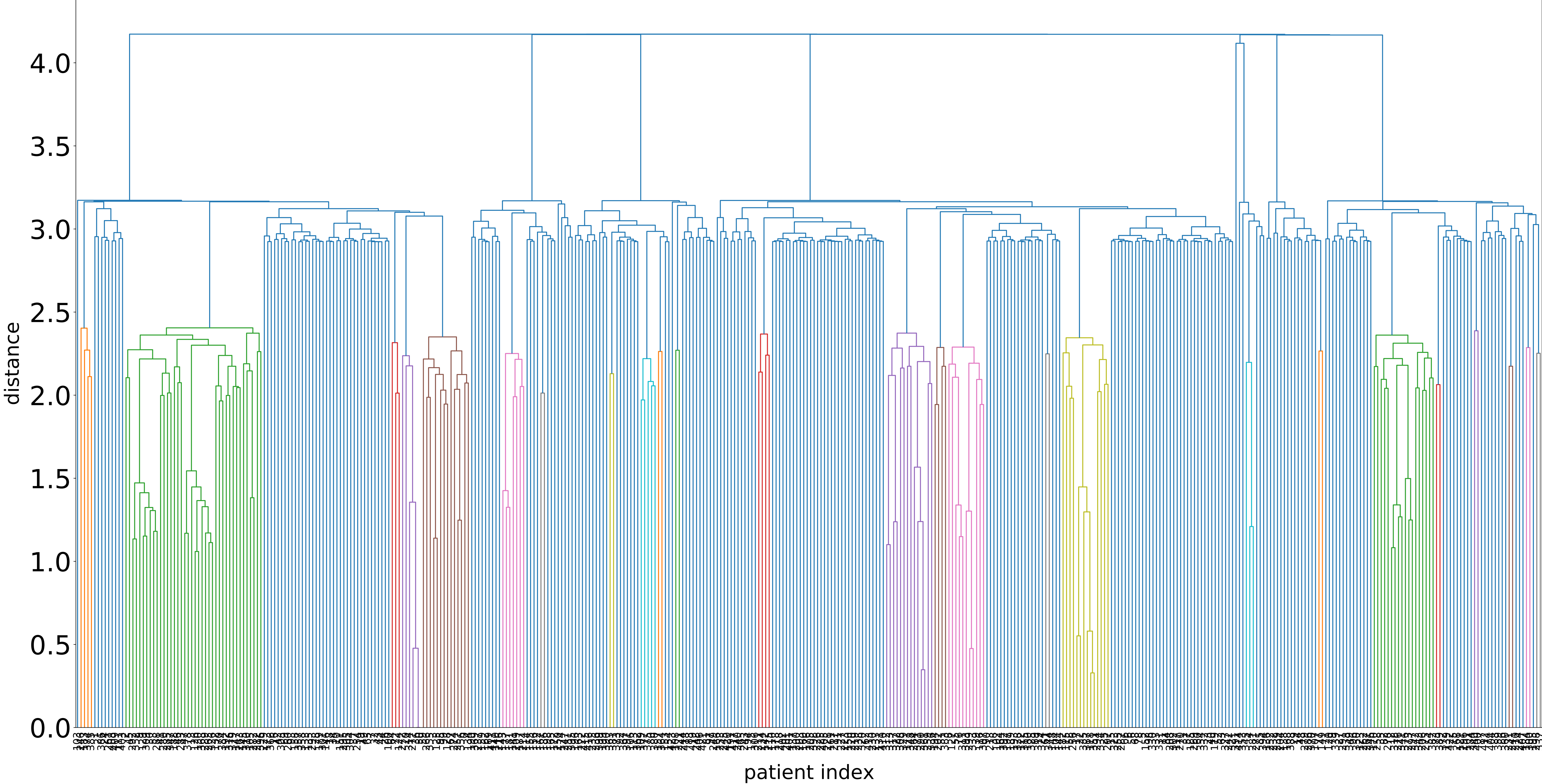


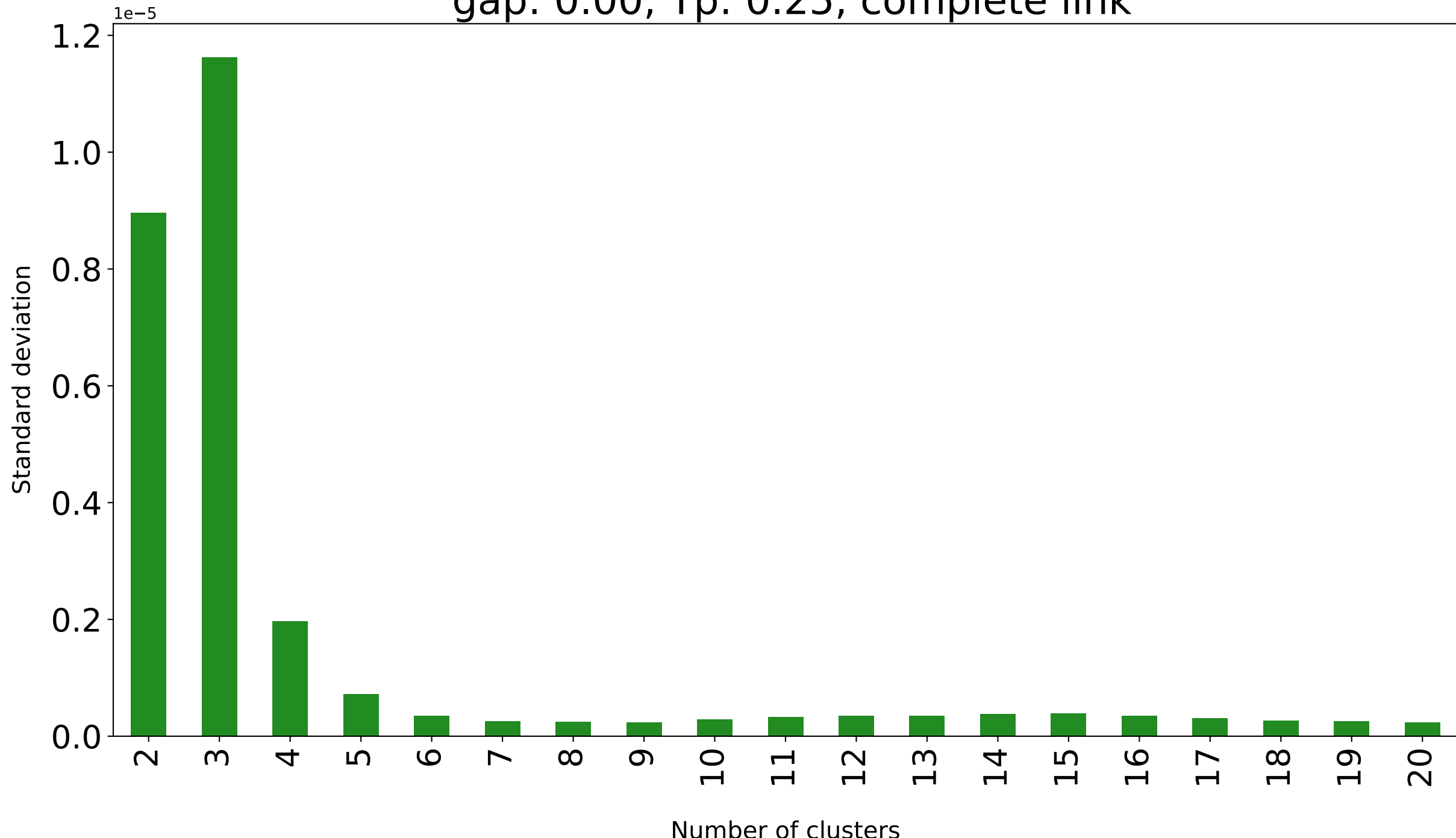
Hierarchical Clustering Dendrogram - gap: 0.00, Tp: 0.25, complete link



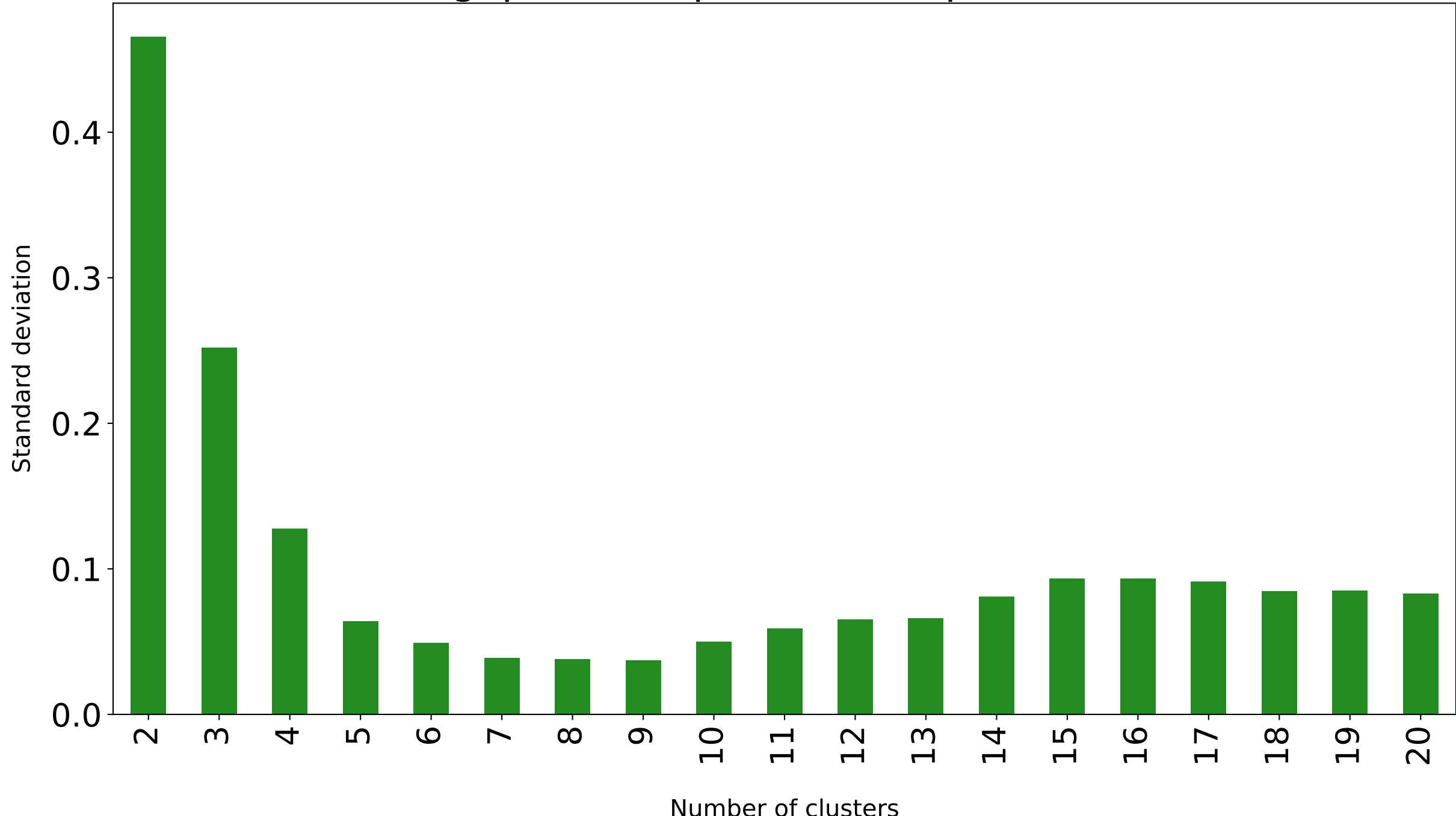
Average values of 20 clustering indices
gap: 0.00, Tp: 0.25, complete link

| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 0.99999 | 0.87162 | 0.8037 | 0.61561 | 0.07912 | 0.63836 | 0.87014 | 0.33625 | 0.87312 | 0.0001 | 0.76607 | 0.73444 | 1.01613 | 0.1442 | 0.12315 |
| 3.0 | 1.0 | 0.88314 | 0.81534 | 0.83863 | 0.07846 | 0.79579 | 0.88092 | 0.29693 | 0.88541 | 0.00013 | 0.83375 | 0.73996 | 0.9773 | 0.13675 | 0.12318 |
| 4.0 | 1.0 | 0.89783 | 0.82125 | 0.91874 | 0.07051 | 0.85577 | 0.89429 | 0.29323 | 0.90145 | 0.00017 | 0.88475 | 0.72285 | 0.95466 | 0.13938 | 0.12321 |
| 5.0 | 1.0 | 0.94662 | 0.9018 | 0.93256 | 0.03445 | 0.92829 | 0.94631 | 0.18899 | 0.94694 | 0.00019 | 0.94737 | 0.83091 | 0.94212 | 0.16779 | 0.12325 |
| 6.0 | 1.0 | 0.94929 | 0.9055 | 0.91775 | 0.03889 | 0.93328 | 0.94908 | 0.20599 | 0.94951 | 0.0002 | 0.95269 | 0.83403 | 1.07844 | 0.16356 | 0.1233 |
| 7.0 | 1.0 | 0.97733 | 0.95714 | 0.96436 | 0.0136 | 0.9706 | 0.97725 | 0.08925 | 0.97741 | 0.00021 | 0.97967 | 0.9229 | 1.07747 | 0.17314 | 0.12479 |
| 8.0 | 1.0 | 0.97445 | 0.95121 | 0.95078 | 0.01406 | 0.96707 | 0.97416 | 0.09108 | 0.97475 | 0.00021 | 0.97718 | 0.91195 | 1.84206 | 0.28085 | 0.16196 |
| 9.0 | 1.0 | 0.96226 | 0.92715 | 0.91225 | 0.01801 | 0.95193 | 0.96132 | 0.11809 | 0.96319 | 0.00022 | 0.96681 | 0.86905 | 1.84173 | 0.35056 | 0.16201 |
| 10.0 | 1.0 | 0.94794 | 0.90161 | 0.89295 | 0.02552 | 0.93435 | 0.94662 | 0.15925 | 0.94926 | 0.00022 | 0.9562 | 0.82881 | 1.84005 | 0.30896 | 0.16207 |
| 11.0 | 1.0 | 0.93373 | 0.87638 | 0.8682 | 0.04137 | 0.91717 | 0.93181 | 0.22258 | 0.93567 | 0.00022 | 0.94603 | 0.78992 | 1.83917 | 0.2702 | 0.16211 |
| 12.0 | 1.0 | 0.92203 | 0.85558 | 0.84165 | 0.04907 | 0.90325 | 0.91925 | 0.26372 | 0.92484 | 0.00022 | 0.93774 | 0.75908 | 1.83885 | 0.23944 | 0.16213 |
| 13.0 | 1.0 | 0.90895 | 0.83201 | 0.81312 | 0.05616 | 0.88761 | 0.90523 | 0.30561 | 0.91271 | 0.00022 | 0.92831 | 0.72346 | 1.83847 | 0.21857 | 0.16224 |
| 14.0 | 1.0 | 0.8839 | 0.79199 | 0.78689 | 0.06918 | 0.85909 | 0.87922 | 0.35094 | 0.88867 | 0.00022 | 0.91593 | 0.67063 | 1.83603 | 0.20313 | 0.16232 |
| 15.0 | 1.0 | 0.84578 | 0.73159 | 0.72567 | 0.0944 | 0.81606 | 0.83845 | 0.42935 | 0.85327 | 0.00022 | 0.89657 | 0.5937 | 1.83411 | 0.19088 | 0.1624 |
| 16.0 | 1.0 | 0.81151 | 0.68681 | 0.76964 | 0.10896 | 0.78037 | 0.80885 | 0.48259 | 0.8142 | 0.00025 | 0.8966 | 0.53567 | 1.8177 | 0.18039 | 0.16241 |
| 17.0 | 1.0 | 0.82586 | 0.70779 | 0.84323 | 0.09921 | 0.80132 | 0.82333 | 0.48568 | 0.82841 | 0.00029 | 0.91559 | 0.56096 | 1.8167 | 0.17707 | 0.16243 |
| 18.0 | 1.0 | 0.83791 | 0.72561 | 0.83848 | 0.09242 | 0.81577 | 0.83622 | 0.46671 | 0.83961 | 0.0003 | 0.92387 | 0.58143 | 1.81647 | 0.17545 | 0.16246 |
| 19.0 | 1.0 | 0.8436 | 0.73461 | 0.83428 | 0.08858 | 0.82263 | 0.84214 | 0.45088 | 0.84507 | 0.00031 | 0.92782 | 0.59321 | 1.81624 | 0.1628 | 0.1625 |
| 20.0 | 1.0 | 0.8491 | 0.74296 | 0.82695 | 0.08533 | 0.82932 | 0.84786 | 0.43672 | 0.85034 | 0.00032 | 0.93177 | 0.60346 | 1.81615 | 0.20467 | 0.16258 |

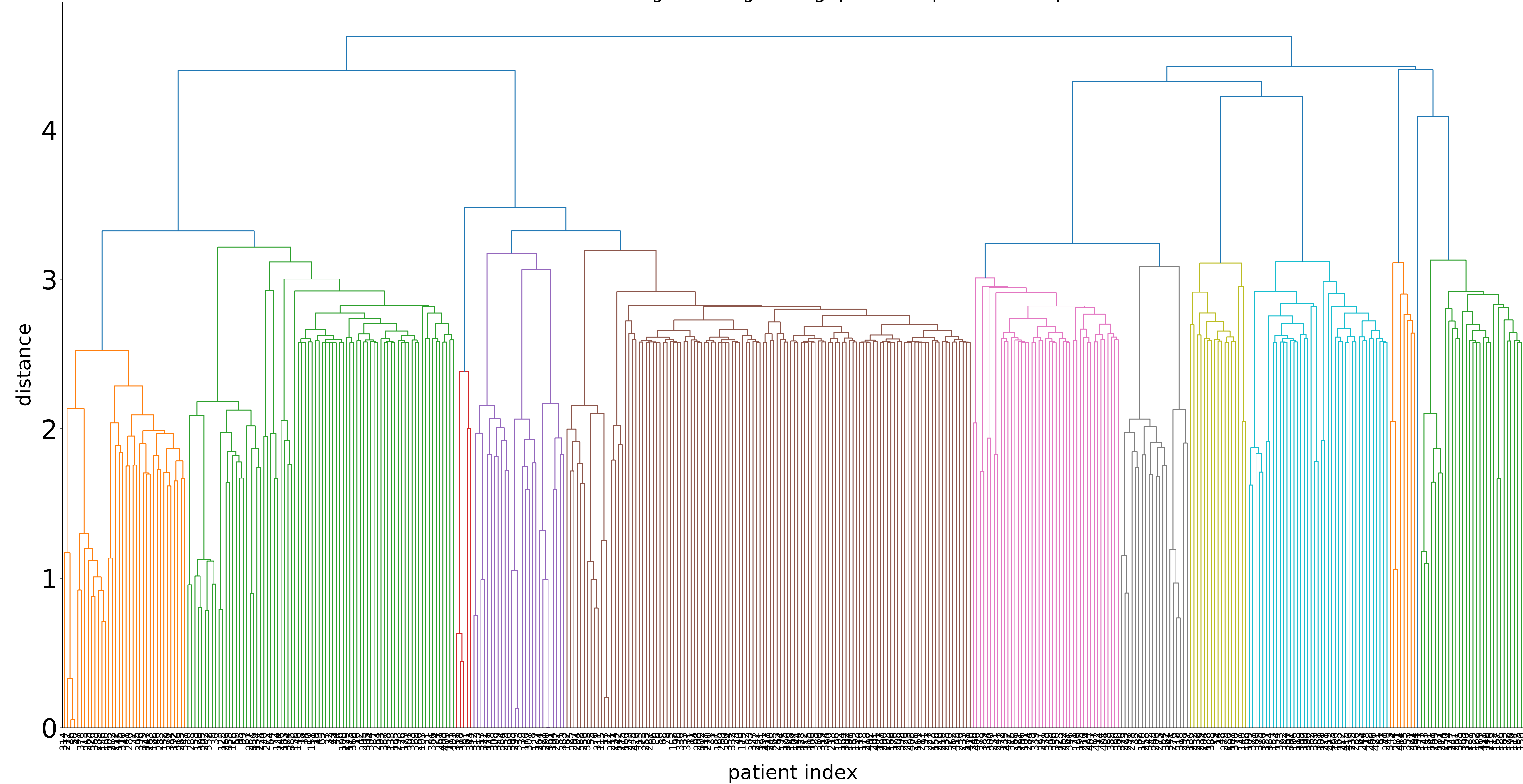
Standard deviation of Adjusted Rand versus number of clusters
gap: 0.00, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 0.00, Tp: 0.25, complete link



Hierarchical Clustering Dendrogram - gap: 0.10, Tp: 0.25, complete link

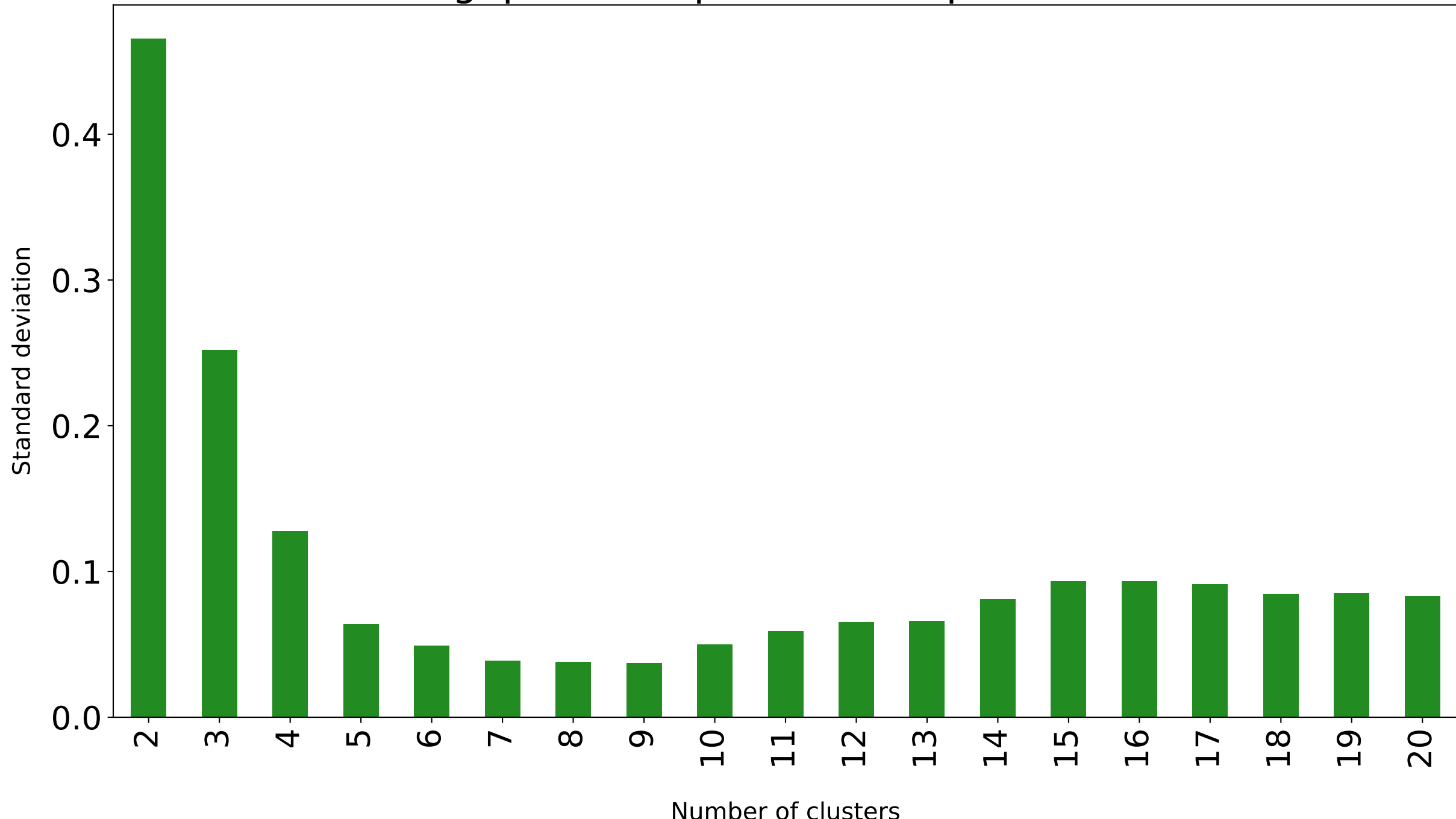


Cophenetic Correlation Coefficient: 0.7345821477507194

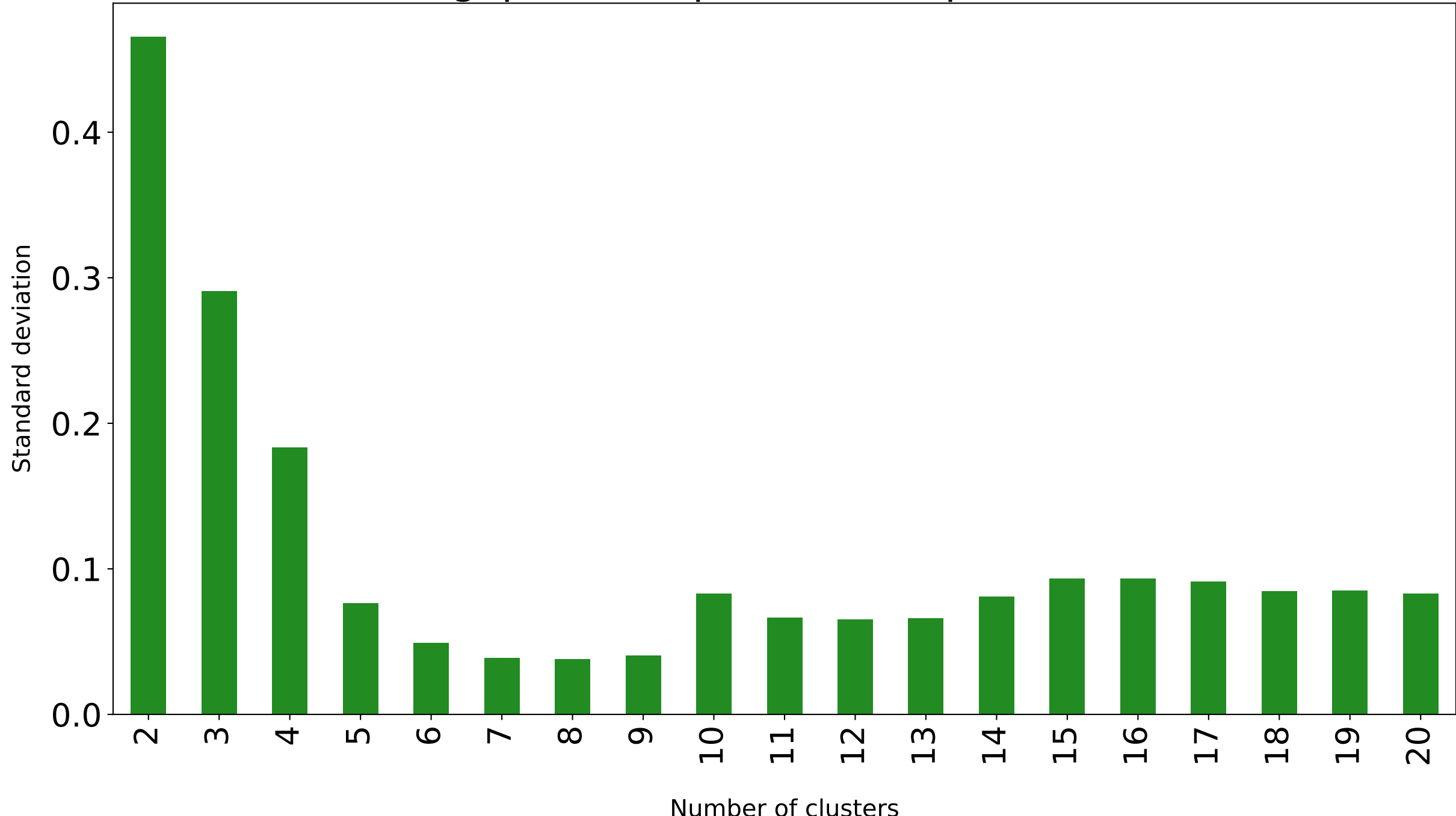
Average values of 20 clustering indices
gap: 0.10, Tp: 0.25, complete link

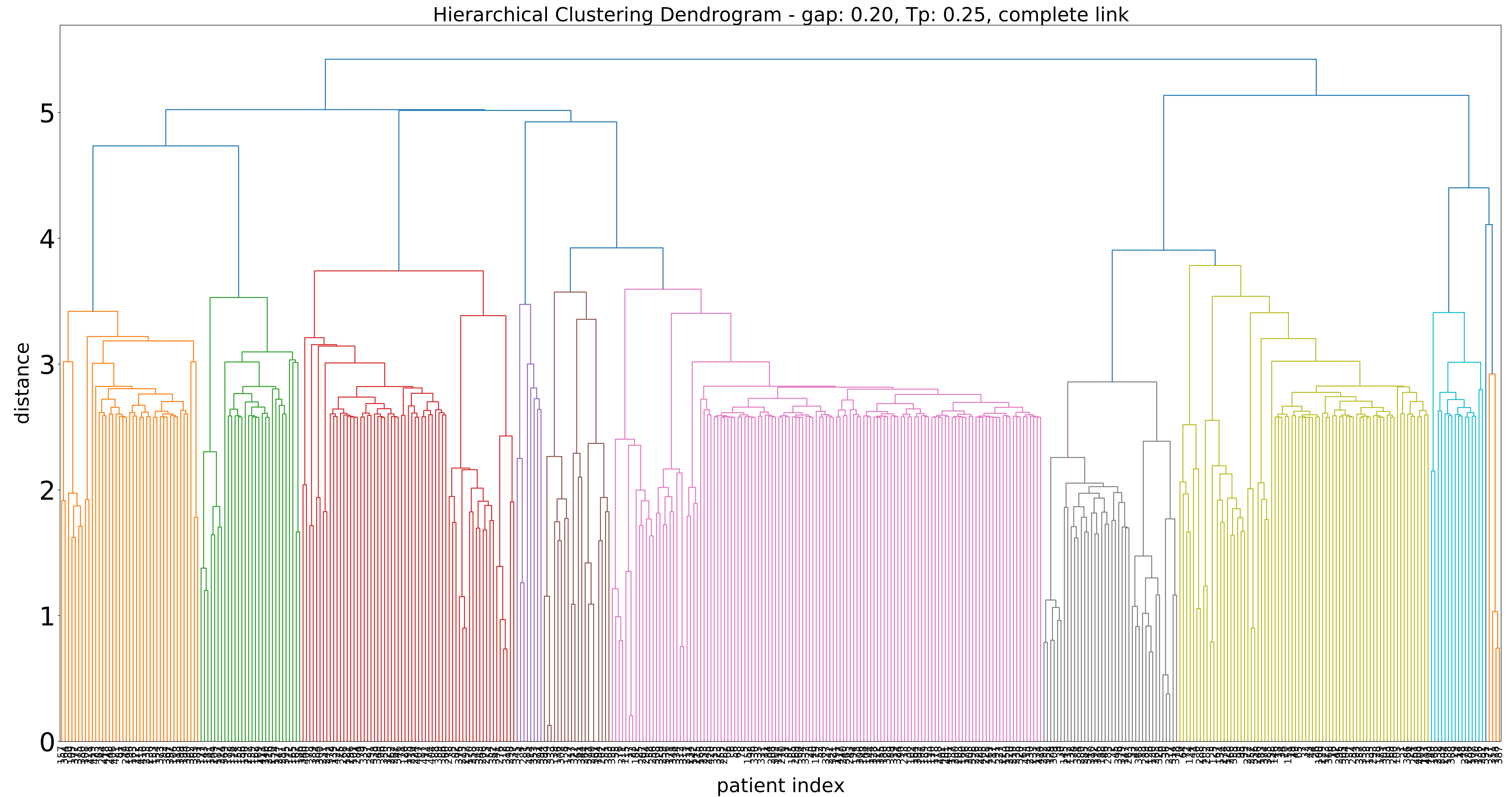
| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 0.99998 | 0.86553 | 0.79775 | 0.72503 | 0.10203 | 0.70136 | 0.86446 | 0.39796 | 0.8666 | 0.00011 | 0.78171 | 0.72319 | 1.04375 | 0.10963 | 0.1054 |
| 3.0 | 1.0 | 0.77849 | 0.66325 | 0.56321 | 0.18257 | 0.60883 | 0.77553 | 0.70444 | 0.78149 | 0.0001 | 0.69532 | 0.53751 | 1.02978 | 0.12569 | 0.10591 |
| 4.0 | 1.00001 | 0.72416 | 0.56279 | 0.42949 | 0.21105 | 0.57354 | 0.70612 | 0.77241 | 0.74287 | 0.0001 | 0.64354 | 0.41652 | 1.02833 | 0.17913 | 0.10603 |
| 5.0 | 1.0 | 0.88383 | 0.79293 | 0.78175 | 0.09934 | 0.84185 | 0.88201 | 0.40435 | 0.88567 | 0.00017 | 0.88196 | 0.66479 | 0.9483 | 0.19538 | 0.10784 |
| 6.0 | 1.0 | 0.95847 | 0.92172 | 0.93707 | 0.03989 | 0.94547 | 0.95833 | 0.20498 | 0.95861 | 0.0002 | 0.96133 | 0.8598 | 0.93623 | 0.19901 | 0.1104 |
| 7.0 | 1.0 | 0.97779 | 0.95766 | 0.96447 | 0.01606 | 0.97118 | 0.9777 | 0.10837 | 0.97788 | 0.00021 | 0.97994 | 0.92276 | 1.01502 | 0.21492 | 0.11395 |
| 8.0 | 1.0 | 0.97431 | 0.95074 | 0.9486 | 0.01468 | 0.96698 | 0.97392 | 0.0991 | 0.97469 | 0.00021 | 0.97711 | 0.91099 | 1.83805 | 0.3121 | 0.1339 |
| 9.0 | 1.0 | 0.94026 | 0.88652 | 0.87402 | 0.03164 | 0.92462 | 0.93876 | 0.18793 | 0.94176 | 0.00022 | 0.94953 | 0.80137 | 1.8365 | 0.29082 | 0.14024 |
| 10.0 | 1.0 | 0.87108 | 0.77645 | 0.82921 | 0.07474 | 0.84217 | 0.86999 | 0.35777 | 0.87217 | 0.00022 | 0.90932 | 0.64742 | 1.82899 | 0.24913 | 0.14025 |
| 11.0 | 1.0 | 0.86466 | 0.76446 | 0.85258 | 0.07913 | 0.83876 | 0.86381 | 0.40465 | 0.86552 | 0.00024 | 0.91617 | 0.62675 | 1.8258 | 0.23575 | 0.14384 |
| 12.0 | 1.0 | 0.85752 | 0.75297 | 0.83102 | 0.08546 | 0.83254 | 0.85678 | 0.43383 | 0.85826 | 0.00026 | 0.91807 | 0.6104 | 1.82231 | 0.22613 | 0.14495 |
| 13.0 | 1.0 | 0.85663 | 0.75041 | 0.83892 | 0.08911 | 0.83394 | 0.85605 | 0.44953 | 0.85722 | 0.00028 | 0.92421 | 0.6043 | 1.81658 | 0.21758 | 0.14589 |
| 14.0 | 1.0 | 0.90992 | 0.83549 | 0.93401 | 0.07538 | 0.89707 | 0.90891 | 0.36056 | 0.91094 | 0.00032 | 0.95516 | 0.72312 | 1.80762 | 0.21405 | 0.14694 |
| 15.0 | 1.0 | 0.91693 | 0.84792 | 0.9307 | 0.07579 | 0.90541 | 0.9163 | 0.36306 | 0.91757 | 0.00033 | 0.95987 | 0.74179 | 1.80848 | 0.20447 | 0.14898 |
| 16.0 | 1.0 | 0.91987 | 0.85324 | 0.92559 | 0.07615 | 0.90907 | 0.91941 | 0.36059 | 0.92034 | 0.00034 | 0.96237 | 0.74974 | 1.8075 | 0.20135 | 0.14946 |
| 17.0 | 1.0 | 0.92335 | 0.85872 | 0.93661 | 0.07655 | 0.91344 | 0.92279 | 0.36223 | 0.92391 | 0.00035 | 0.96511 | 0.75732 | 1.80488 | 0.18486 | 0.14957 |
| 18.0 | 1.0 | 0.93066 | 0.87124 | 0.94669 | 0.07479 | 0.92197 | 0.93015 | 0.35317 | 0.93118 | 0.00037 | 0.96921 | 0.7763 | 1.80322 | 0.18525 | 0.14985 |
| 19.0 | 1.0 | 0.93589 | 0.88072 | 0.94221 | 0.07164 | 0.92796 | 0.93558 | 0.33965 | 0.9362 | 0.00037 | 0.97199 | 0.79118 | 1.80306 | 0.18712 | 0.14991 |
| 20.0 | 1.0 | 0.9397 | 0.88748 | 0.93853 | 0.07036 | 0.93235 | 0.93948 | 0.33064 | 0.93991 | 0.00038 | 0.97404 | 0.80171 | 1.80275 | 0.17871 | 0.1511 |

Standard deviation of Adjusted Rand versus number of clusters
gap: 0.10, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 0.10, Tp: 0.25, complete link

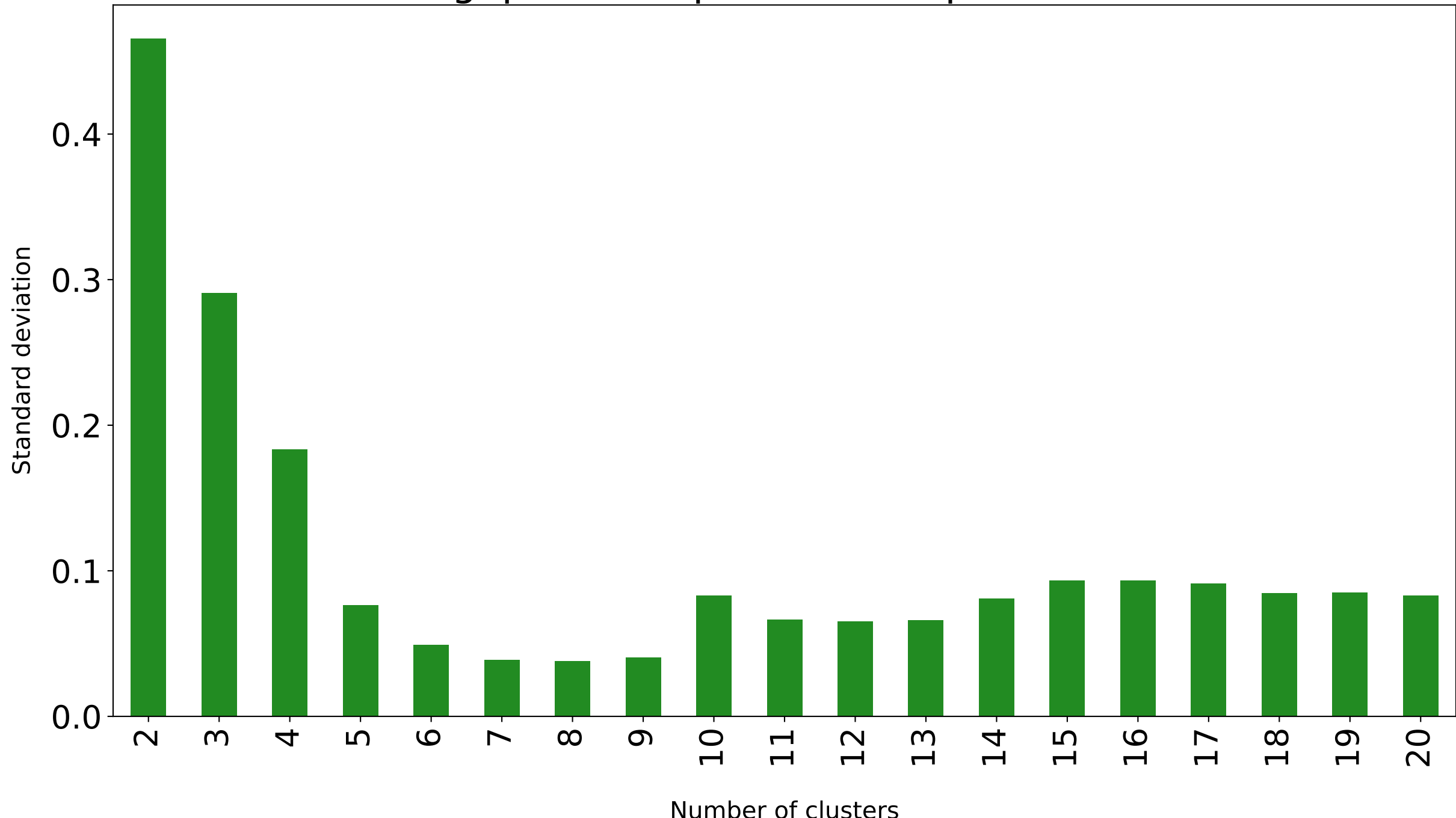




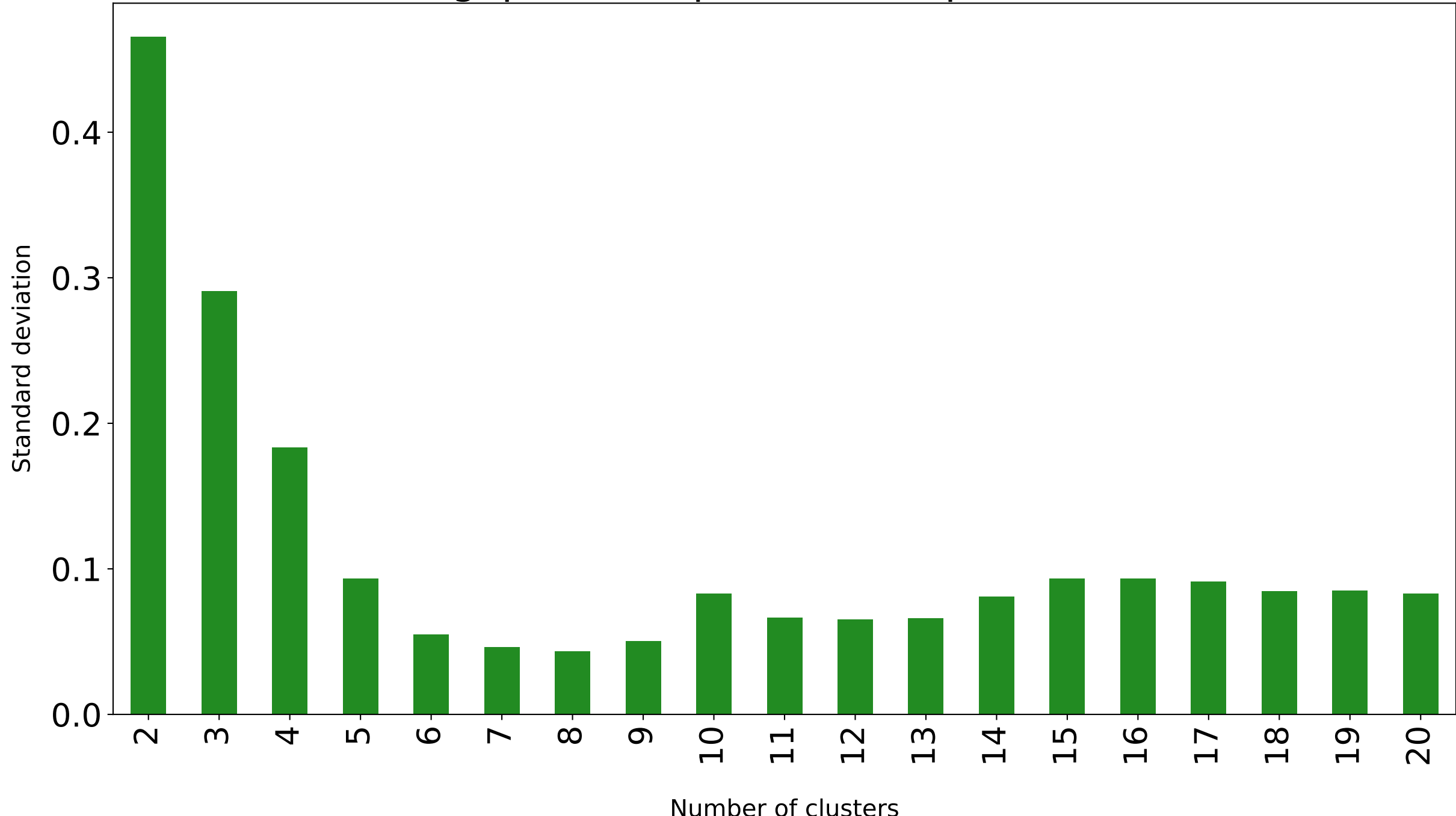
Average values of 20 clustering indices
gap: 0.20, Tp: 0.25, complete link

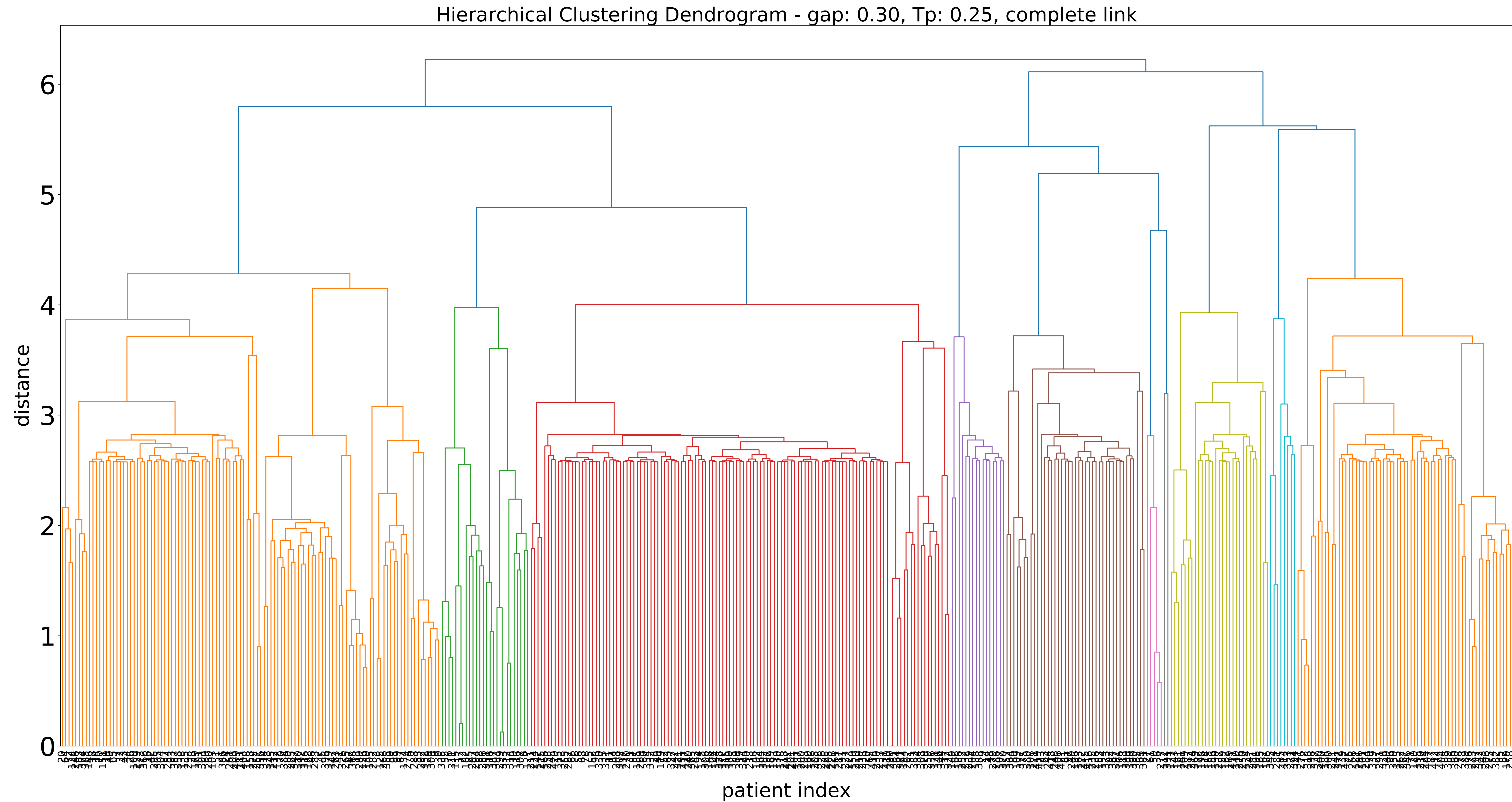
| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 0.99996 | 0.64051 | 0.48582 | 0.17865 | 0.27294 | 0.18649 | 0.63963 | 0.96122 | 0.6414 | 3e-05 | 0.44538 | 0.34272 | 1.01038 | 0.15661 | 0.14916 |
| 3.0 | 1.00013 | 0.69727 | 0.5348 | 0.3311 | 0.19706 | 0.45217 | 0.68555 | 0.7608 | 0.70925 | 7e-05 | 0.56236 | 0.38056 | 1.18399 | 0.18137 | 0.15254 |
| 4.0 | 1.00001 | 0.74225 | 0.5902 | 0.52369 | 0.15384 | 0.6141 | 0.73589 | 0.66278 | 0.74868 | 0.00011 | 0.70254 | 0.4297 | 1.10856 | 0.17676 | 0.15273 |
| 5.0 | 1.0 | 0.90309 | 0.8282 | 0.86129 | 0.06769 | 0.86915 | 0.90229 | 0.37244 | 0.90391 | 0.00018 | 0.90517 | 0.7182 | 1.03089 | 0.19681 | 0.15555 |
| 6.0 | 1.0 | 0.93402 | 0.87842 | 0.89665 | 0.05881 | 0.9135 | 0.93365 | 0.29768 | 0.93439 | 0.0002 | 0.93933 | 0.7903 | 1.01461 | 0.20177 | 0.16183 |
| 7.0 | 1.0 | 0.95749 | 0.92025 | 0.9404 | 0.03067 | 0.94514 | 0.95727 | 0.19265 | 0.9577 | 0.00021 | 0.96254 | 0.85844 | 0.99547 | 0.22098 | 0.17408 |
| 8.0 | 1.0 | 0.95691 | 0.9185 | 0.9255 | 0.02687 | 0.94483 | 0.9564 | 0.17201 | 0.95743 | 0.00021 | 0.9625 | 0.85515 | 1.20399 | 0.22767 | 0.18645 |
| 9.0 | 1.0 | 0.92663 | 0.8621 | 0.84197 | 0.04011 | 0.90772 | 0.92426 | 0.23414 | 0.92902 | 0.00021 | 0.93829 | 0.76465 | 1.80393 | 0.32936 | 0.19525 |
| 10.0 | 1.0 | 0.87069 | 0.77246 | 0.7978 | 0.07582 | 0.84103 | 0.86886 | 0.38692 | 0.87253 | 0.00021 | 0.90605 | 0.63769 | 1.79624 | 0.27356 | 0.19617 |
| 11.0 | 1.0 | 0.85016 | 0.74079 | 0.8112 | 0.08721 | 0.82036 | 0.84938 | 0.46944 | 0.85095 | 0.00023 | 0.90474 | 0.59292 | 1.78628 | 0.26207 | 0.2025 |
| 12.0 | 1.0 | 0.84151 | 0.72737 | 0.7805 | 0.09475 | 0.8122 | 0.84034 | 0.51878 | 0.84268 | 0.00024 | 0.90476 | 0.57623 | 1.78391 | 0.25307 | 0.20481 |
| 13.0 | 1.0 | 0.825 | 0.70253 | 0.76052 | 0.10721 | 0.79505 | 0.82376 | 0.56566 | 0.82626 | 0.00025 | 0.9016 | 0.54499 | 1.77915 | 0.24889 | 0.21311 |
| 14.0 | 1.0 | 0.86919 | 0.76979 | 0.84014 | 0.09549 | 0.84881 | 0.8687 | 0.48603 | 0.86967 | 0.00029 | 0.93157 | 0.62946 | 1.76816 | 0.24757 | 0.21446 |
| 15.0 | 1.0 | 0.87387 | 0.77677 | 0.83354 | 0.09325 | 0.85472 | 0.8733 | 0.47488 | 0.87444 | 0.00029 | 0.93524 | 0.63829 | 1.7679 | 0.23819 | 0.21652 |
| 16.0 | 1.0 | 0.87739 | 0.78243 | 0.85277 | 0.09506 | 0.85966 | 0.87702 | 0.48306 | 0.87775 | 0.00031 | 0.93968 | 0.64547 | 1.76362 | 0.23624 | 0.2171 |
| 17.0 | 1.0 | 0.88622 | 0.79634 | 0.85357 | 0.08904 | 0.87024 | 0.88576 | 0.45949 | 0.88668 | 0.00032 | 0.94517 | 0.66444 | 1.76228 | 0.23251 | 0.22052 |
| 18.0 | 1.0 | 0.89165 | 0.80422 | 0.84377 | 0.08577 | 0.87682 | 0.89086 | 0.4503 | 0.89245 | 0.00032 | 0.94848 | 0.67471 | 1.76208 | 0.23374 | 0.2241 |
| 19.0 | 1.0 | 0.89354 | 0.80711 | 0.84324 | 0.08508 | 0.87939 | 0.89271 | 0.45153 | 0.89438 | 0.00033 | 0.95053 | 0.67849 | 1.76034 | 0.22601 | 0.22471 |
| 20.0 | 1.0 | 0.8975 | 0.81292 | 0.83886 | 0.08336 | 0.88412 | 0.89637 | 0.44384 | 0.89864 | 0.00034 | 0.95274 | 0.68636 | 1.76011 | 0.22367 | 0.2248 |

Standard deviation of Adjusted Rand versus number of clusters
gap: 0.20, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 0.20, Tp: 0.25, complete link

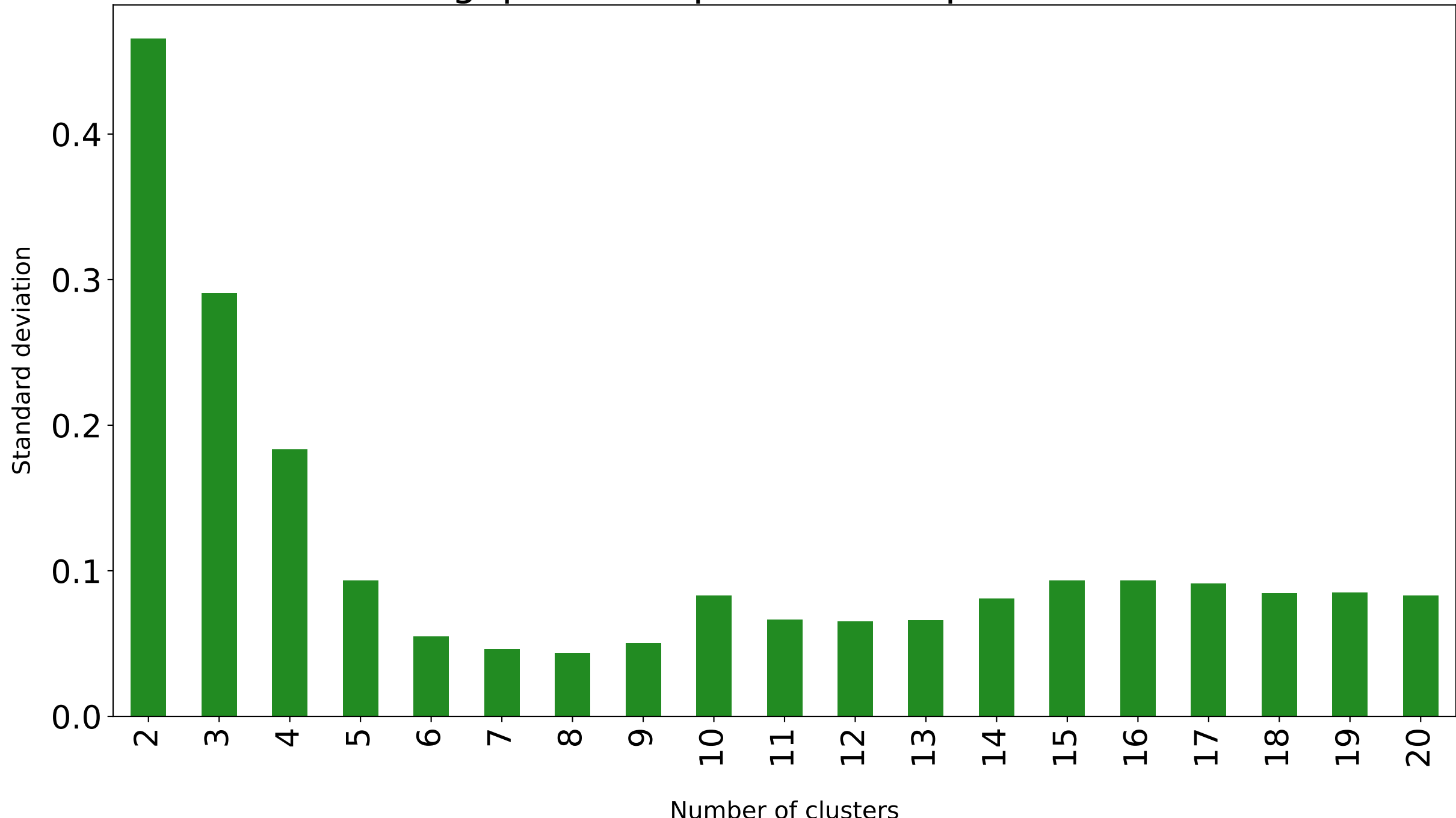




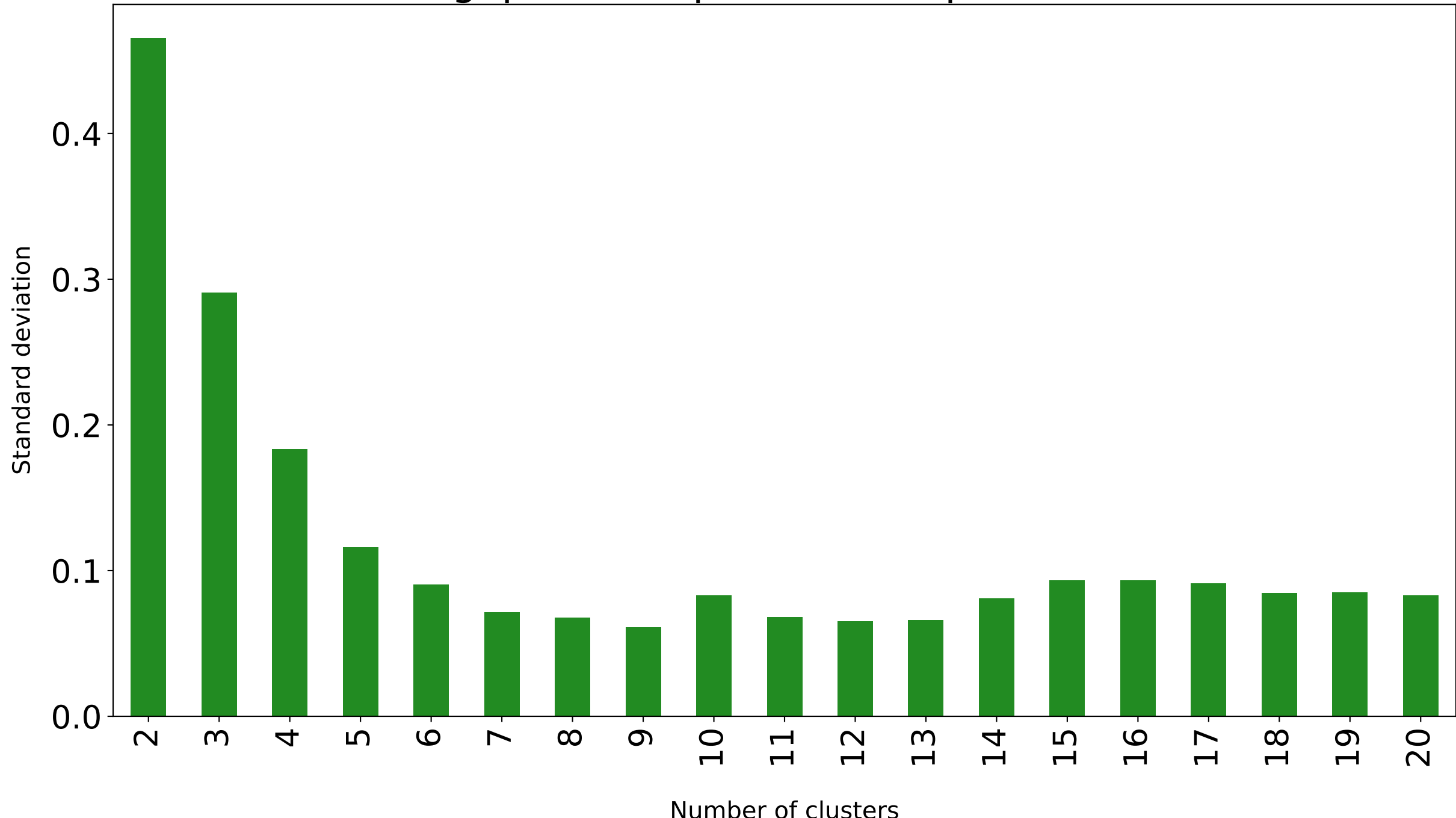
Average values of 20 clustering indices
gap: 0.30, Tp: 0.25, complete link

| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 0.99996 | 0.79056 | 0.68357 | 0.56261 | 0.15394 | 0.54598 | 0.78971 | 0.63142 | 0.79141 | 9e-05 | 0.66517 | 0.56319 | 1.06098 | 0.12059 | 0.19283 |
| 3.0 | 1.00001 | 0.68646 | 0.53904 | 0.42203 | 0.2305 | 0.46017 | 0.68337 | 0.9506 | 0.68959 | 7e-05 | 0.59441 | 0.393 | 1.12463 | 0.13552 | 0.18393 |
| 4.0 | 1.0 | 0.75927 | 0.61764 | 0.72553 | 0.1778 | 0.65759 | 0.7546 | 0.80806 | 0.76405 | 0.00013 | 0.74721 | 0.46171 | 1.02386 | 0.17741 | 0.18962 |
| 5.0 | 1.0 | 0.85456 | 0.7533 | 0.8234 | 0.11005 | 0.8049 | 0.85338 | 0.57594 | 0.85577 | 0.00017 | 0.86341 | 0.61879 | 0.99046 | 0.21201 | 0.19067 |
| 6.0 | 1.0 | 0.88155 | 0.79335 | 0.83059 | 0.09023 | 0.84472 | 0.88095 | 0.50806 | 0.88216 | 0.00018 | 0.89449 | 0.66839 | 0.98292 | 0.22076 | 0.1961 |
| 7.0 | 1.0 | 0.91074 | 0.83986 | 0.86302 | 0.0605 | 0.88514 | 0.91021 | 0.39436 | 0.91128 | 0.0002 | 0.92365 | 0.73392 | 0.97913 | 0.23512 | 0.20544 |
| 8.0 | 1.0 | 0.90833 | 0.83455 | 0.84476 | 0.0566 | 0.88325 | 0.90725 | 0.35519 | 0.90942 | 0.0002 | 0.92337 | 0.72558 | 1.37935 | 0.2284 | 0.21841 |
| 9.0 | 1.0 | 0.88807 | 0.80102 | 0.87679 | 0.07289 | 0.86138 | 0.88733 | 0.41456 | 0.88882 | 0.00022 | 0.91688 | 0.67557 | 1.36003 | 0.20518 | 0.22796 |
| 10.0 | 1.0 | 0.87505 | 0.7801 | 0.82089 | 0.0801 | 0.84696 | 0.87386 | 0.4313 | 0.87624 | 0.00022 | 0.91135 | 0.64759 | 1.78842 | 0.20708 | 0.2489 |
| 11.0 | 1.0 | 0.83057 | 0.71279 | 0.82307 | 0.11007 | 0.79774 | 0.82953 | 0.54415 | 0.83161 | 0.00023 | 0.89504 | 0.56063 | 1.77061 | 0.19131 | 0.2514 |
| 12.0 | 1.0 | 0.83375 | 0.71717 | 0.80343 | 0.10911 | 0.80338 | 0.83292 | 0.55406 | 0.83458 | 0.00024 | 0.90186 | 0.56482 | 1.76822 | 0.1821 | 0.25699 |
| 13.0 | 1.0 | 0.84004 | 0.72593 | 0.80203 | 0.10675 | 0.81282 | 0.8392 | 0.56148 | 0.84088 | 0.00026 | 0.91057 | 0.57471 | 1.76717 | 0.18384 | 0.26635 |
| 14.0 | 1.0 | 0.88394 | 0.79361 | 0.89926 | 0.09955 | 0.86648 | 0.88284 | 0.49029 | 0.88504 | 0.0003 | 0.94023 | 0.66438 | 1.75004 | 0.17723 | 0.26796 |
| 15.0 | 1.0 | 0.89965 | 0.81923 | 0.9026 | 0.09177 | 0.88509 | 0.89906 | 0.45952 | 0.90024 | 0.00032 | 0.95002 | 0.69923 | 1.74932 | 0.18251 | 0.27135 |
| 16.0 | 1.0 | 0.9038 | 0.82597 | 0.89995 | 0.09177 | 0.89021 | 0.90341 | 0.45831 | 0.9042 | 0.00032 | 0.95324 | 0.70813 | 1.74755 | 0.18791 | 0.27518 |
| 17.0 | 1.0 | 0.90734 | 0.83156 | 0.89003 | 0.09035 | 0.8945 | 0.90702 | 0.45197 | 0.90767 | 0.00033 | 0.9557 | 0.71542 | 1.74728 | 0.19297 | 0.27574 |
| 18.0 | 1.0 | 0.91021 | 0.83608 | 0.89075 | 0.08984 | 0.89811 | 0.90988 | 0.44192 | 0.91055 | 0.00034 | 0.95803 | 0.72151 | 1.74513 | 0.20045 | 0.28669 |
| 19.0 | 1.0 | 0.90565 | 0.82831 | 0.88383 | 0.0926 | 0.8933 | 0.90535 | 0.45631 | 0.90594 | 0.00034 | 0.95707 | 0.70962 | 1.7428 | 0.1928 | 0.28678 |
| 20.0 | 1.0 | 0.92069 | 0.85365 | 0.92197 | 0.08603 | 0.9108 | 0.92043 | 0.42985 | 0.92095 | 0.00036 | 0.96528 | 0.74722 | 1.73553 | 0.18919 | 0.28726 |

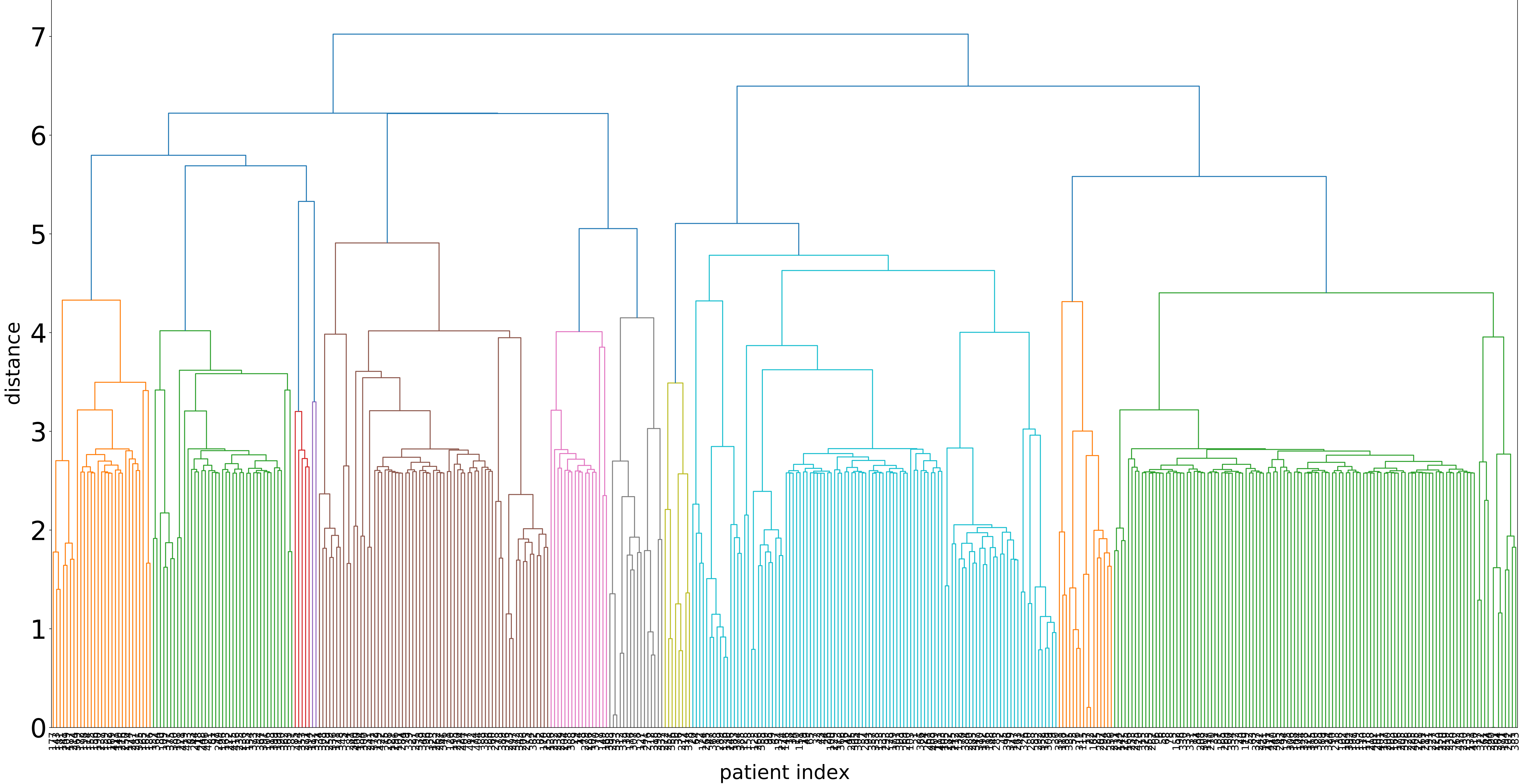
Standard deviation of Adjusted Rand versus number of clusters
gap: 0.30, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 0.30, Tp: 0.25, complete link



Hierarchical Clustering Dendrogram - gap: 0.40, Tp: 0.25, complete link

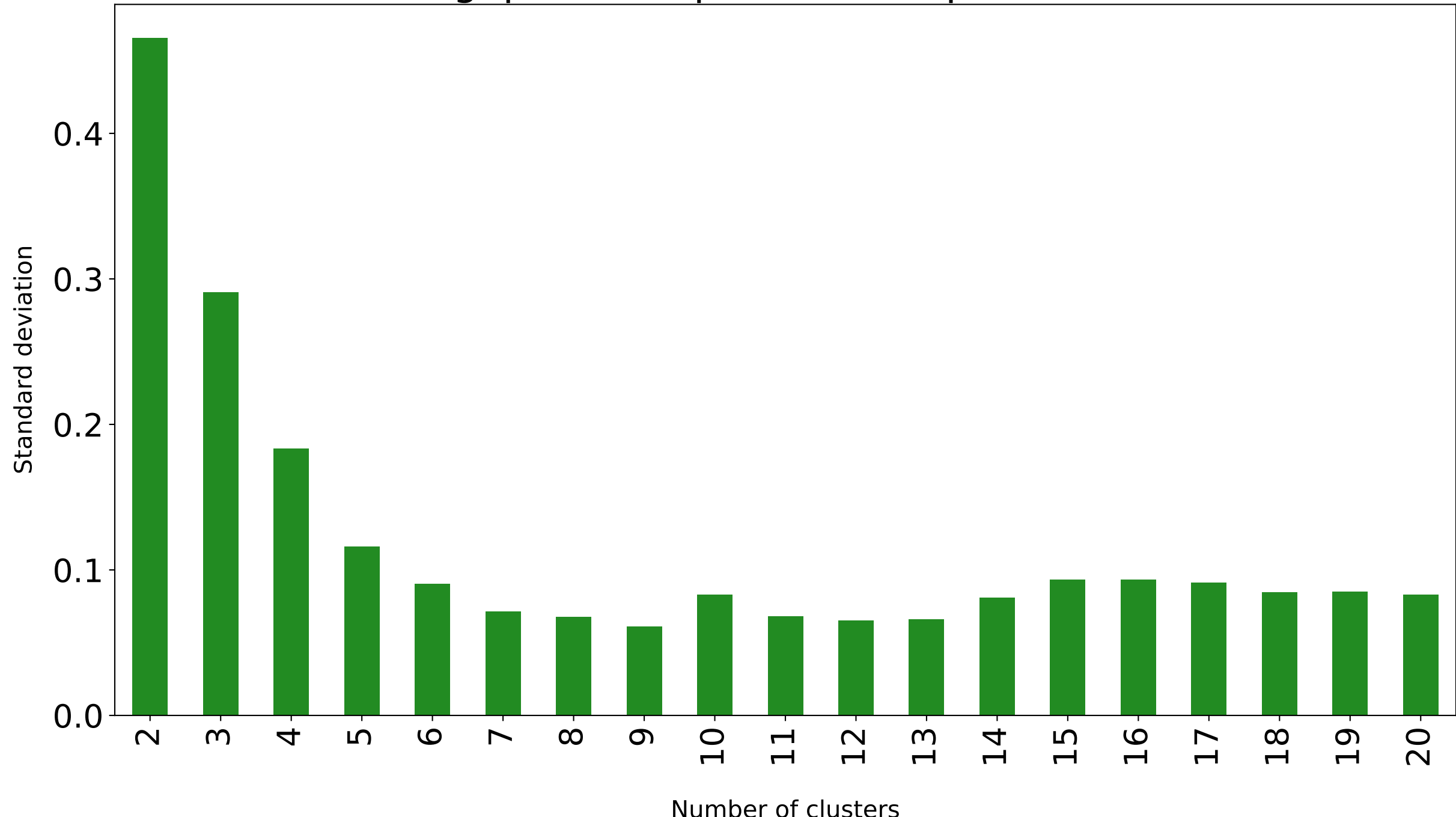


Cophenetic Correlation Coefficient: 0.6871868097142786

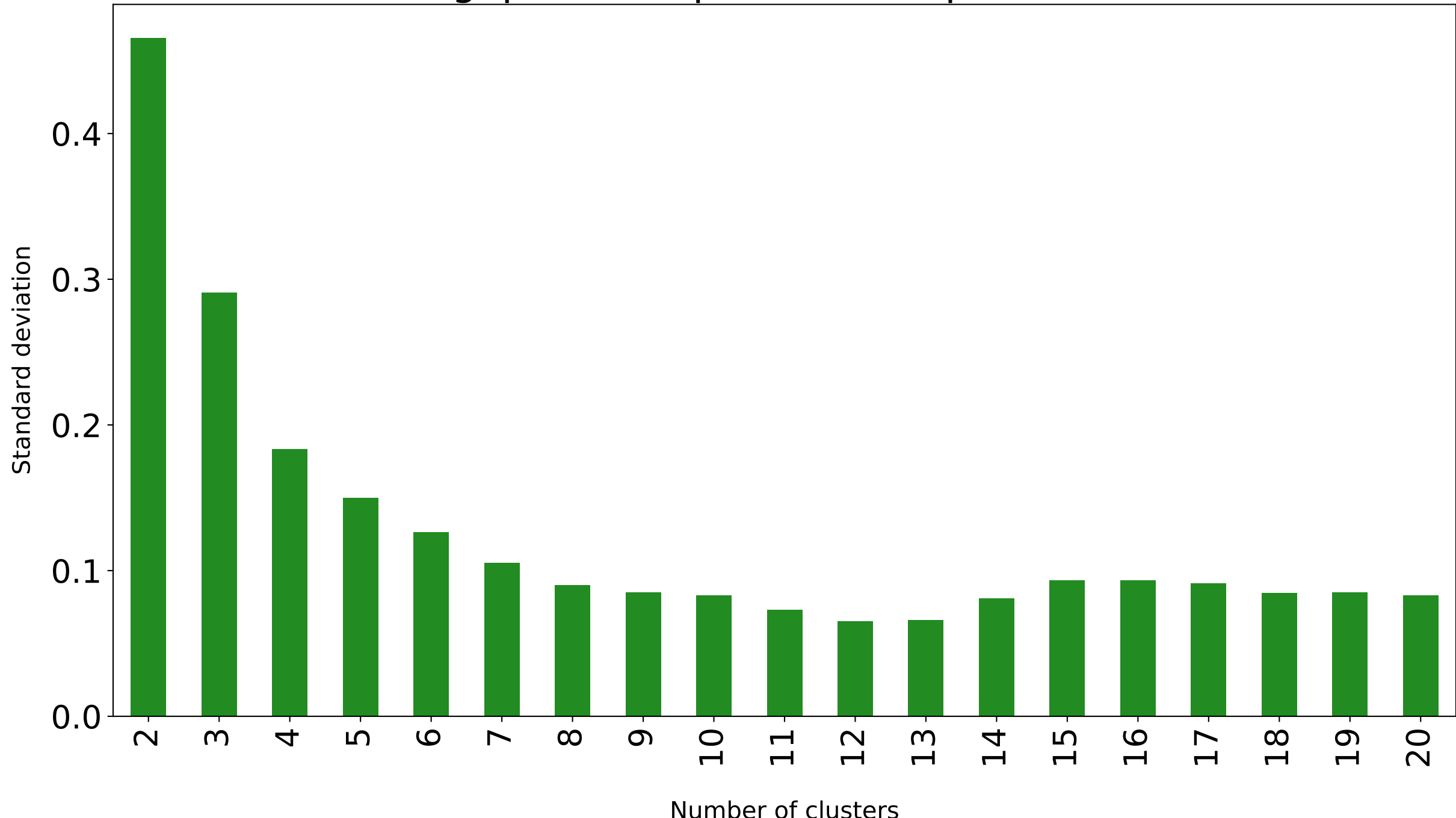
Average values of 20 clustering indices
gap: 0.40, Tp: 0.25, complete link

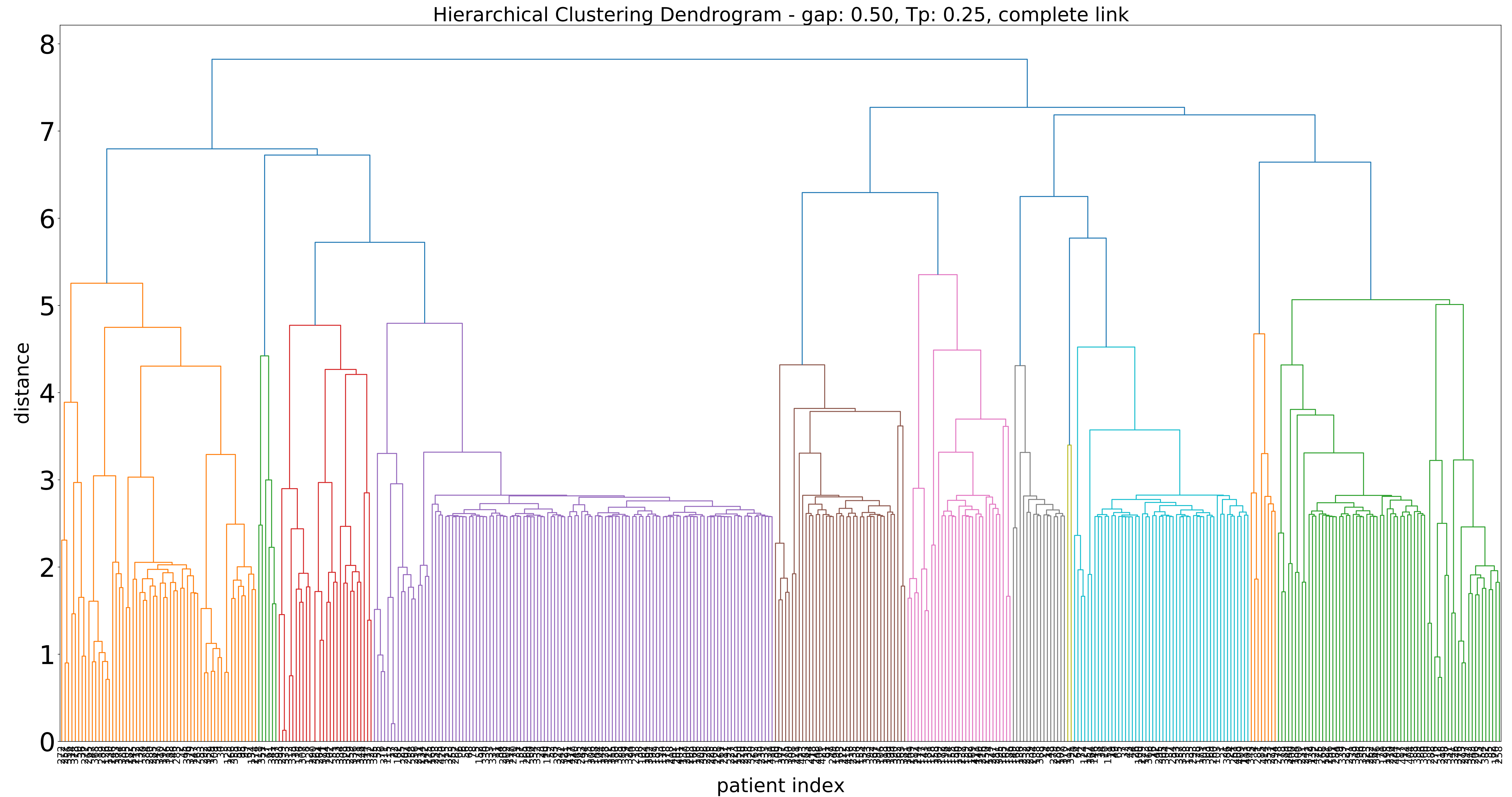
| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 0.99994 | 0.73368 | 0.60059 | 0.44495 | 0.19805 | 0.41769 | 0.73172 | 0.77837 | 0.73569 | 7e-05 | 0.57599 | 0.45945 | 1.0678 | 0.12046 | 0.19964 |
| 3.0 | 1.00001 | 0.67688 | 0.51968 | 0.53795 | 0.21435 | 0.47752 | 0.67262 | 0.88939 | 0.68121 | 8e-05 | 0.6067 | 0.3668 | 1.01245 | 0.19011 | 0.20842 |
| 4.0 | 1.0 | 0.72545 | 0.57191 | 0.70994 | 0.18031 | 0.61175 | 0.7188 | 0.85295 | 0.73226 | 0.00012 | 0.71611 | 0.41335 | 0.93406 | 0.18519 | 0.20854 |
| 5.0 | 1.0 | 0.7953 | 0.66866 | 0.79136 | 0.13924 | 0.72457 | 0.79156 | 0.72736 | 0.79913 | 0.00015 | 0.80846 | 0.52119 | 0.94451 | 0.19519 | 0.22376 |
| 6.0 | 1.0 | 0.82041 | 0.70268 | 0.81906 | 0.12073 | 0.76542 | 0.81794 | 0.66724 | 0.82291 | 0.00017 | 0.84407 | 0.55728 | 0.92389 | 0.2183 | 0.22795 |
| 7.0 | 1.0 | 0.83705 | 0.72619 | 0.81057 | 0.1065 | 0.79077 | 0.83597 | 0.60547 | 0.83813 | 0.00018 | 0.8661 | 0.58256 | 1.07908 | 0.20897 | 0.23237 |
| 8.0 | 1.0 | 0.84966 | 0.7438 | 0.83995 | 0.09996 | 0.81246 | 0.84864 | 0.57752 | 0.85067 | 0.0002 | 0.88726 | 0.60374 | 1.06224 | 0.20791 | 0.24338 |
| 9.0 | 1.0 | 0.84339 | 0.73406 | 0.79379 | 0.10391 | 0.80699 | 0.84246 | 0.58077 | 0.84432 | 0.00021 | 0.88831 | 0.59071 | 1.77626 | 0.21469 | 0.25402 |
| 10.0 | 1.0 | 0.81313 | 0.68819 | 0.74589 | 0.1239 | 0.77293 | 0.81196 | 0.66361 | 0.81431 | 0.00021 | 0.87513 | 0.53215 | 1.76977 | 0.21598 | 0.24167 |
| 11.0 | 1.0 | 0.813 | 0.68688 | 0.73013 | 0.11942 | 0.77459 | 0.81121 | 0.63179 | 0.81481 | 0.00021 | 0.87862 | 0.53025 | 1.76631 | 0.21643 | 0.24882 |
| 12.0 | 1.0 | 0.81466 | 0.68722 | 0.71977 | 0.11842 | 0.77899 | 0.81215 | 0.59657 | 0.81717 | 0.00022 | 0.88457 | 0.52896 | 1.7592 | 0.20483 | 0.25531 |
| 13.0 | 1.0 | 0.81495 | 0.68811 | 0.73439 | 0.12877 | 0.78233 | 0.81307 | 0.64554 | 0.81683 | 0.00024 | 0.89321 | 0.52928 | 1.7511 | 0.18613 | 0.25498 |
| 14.0 | 1.0 | 0.84653 | 0.73508 | 0.8089 | 0.1166 | 0.82235 | 0.84588 | 0.60678 | 0.84717 | 0.00028 | 0.91938 | 0.58494 | 1.73575 | 0.18564 | 0.26807 |
| 15.0 | 1.0 | 0.88852 | 0.80052 | 0.8879 | 0.10856 | 0.87248 | 0.88807 | 0.53092 | 0.88897 | 0.00031 | 0.94514 | 0.67126 | 1.71821 | 0.17937 | 0.27264 |
| 16.0 | 1.0 | 0.89242 | 0.80672 | 0.88477 | 0.1087 | 0.87733 | 0.8921 | 0.52851 | 0.89273 | 0.00032 | 0.94824 | 0.67929 | 1.71604 | 0.18625 | 0.27315 |
| 17.0 | 1.0 | 0.89546 | 0.81175 | 0.87981 | 0.10334 | 0.88101 | 0.89519 | 0.50618 | 0.89573 | 0.00032 | 0.95033 | 0.68643 | 1.71505 | 0.1963 | 0.2736 |
| 18.0 | 1.0 | 0.8937 | 0.80883 | 0.86872 | 0.10328 | 0.87923 | 0.89339 | 0.50392 | 0.89402 | 0.00033 | 0.95015 | 0.6823 | 1.71484 | 0.20617 | 0.28441 |
| 19.0 | 1.0 | 0.89035 | 0.80299 | 0.85491 | 0.10411 | 0.87571 | 0.8899 | 0.50636 | 0.8908 | 0.00033 | 0.94934 | 0.67367 | 1.71454 | 0.21262 | 0.29368 |
| 20.0 | 1.0 | 0.88786 | 0.79862 | 0.84996 | 0.10619 | 0.87333 | 0.88739 | 0.51258 | 0.88834 | 0.00034 | 0.94947 | 0.66692 | 1.71185 | 0.20846 | 0.29377 |

Standard deviation of Adjusted Rand versus number of clusters
gap: 0.40, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 0.40, Tp: 0.25, complete link

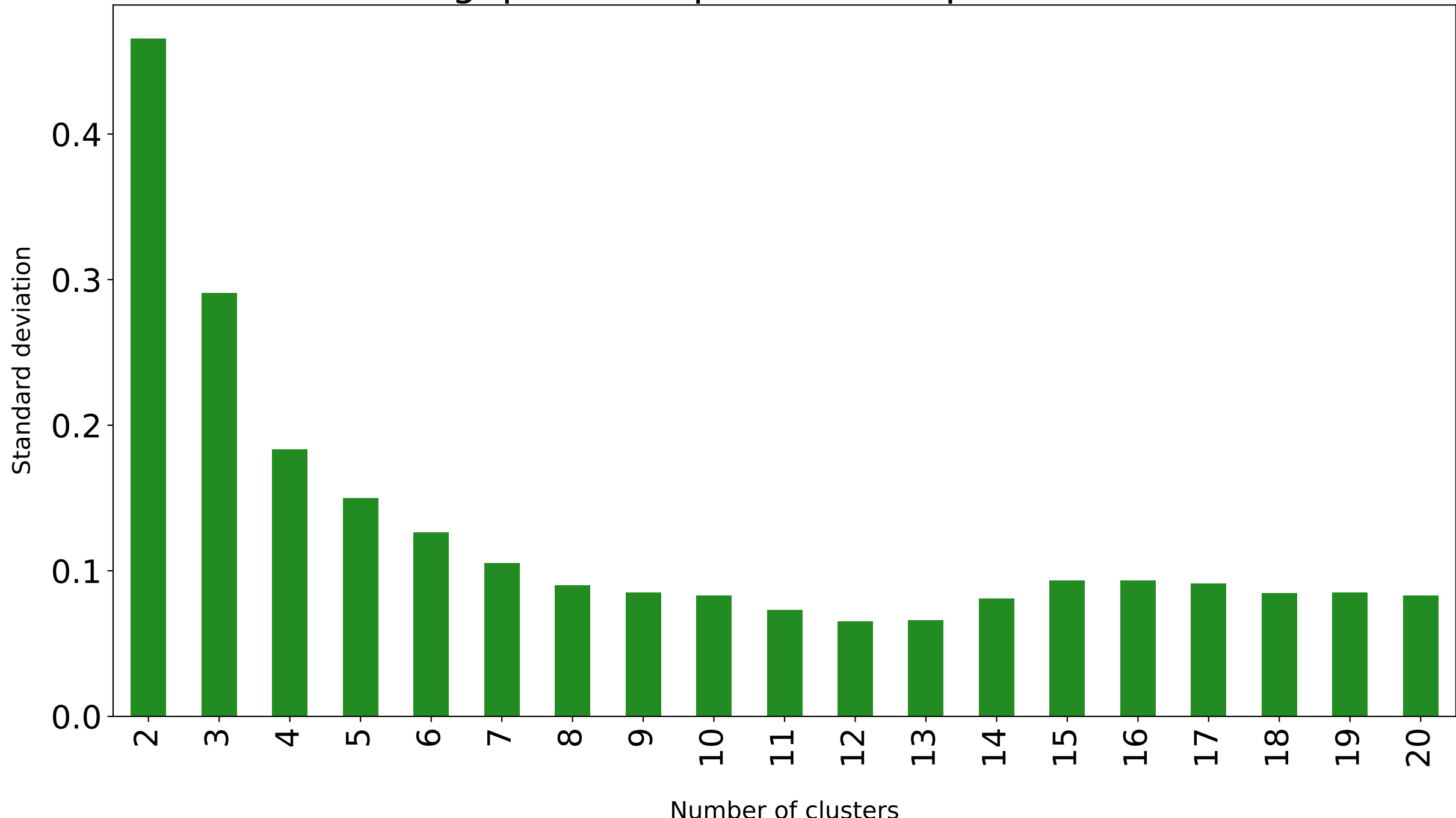




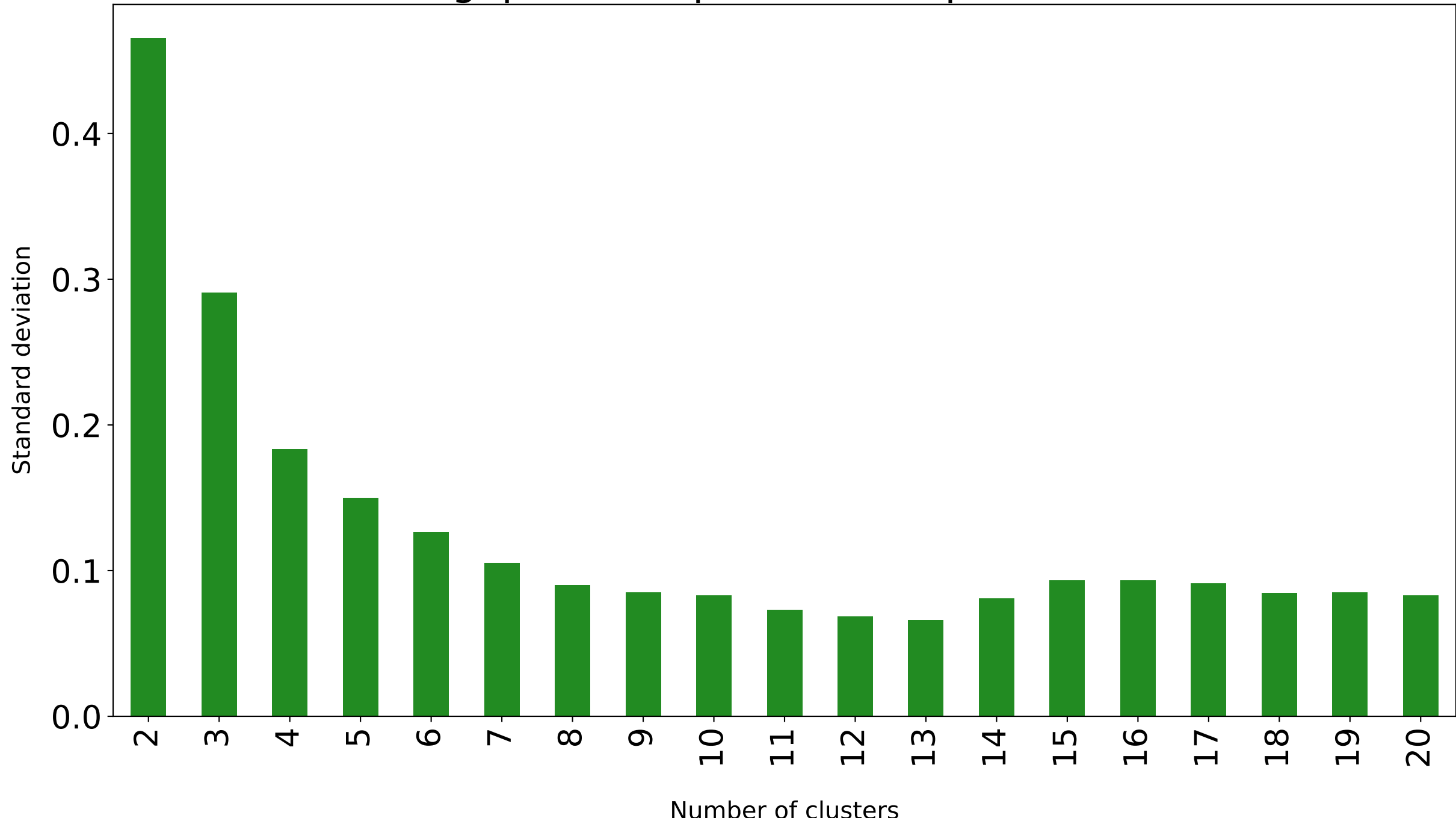
Average values of 20 clustering indices
gap: 0.50, Tp: 0.25, complete link

| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 0.99987 | 0.67422 | 0.5136 | 0.32008 | 0.23316 | 0.29521 | 0.67141 | 0.92118 | 0.67712 | 5e-05 | 0.48825 | 0.35363 | 1.04673 | 0.13752 | 0.17606 |
| 3.0 | 1.00002 | 0.59535 | 0.42899 | 0.3358 | 0.30335 | 0.3242 | 0.59303 | 1.23165 | 0.59771 | 5e-05 | 0.51406 | 0.27945 | 1.02583 | 0.15002 | 0.17818 |
| 4.0 | 1.00001 | 0.63087 | 0.46321 | 0.43715 | 0.2491 | 0.4549 | 0.62843 | 1.14281 | 0.63333 | 8e-05 | 0.6154 | 0.30548 | 0.98215 | 0.17385 | 0.18839 |
| 5.0 | 1.0 | 0.72966 | 0.58074 | 0.70099 | 0.19436 | 0.63862 | 0.72636 | 0.92692 | 0.73301 | 0.00014 | 0.75917 | 0.42089 | 0.91155 | 0.17069 | 0.19039 |
| 6.0 | 1.0 | 0.74353 | 0.59673 | 0.7026 | 0.1906 | 0.66622 | 0.74183 | 0.91121 | 0.74524 | 0.00015 | 0.7875 | 0.43341 | 1.14439 | 0.20224 | 0.19271 |
| 7.0 | 1.0 | 0.7498 | 0.60424 | 0.6946 | 0.18797 | 0.67947 | 0.74867 | 0.88771 | 0.75094 | 0.00016 | 0.80244 | 0.43981 | 1.13438 | 0.21272 | 0.2034 |
| 8.0 | 1.0 | 0.78236 | 0.64665 | 0.73568 | 0.14992 | 0.72685 | 0.78141 | 0.75792 | 0.78331 | 0.00018 | 0.8375 | 0.48511 | 1.1099 | 0.23404 | 0.20486 |
| 9.0 | 1.0 | 0.81095 | 0.68583 | 0.76209 | 0.12385 | 0.76654 | 0.80994 | 0.65437 | 0.81196 | 0.0002 | 0.86557 | 0.53001 | 1.09003 | 0.2485 | 0.22179 |
| 10.0 | 1.0 | 0.81485 | 0.68966 | 0.73836 | 0.11702 | 0.77358 | 0.81345 | 0.62471 | 0.81625 | 0.0002 | 0.87255 | 0.53261 | 1.75387 | 0.231 | 0.22367 |
| 11.0 | 1.0 | 0.82811 | 0.70942 | 0.82943 | 0.11998 | 0.79567 | 0.82699 | 0.61388 | 0.82923 | 0.00023 | 0.89571 | 0.55719 | 1.72626 | 0.20083 | 0.23917 |
| 12.0 | 1.0 | 0.82885 | 0.71099 | 0.81122 | 0.12332 | 0.79779 | 0.8282 | 0.63588 | 0.82951 | 0.00024 | 0.89987 | 0.55868 | 1.72423 | 0.2105 | 0.24364 |
| 13.0 | 1.0 | 0.83357 | 0.71757 | 0.8042 | 0.12367 | 0.80493 | 0.83296 | 0.64723 | 0.83418 | 0.00025 | 0.90662 | 0.56602 | 1.72079 | 0.20363 | 0.25272 |
| 14.0 | 1.0 | 0.82771 | 0.70814 | 0.80439 | 0.13085 | 0.80046 | 0.82705 | 0.66603 | 0.82836 | 0.00027 | 0.90977 | 0.5532 | 1.70853 | 0.19883 | 0.25551 |
| 15.0 | 1.0 | 0.82746 | 0.70707 | 0.78419 | 0.12755 | 0.80113 | 0.82675 | 0.65982 | 0.82818 | 0.00027 | 0.91214 | 0.55092 | 1.70775 | 0.2001 | 0.267 |
| 16.0 | 1.0 | 0.87325 | 0.7759 | 0.87425 | 0.11341 | 0.85554 | 0.87272 | 0.56905 | 0.87378 | 0.00031 | 0.93934 | 0.63715 | 1.68576 | 0.20957 | 0.26826 |
| 17.0 | 1.0 | 0.88385 | 0.79284 | 0.8826 | 0.10475 | 0.868 | 0.88344 | 0.53209 | 0.88426 | 0.00032 | 0.94547 | 0.6601 | 1.68291 | 0.20915 | 0.26961 |
| 18.0 | 1.0 | 0.89637 | 0.8127 | 0.9066 | 0.10414 | 0.8828 | 0.89586 | 0.51987 | 0.89689 | 0.00034 | 0.95274 | 0.68736 | 1.67887 | 0.2022 | 0.2739 |
| 19.0 | 1.0 | 0.90118 | 0.82085 | 0.90059 | 0.10211 | 0.8884 | 0.90085 | 0.50684 | 0.90151 | 0.00035 | 0.95553 | 0.6989 | 1.67844 | 0.20747 | 0.28306 |
| 20.0 | 1.0 | 0.91064 | 0.83668 | 0.91038 | 0.09833 | 0.89934 | 0.91035 | 0.47966 | 0.91093 | 0.00036 | 0.9605 | 0.72208 | 1.67573 | 0.21211 | 0.28525 |

Standard deviation of Adjusted Rand versus number of clusters
gap: 0.50, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 0.50, Tp: 0.25, complete link

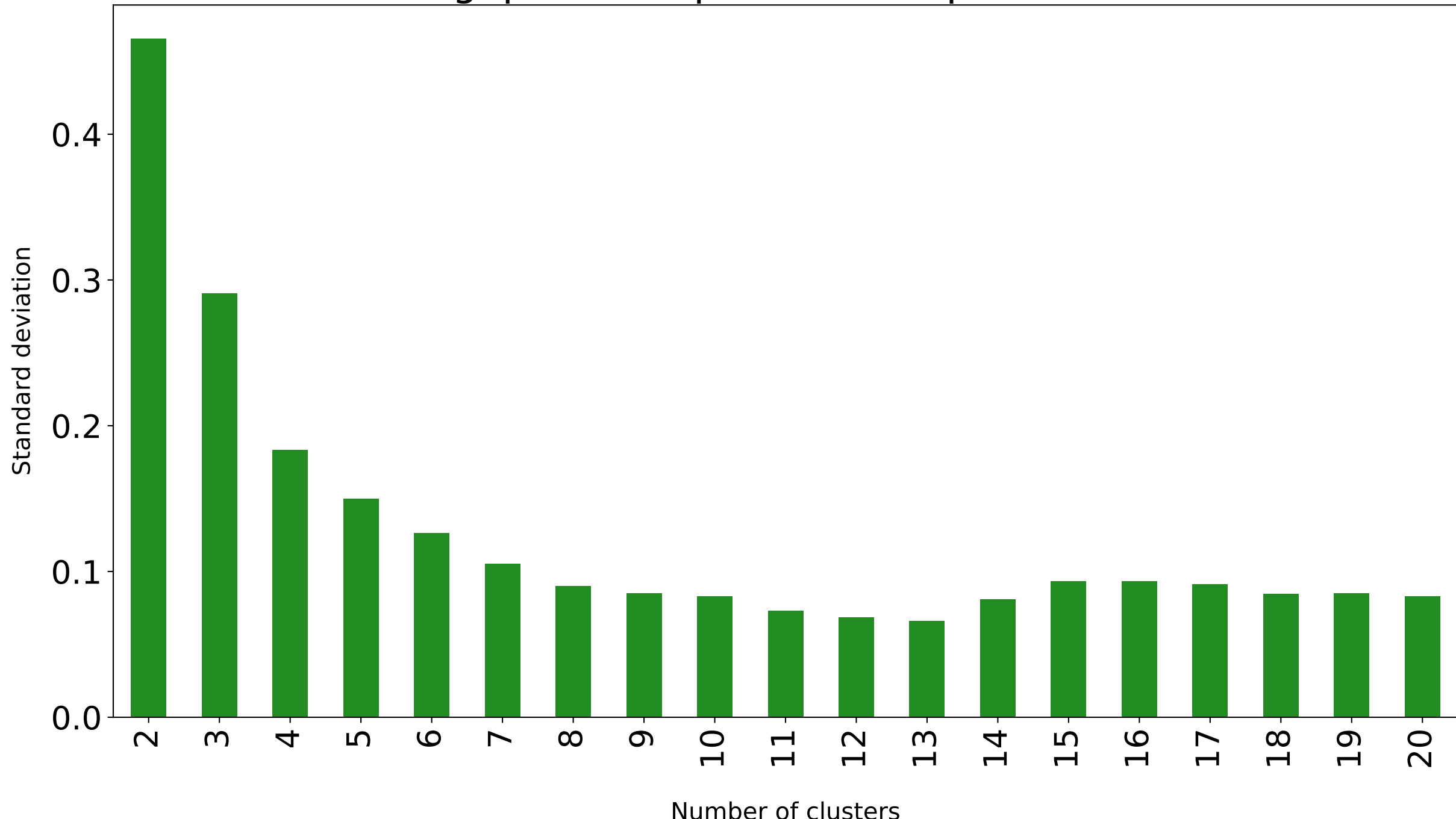




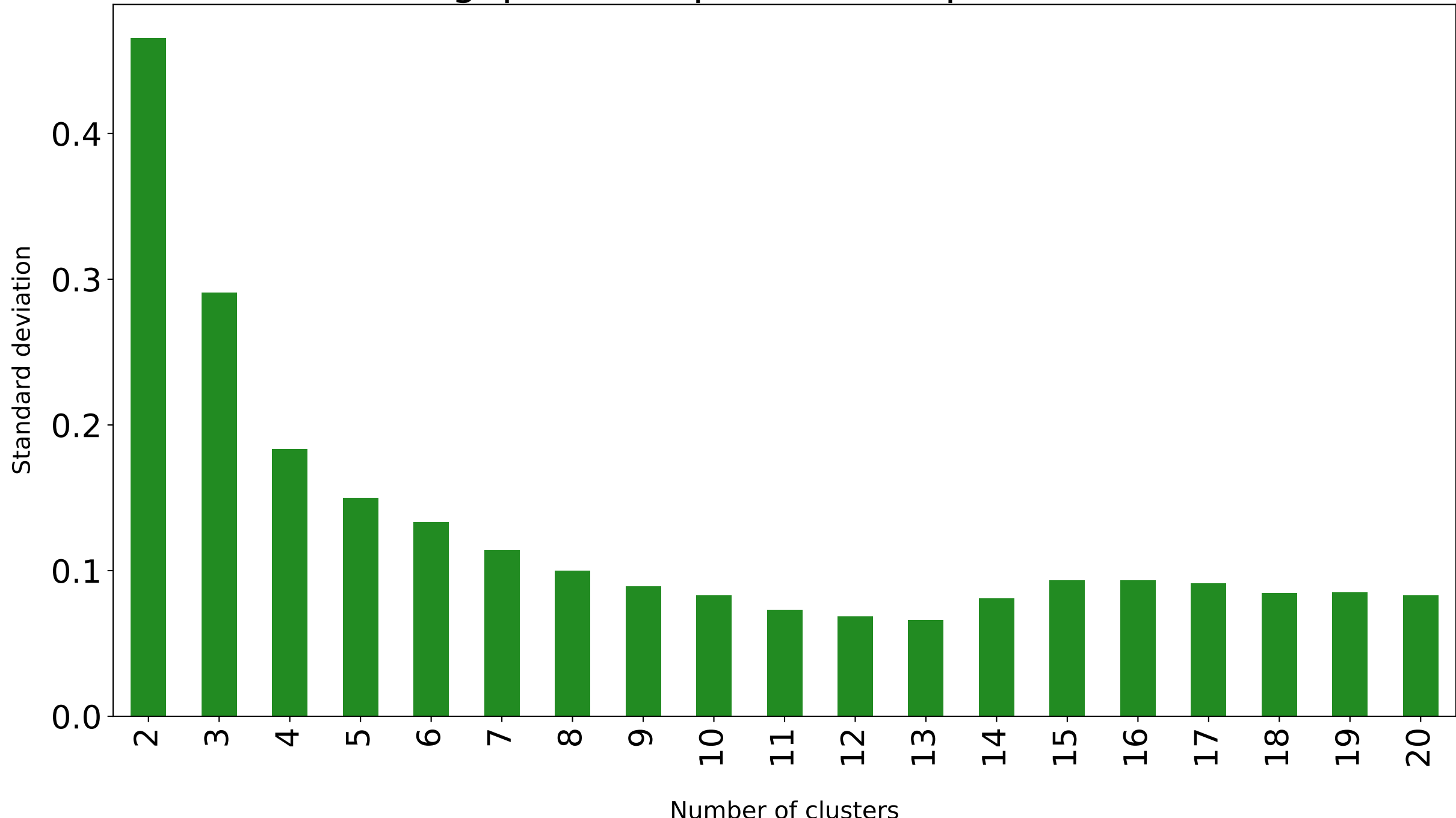
Average values of 20 clustering indices
gap: 0.60, Tp: 0.25, complete link

| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 0.99989 | 0.60341 | 0.43062 | 0.11877 | 0.31099 | 0.10716 | 0.59759 | 1.09689 | 0.60945 | 2e-05 | 0.3875 | 0.27849 | 1.0431 | 0.12412 | 0.18894 |
| 3.0 | 1.00001 | 0.55533 | 0.38634 | 0.16348 | 0.33311 | 0.17996 | 0.55266 | 1.32168 | 0.55804 | 3e-05 | 0.42319 | 0.24326 | 1.14372 | 0.1626 | 0.19114 |
| 4.0 | 1.00001 | 0.55047 | 0.38286 | 0.26474 | 0.32587 | 0.29238 | 0.54777 | 1.43233 | 0.5532 | 5e-05 | 0.50806 | 0.24122 | 1.20068 | 0.13558 | 0.20468 |
| 5.0 | 1.00001 | 0.61766 | 0.45273 | 0.45631 | 0.25228 | 0.46027 | 0.61576 | 1.25005 | 0.61958 | 9e-05 | 0.63785 | 0.30014 | 1.12201 | 0.17589 | 0.19103 |
| 6.0 | 1.0 | 0.63213 | 0.46604 | 0.45882 | 0.23343 | 0.49691 | 0.62941 | 1.20441 | 0.63487 | 0.0001 | 0.66973 | 0.31023 | 1.19312 | 0.18539 | 0.20534 |
| 7.0 | 1.0 | 0.69244 | 0.53431 | 0.58318 | 0.19839 | 0.59993 | 0.69085 | 1.04542 | 0.69405 | 0.00013 | 0.75134 | 0.37179 | 1.14511 | 0.19265 | 0.20714 |
| 8.0 | 1.0 | 0.70179 | 0.54292 | 0.57195 | 0.18658 | 0.61824 | 0.69908 | 0.98983 | 0.70453 | 0.00014 | 0.76702 | 0.37886 | 1.14307 | 0.22505 | 0.21645 |
| 9.0 | 1.0 | 0.70738 | 0.54589 | 0.55304 | 0.18169 | 0.631 | 0.70234 | 0.96243 | 0.71248 | 0.00015 | 0.77786 | 0.38071 | 1.47594 | 0.2337 | 0.21799 |
| 10.0 | 1.0 | 0.7099 | 0.54636 | 0.55321 | 0.18203 | 0.64031 | 0.70429 | 0.93432 | 0.71557 | 0.00016 | 0.79065 | 0.37879 | 1.4696 | 0.21578 | 0.22751 |
| 11.0 | 1.0 | 0.78984 | 0.65484 | 0.7261 | 0.14363 | 0.74718 | 0.78892 | 0.75798 | 0.79075 | 0.00021 | 0.86697 | 0.49159 | 1.38906 | 0.2166 | 0.23866 |
| 12.0 | 1.0 | 0.80837 | 0.67914 | 0.82322 | 0.14163 | 0.77497 | 0.80678 | 0.73565 | 0.80998 | 0.00024 | 0.89085 | 0.51883 | 1.35798 | 0.2042 | 0.25233 |
| 13.0 | 1.0 | 0.82041 | 0.69751 | 0.81876 | 0.13202 | 0.79007 | 0.81944 | 0.69679 | 0.82139 | 0.00025 | 0.90061 | 0.5411 | 1.35603 | 0.20232 | 0.25266 |
| 14.0 | 1.0 | 0.82797 | 0.70771 | 0.82589 | 0.13143 | 0.80078 | 0.827 | 0.68709 | 0.82895 | 0.00027 | 0.90956 | 0.55198 | 1.34736 | 0.20882 | 0.25716 |
| 15.0 | 1.0 | 0.84138 | 0.72762 | 0.81681 | 0.12404 | 0.8172 | 0.84074 | 0.65153 | 0.84202 | 0.00028 | 0.91908 | 0.57586 | 1.3456 | 0.21759 | 0.26513 |
| 16.0 | 1.0 | 0.84716 | 0.73572 | 0.80219 | 0.12206 | 0.82457 | 0.84648 | 0.63975 | 0.84785 | 0.00029 | 0.92379 | 0.58519 | 1.67869 | 0.21899 | 0.26763 |
| 17.0 | 1.0 | 0.85728 | 0.75122 | 0.82478 | 0.12167 | 0.83716 | 0.85692 | 0.6352 | 0.85765 | 0.00031 | 0.93169 | 0.60436 | 1.67106 | 0.21962 | 0.26768 |
| 18.0 | 1.0 | 0.89064 | 0.80383 | 0.88898 | 0.11494 | 0.87612 | 0.89029 | 0.57147 | 0.89099 | 0.00033 | 0.94981 | 0.67525 | 1.65454 | 0.20894 | 0.27201 |
| 19.0 | 1.0 | 0.89966 | 0.81847 | 0.89768 | 0.11135 | 0.88668 | 0.89935 | 0.54694 | 0.89997 | 0.00035 | 0.95489 | 0.69563 | 1.65105 | 0.21704 | 0.27245 |
| 20.0 | 1.0 | 0.90993 | 0.83546 | 0.90445 | 0.10311 | 0.89859 | 0.90969 | 0.51522 | 0.91017 | 0.00036 | 0.96036 | 0.71994 | 1.64759 | 0.2164 | 0.2746 |

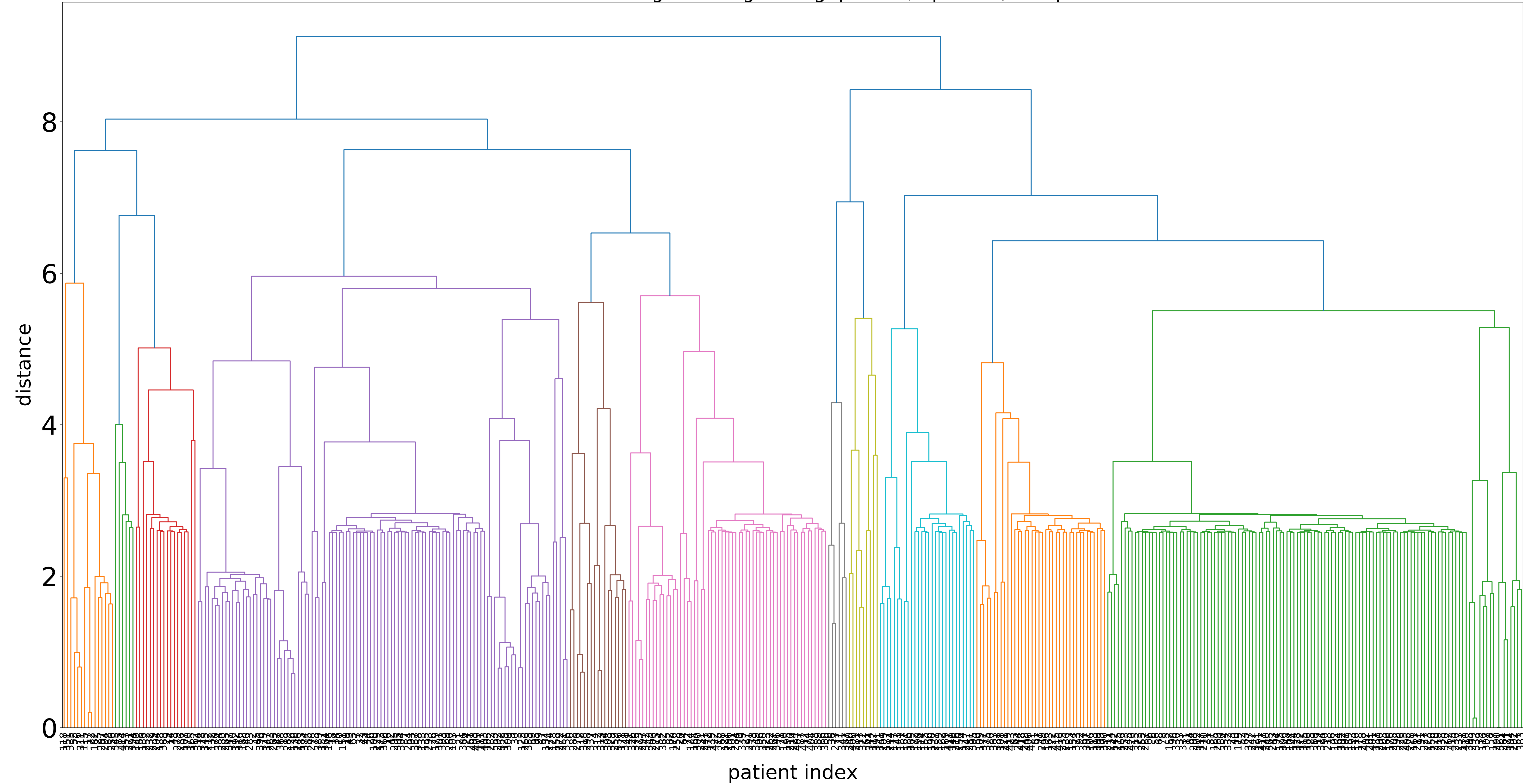
Standard deviation of Adjusted Rand versus number of clusters
gap: 0.60, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 0.60, Tp: 0.25, complete link



Hierarchical Clustering Dendrogram - gap: 0.70, Tp: 0.25, complete link

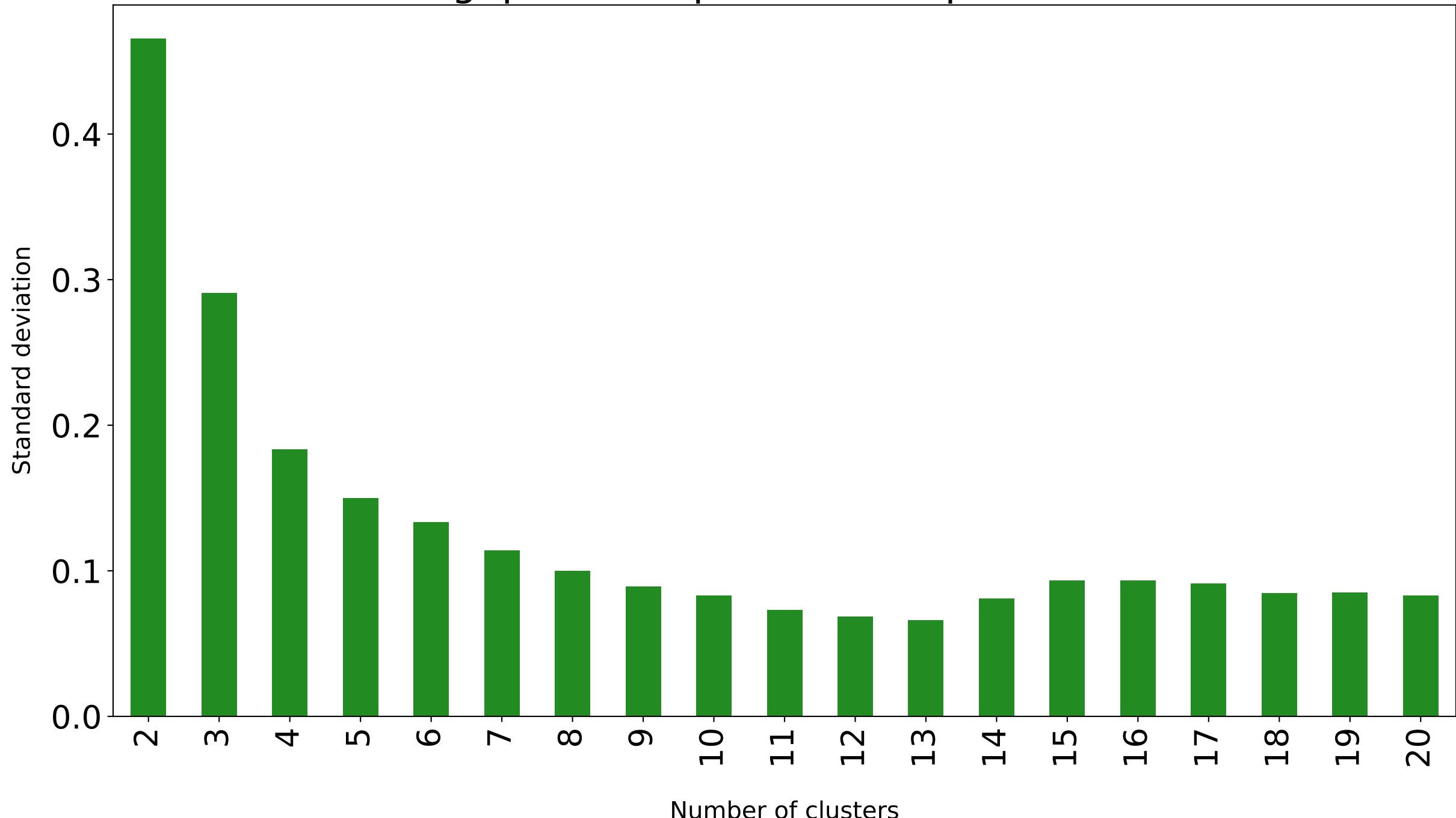


Cophenetic Correlation Coefficient: 0.6307419544840157

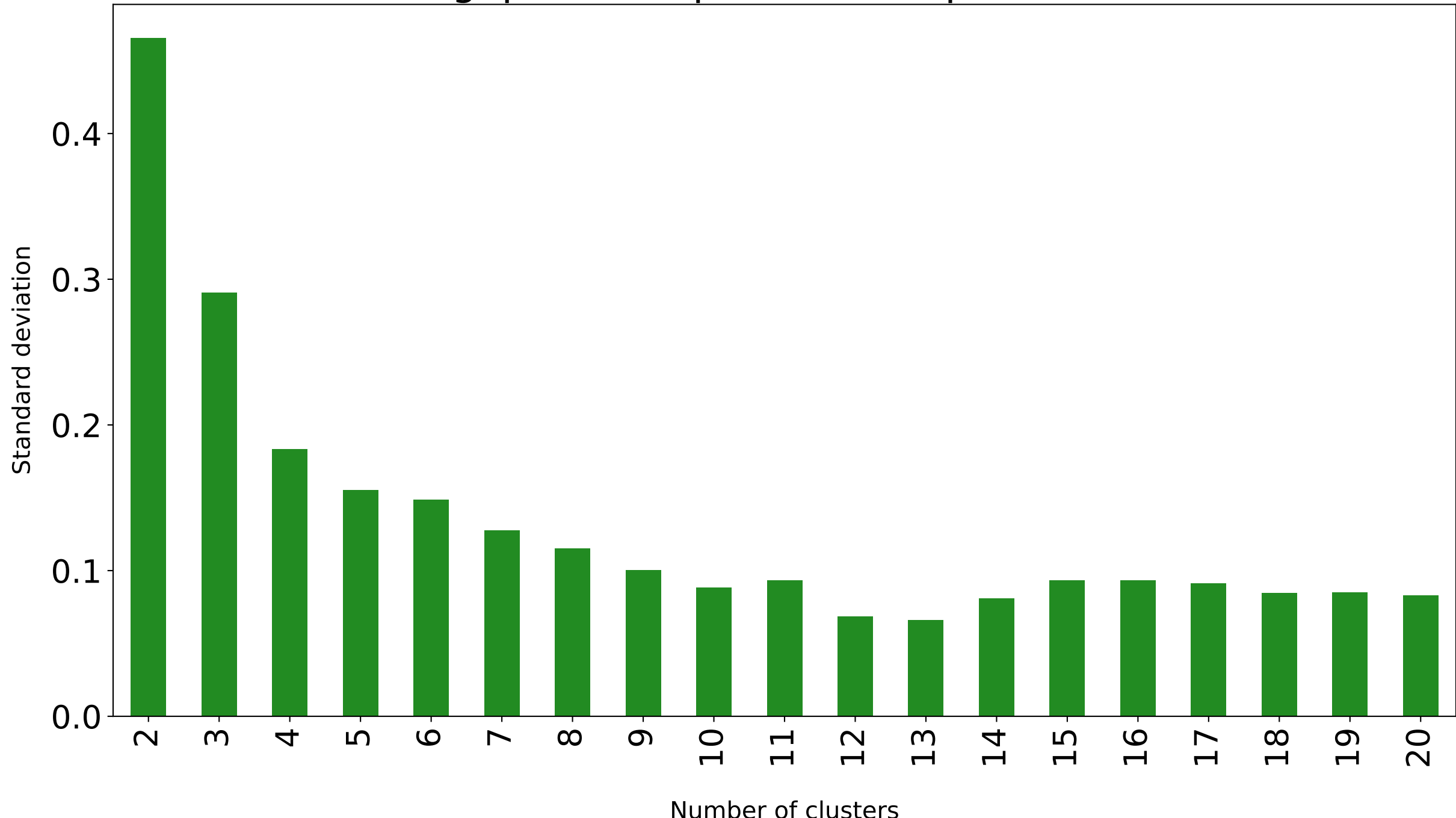
Average values of 20 clustering indices
gap: 0.70, Tp: 0.25, complete link

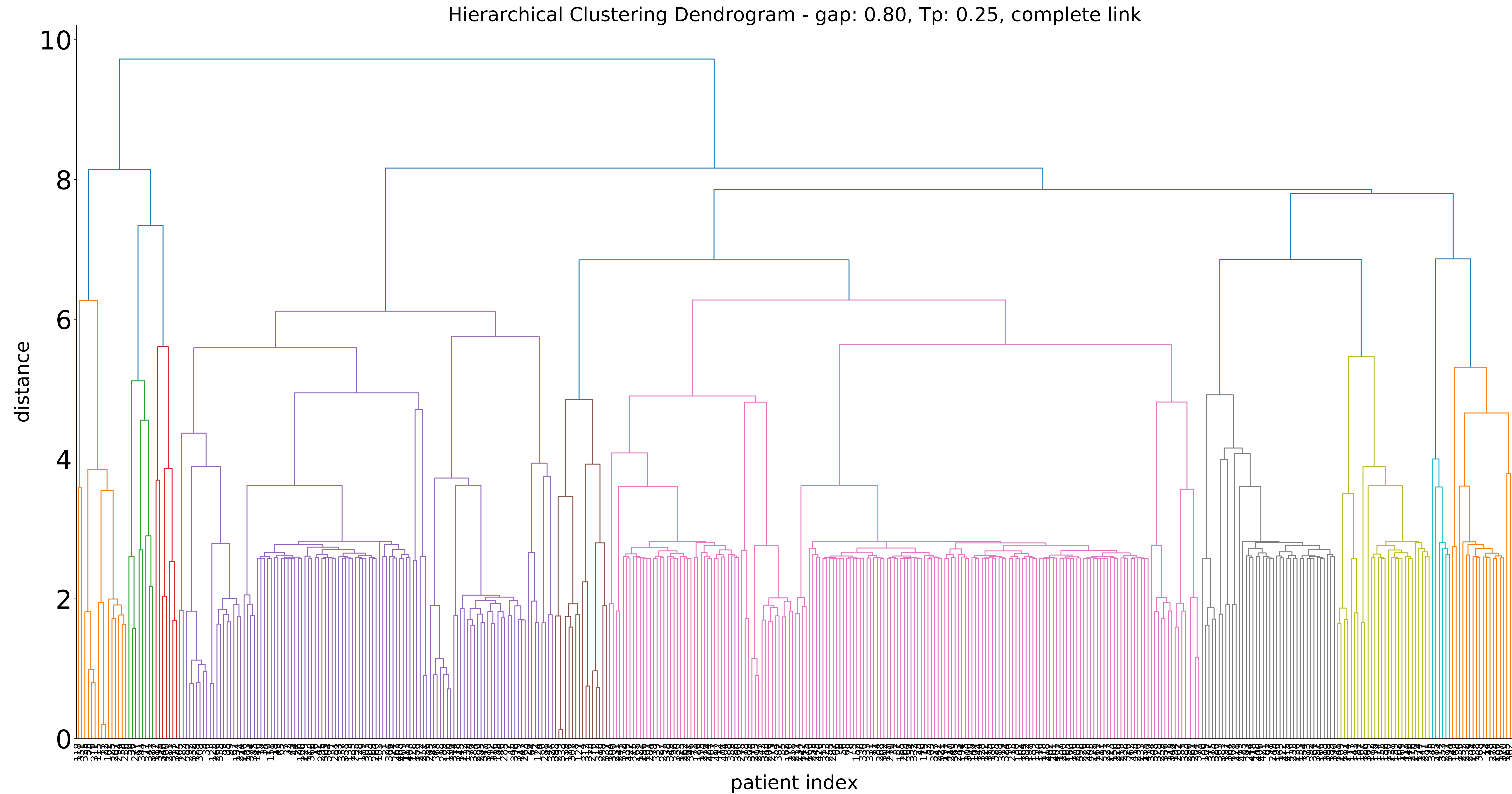
| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 0.9999 | 0.6266 | 0.44472 | 0.0896 | 0.29225 | 0.07518 | 0.61316 | 1.02467 | 0.64062 | 1e-05 | 0.3693 | 0.28799 | 1.02503 | 0.12552 | 0.18996 |
| 3.0 | 1.00025 | 0.57012 | 0.40018 | 0.17924 | 0.3244 | 0.17273 | 0.56731 | 1.2955 | 0.57297 | 3e-05 | 0.41729 | 0.25353 | 1.05897 | 0.15379 | 0.19912 |
| 4.0 | 1.00002 | 0.5376 | 0.36995 | 0.23609 | 0.34097 | 0.2418 | 0.53551 | 1.47993 | 0.53972 | 4e-05 | 0.47165 | 0.2301 | 1.11672 | 0.12576 | 0.20966 |
| 5.0 | 1.00001 | 0.58591 | 0.42022 | 0.40932 | 0.2814 | 0.39864 | 0.58395 | 1.36566 | 0.5879 | 7e-05 | 0.59266 | 0.27305 | 1.04407 | 0.15871 | 0.19423 |
| 6.0 | 1.00001 | 0.60082 | 0.43453 | 0.41337 | 0.25845 | 0.44045 | 0.59831 | 1.30202 | 0.60335 | 9e-05 | 0.62888 | 0.28437 | 1.05277 | 0.19688 | 0.21077 |
| 7.0 | 1.0 | 0.64917 | 0.48587 | 0.51859 | 0.22977 | 0.53767 | 0.64727 | 1.18152 | 0.65109 | 0.00012 | 0.71124 | 0.32819 | 1.00526 | 0.20452 | 0.21323 |
| 8.0 | 1.0 | 0.66149 | 0.49689 | 0.51038 | 0.21729 | 0.56193 | 0.65817 | 1.13013 | 0.66485 | 0.00013 | 0.73103 | 0.33689 | 1.00455 | 0.22142 | 0.21886 |
| 9.0 | 1.0 | 0.6743 | 0.5073 | 0.50468 | 0.20207 | 0.58584 | 0.66847 | 1.06945 | 0.68019 | 0.00014 | 0.74873 | 0.34501 | 1.00268 | 0.24736 | 0.22662 |
| 10.0 | 1.0 | 0.67945 | 0.51126 | 0.50882 | 0.19762 | 0.59876 | 0.67289 | 1.03324 | 0.68611 | 0.00015 | 0.76322 | 0.34741 | 0.99655 | 0.23049 | 0.23025 |
| 11.0 | 1.0 | 0.76529 | 0.62418 | 0.68718 | 0.15393 | 0.71563 | 0.76392 | 0.83155 | 0.76666 | 0.0002 | 0.848 | 0.46149 | 0.91699 | 0.23037 | 0.24833 |
| 12.0 | 1.0 | 0.77672 | 0.63718 | 0.74577 | 0.15222 | 0.73553 | 0.77597 | 0.83146 | 0.77748 | 0.00022 | 0.86956 | 0.47173 | 0.89586 | 0.21569 | 0.25217 |
| 13.0 | 1.0 | 0.78207 | 0.64357 | 0.72684 | 0.14853 | 0.74339 | 0.78112 | 0.80623 | 0.78303 | 0.00023 | 0.8761 | 0.47804 | 1.71006 | 0.21581 | 0.25532 |
| 14.0 | 1.0 | 0.80401 | 0.67417 | 0.76693 | 0.13947 | 0.77224 | 0.80329 | 0.74861 | 0.80473 | 0.00025 | 0.89598 | 0.51269 | 1.69177 | 0.21147 | 0.25956 |
| 15.0 | 1.0 | 0.8046 | 0.67458 | 0.76742 | 0.14206 | 0.77486 | 0.80394 | 0.75519 | 0.80526 | 0.00027 | 0.90149 | 0.51249 | 1.68226 | 0.21535 | 0.26356 |
| 16.0 | 1.0 | 0.81114 | 0.68323 | 0.76154 | 0.13597 | 0.7831 | 0.81034 | 0.73112 | 0.81195 | 0.00028 | 0.90639 | 0.52192 | 1.6804 | 0.22614 | 0.26891 |
| 17.0 | 1.0 | 0.87697 | 0.78142 | 0.89694 | 0.12391 | 0.86062 | 0.87594 | 0.61741 | 0.87799 | 0.00033 | 0.94307 | 0.64537 | 1.64621 | 0.21728 | 0.27381 |
| 18.0 | 1.0 | 0.88474 | 0.79412 | 0.89328 | 0.12142 | 0.86967 | 0.88413 | 0.5993 | 0.88536 | 0.00034 | 0.9476 | 0.66208 | 1.64565 | 0.21179 | 0.27455 |
| 19.0 | 1.0 | 0.89506 | 0.81094 | 0.89628 | 0.11699 | 0.88163 | 0.89471 | 0.57233 | 0.89541 | 0.00035 | 0.95327 | 0.68507 | 1.64414 | 0.20014 | 0.28025 |
| 20.0 | 1.0 | 0.90372 | 0.8251 | 0.89641 | 0.11116 | 0.89163 | 0.90354 | 0.54523 | 0.9039 | 0.00035 | 0.95787 | 0.7046 | 1.6427 | 0.20081 | 0.28109 |

Standard deviation of Adjusted Rand versus number of clusters
gap: 0.70, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 0.70, Tp: 0.25, complete link

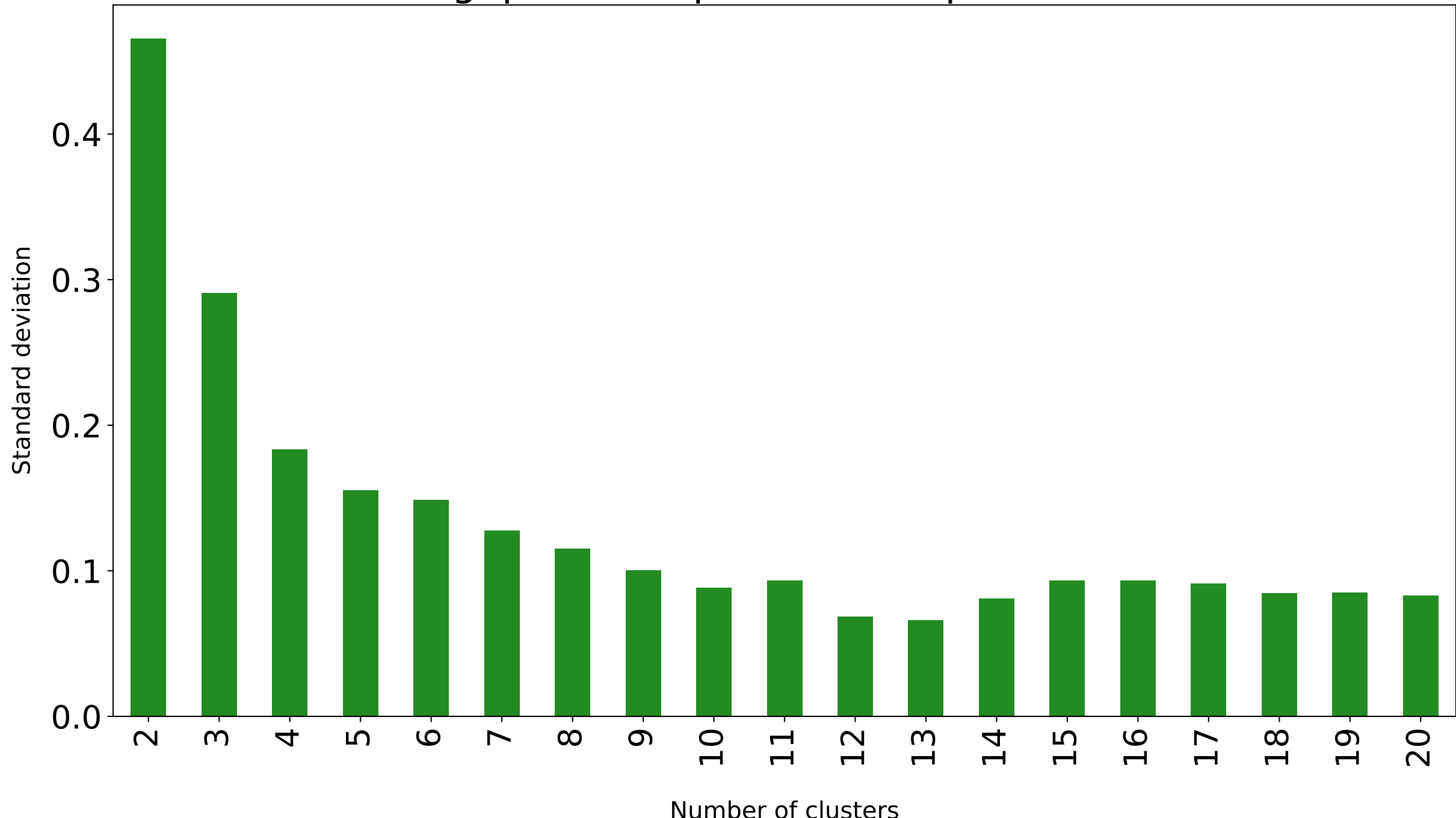




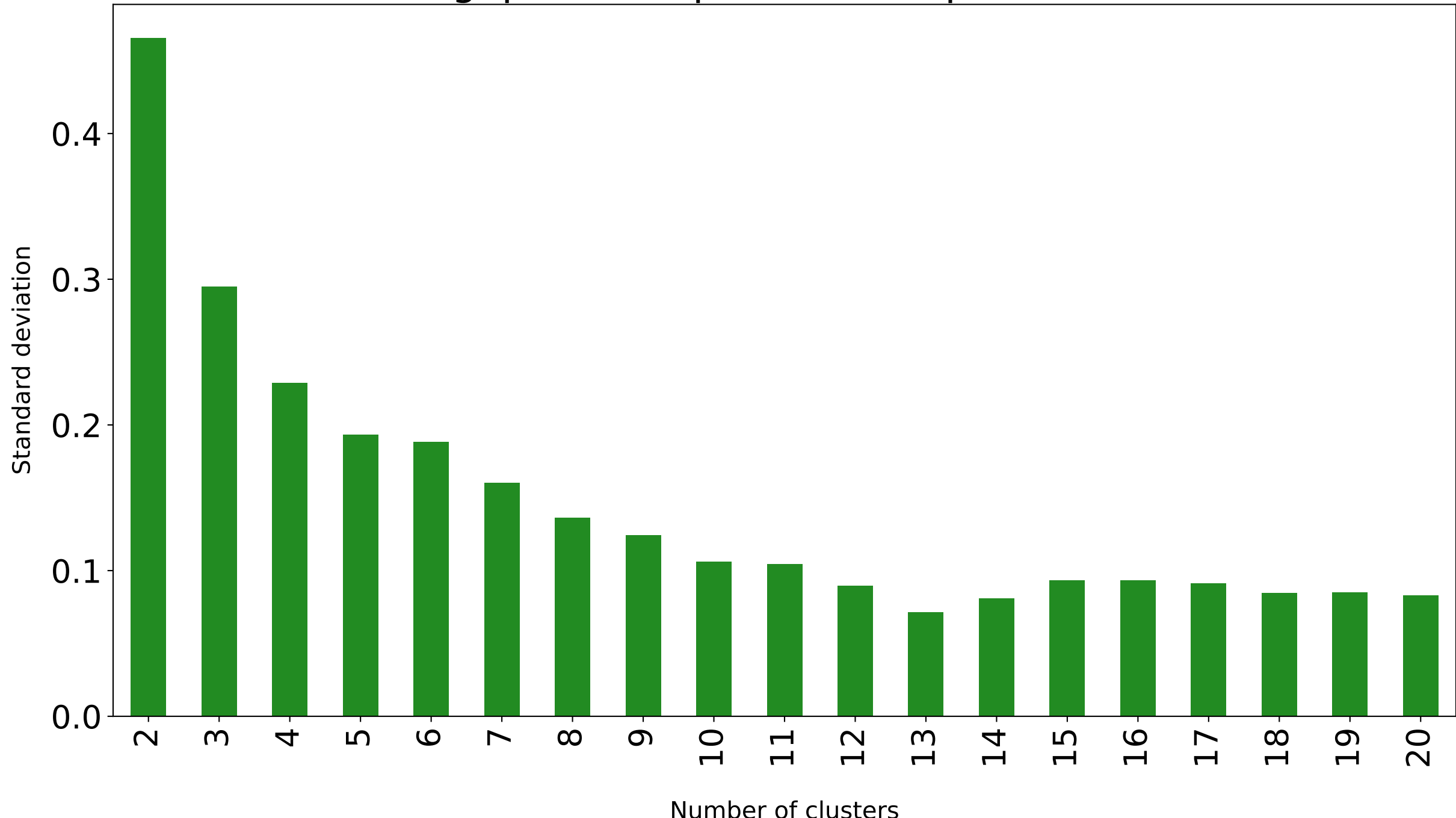
Average values of 20 clustering indices
gap: 0.80, Tp: 0.25, complete link

| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 1.0 | 0.84778 | 0.74321 | 0.44061 | 0.10531 | 0.29585 | 0.84054 | 0.51844 | 0.85522 | 0.00014 | 0.63799 | 0.62095 | 1.03704 | 0.13067 | 0.21284 |
| 3.0 | 0.99997 | 0.67452 | 0.52382 | 0.33256 | 0.23162 | 0.32344 | 0.67133 | 1.01987 | 0.67776 | 5e-05 | 0.51119 | 0.37712 | 0.96573 | 0.1623 | 0.21335 |
| 4.0 | 1.00004 | 0.61705 | 0.44737 | 0.23394 | 0.25503 | 0.30919 | 0.60849 | 1.16556 | 0.62582 | 5e-05 | 0.48605 | 0.29687 | 1.07537 | 0.21088 | 0.22118 |
| 5.0 | 1.00001 | 0.64991 | 0.49341 | 0.4772 | 0.24271 | 0.48564 | 0.64814 | 1.11378 | 0.6517 | 9e-05 | 0.64052 | 0.34201 | 0.97991 | 0.19068 | 0.22282 |
| 6.0 | 1.0 | 0.67507 | 0.52126 | 0.50655 | 0.22018 | 0.54457 | 0.67217 | 1.0283 | 0.678 | 0.00011 | 0.68938 | 0.36858 | 0.96395 | 0.19613 | 0.23663 |
| 7.0 | 1.0 | 0.68034 | 0.51983 | 0.4848 | 0.21236 | 0.56703 | 0.67355 | 1.00419 | 0.68725 | 0.00012 | 0.70717 | 0.36422 | 0.97396 | 0.20925 | 0.25314 |
| 8.0 | 1.0 | 0.67481 | 0.50587 | 0.45568 | 0.21003 | 0.56953 | 0.6639 | 0.9986 | 0.68596 | 0.00012 | 0.71043 | 0.34768 | 0.99915 | 0.24169 | 0.25329 |
| 9.0 | 1.0 | 0.67889 | 0.50755 | 0.46011 | 0.18572 | 0.58314 | 0.66639 | 0.91987 | 0.69169 | 0.00013 | 0.72486 | 0.348 | 0.98798 | 0.25587 | 0.25367 |
| 10.0 | 1.0 | 0.68906 | 0.52009 | 0.49324 | 0.18078 | 0.6061 | 0.67896 | 0.89296 | 0.69935 | 0.00014 | 0.75457 | 0.35756 | 0.96719 | 0.24084 | 0.27042 |
| 11.0 | 1.0 | 0.79692 | 0.66864 | 0.7256 | 0.12558 | 0.75342 | 0.79553 | 0.67073 | 0.79831 | 0.0002 | 0.86619 | 0.51387 | 0.8782 | 0.23662 | 0.27064 |
| 12.0 | 1.0 | 0.79852 | 0.66728 | 0.70095 | 0.12194 | 0.75765 | 0.79591 | 0.64507 | 0.80115 | 0.00021 | 0.8706 | 0.5098 | 1.69243 | 0.23598 | 0.27744 |
| 13.0 | 1.0 | 0.81412 | 0.68964 | 0.77633 | 0.12625 | 0.78118 | 0.8133 | 0.66565 | 0.81494 | 0.00024 | 0.89368 | 0.53289 | 1.66481 | 0.22997 | 0.28979 |
| 14.0 | 1.0 | 0.82237 | 0.70068 | 0.77019 | 0.12069 | 0.79224 | 0.82136 | 0.63772 | 0.82338 | 0.00025 | 0.90142 | 0.54531 | 1.66171 | 0.23381 | 0.28051 |
| 15.0 | 1.0 | 0.86056 | 0.75759 | 0.84644 | 0.11206 | 0.83927 | 0.85992 | 0.55967 | 0.86119 | 0.00029 | 0.92844 | 0.61592 | 1.63951 | 0.2203 | 0.28188 |
| 16.0 | 1.0 | 0.86533 | 0.76422 | 0.83298 | 0.11115 | 0.84528 | 0.86475 | 0.54992 | 0.86591 | 0.0003 | 0.93223 | 0.62292 | 1.63921 | 0.21647 | 0.28262 |
| 17.0 | 1.0 | 0.89648 | 0.81404 | 0.90253 | 0.10037 | 0.88207 | 0.89583 | 0.50064 | 0.89713 | 0.00033 | 0.95022 | 0.6922 | 1.61847 | 0.21605 | 0.2891 |
| 18.0 | 1.0 | 0.9034 | 0.82558 | 0.90355 | 0.09676 | 0.89027 | 0.90294 | 0.48258 | 0.90385 | 0.00033 | 0.95458 | 0.70847 | 1.61509 | 0.22434 | 0.2974 |
| 19.0 | 1.0 | 0.90681 | 0.83106 | 0.89556 | 0.09576 | 0.89438 | 0.90648 | 0.47379 | 0.90713 | 0.00034 | 0.95692 | 0.7157 | 1.61435 | 0.22755 | 0.30875 |
| 20.0 | 1.0 | 0.9056 | 0.82864 | 0.88195 | 0.09719 | 0.89324 | 0.90527 | 0.47784 | 0.90593 | 0.00034 | 0.95705 | 0.7113 | 1.61417 | 0.2254 | 0.3195 |

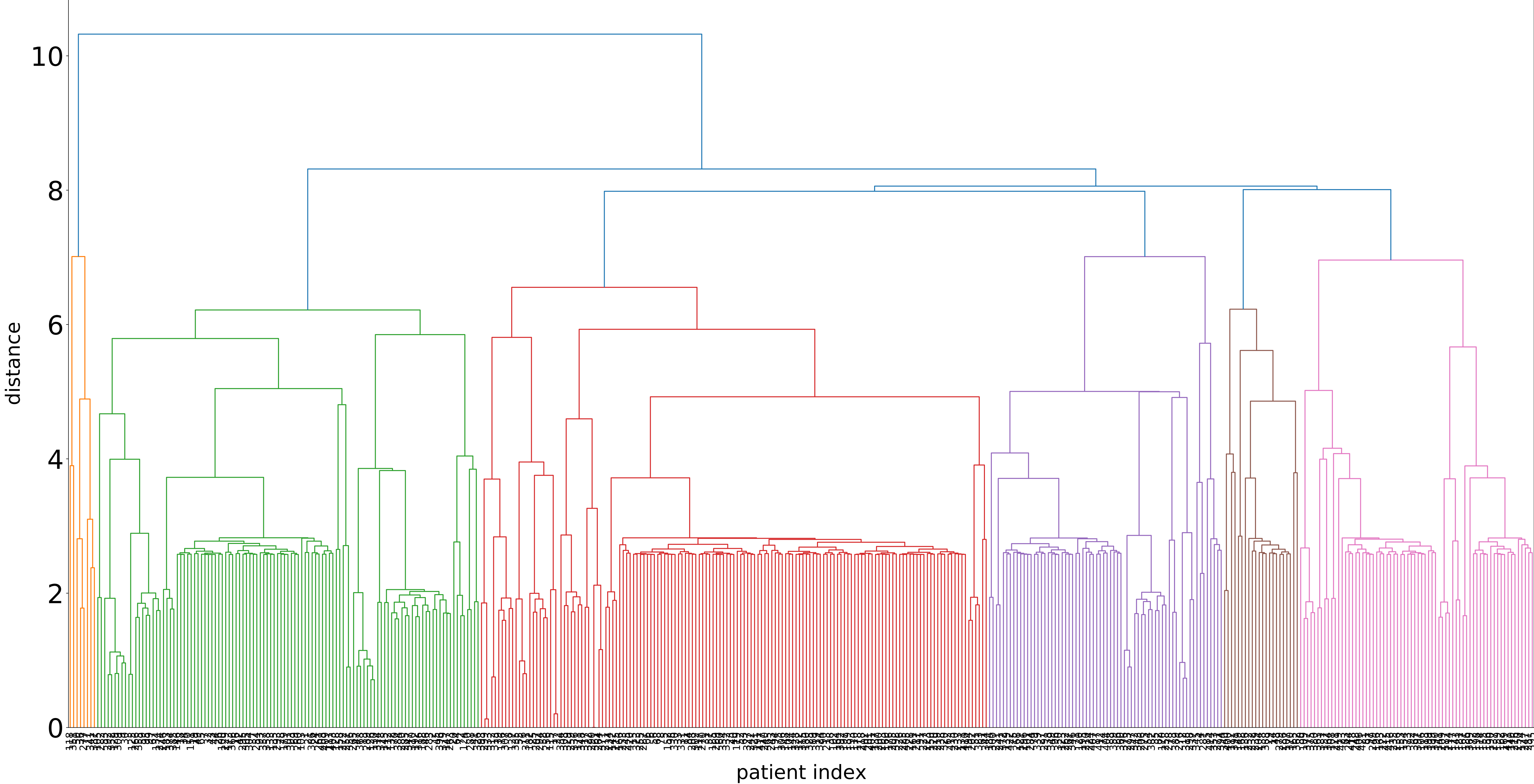
Standard deviation of Adjusted Rand versus number of clusters
gap: 0.80, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 0.80, Tp: 0.25, complete link



Hierarchical Clustering Dendrogram - gap: 0.90, Tp: 0.25, complete link

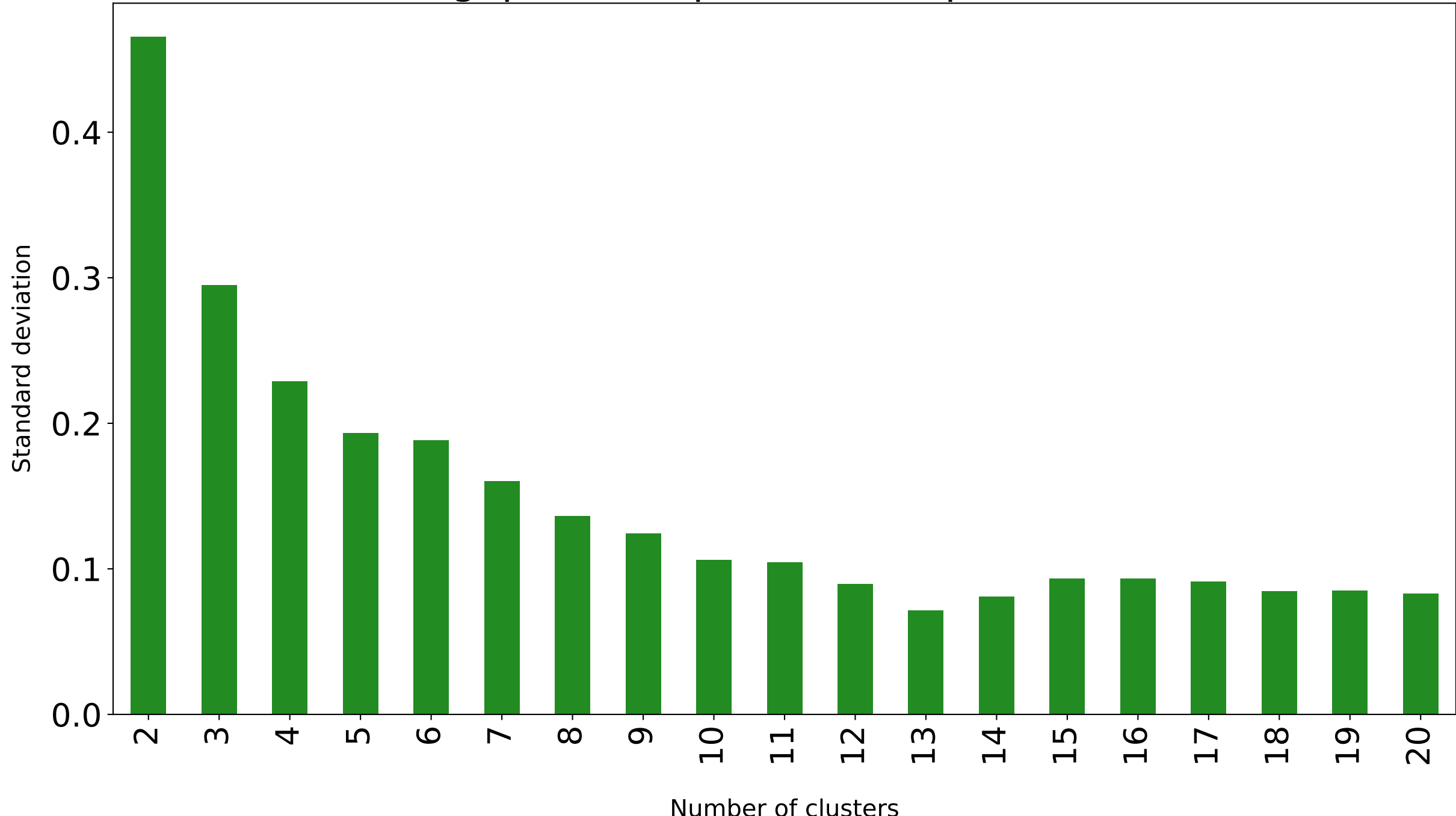


Cophenetic Correlation Coefficient: 0.7298357740390699

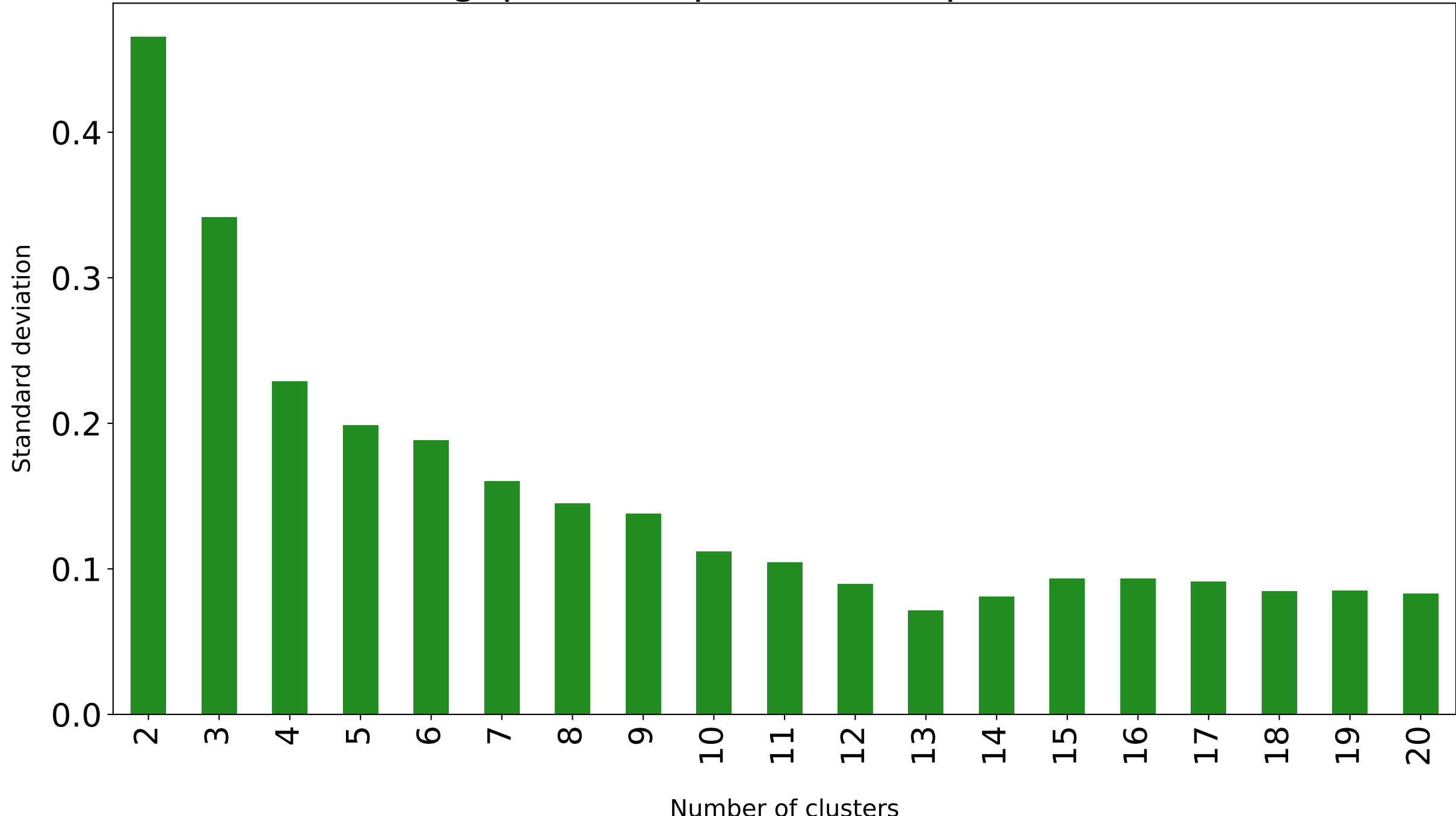
Average values of 20 clustering indices
gap: 0.90, Tp: 0.25, complete link

| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 1.0 | 0.89878 | 0.82269 | 0.42631 | 0.06829 | 0.5076 | 0.88952 | 0.30617 | 0.9084 | 0.00048 | 0.7455 | 0.74092 | 1.0 | 0.34189 | 0.22096 |
| 3.0 | 0.99998 | 0.73326 | 0.59628 | 0.36661 | 0.18303 | 0.38881 | 0.7291 | 0.76128 | 0.7375 | 6e-05 | 0.55936 | 0.4572 | 0.94159 | 0.25249 | 0.22795 |
| 4.0 | 1.00002 | 0.66625 | 0.51051 | 0.47505 | 0.22091 | 0.45609 | 0.66348 | 0.97547 | 0.66905 | 8e-05 | 0.59699 | 0.3583 | 0.87786 | 0.22295 | 0.22944 |
| 5.0 | 1.00001 | 0.67692 | 0.52182 | 0.46884 | 0.20642 | 0.51352 | 0.67356 | 0.95612 | 0.68031 | 9e-05 | 0.64756 | 0.36805 | 1.04429 | 0.21964 | 0.23015 |
| 6.0 | 1.0 | 0.73933 | 0.59894 | 0.68575 | 0.16859 | 0.64817 | 0.73659 | 0.85784 | 0.7421 | 0.00014 | 0.76395 | 0.44845 | 0.95333 | 0.22727 | 0.26205 |
| 7.0 | 1.0 | 0.76093 | 0.62593 | 0.67265 | 0.15882 | 0.68391 | 0.75903 | 0.81744 | 0.76285 | 0.00015 | 0.79392 | 0.47477 | 1.75113 | 0.22751 | 0.26209 |
| 8.0 | 1.0 | 0.77323 | 0.64021 | 0.66705 | 0.15255 | 0.70644 | 0.77101 | 0.78264 | 0.77545 | 0.00016 | 0.8139 | 0.48811 | 1.74317 | 0.23255 | 0.26402 |
| 9.0 | 1.0 | 0.79681 | 0.67162 | 0.69233 | 0.12555 | 0.74256 | 0.79431 | 0.68393 | 0.79933 | 0.00018 | 0.84208 | 0.52393 | 1.72567 | 0.24831 | 0.28037 |
| 10.0 | 1.0 | 0.80356 | 0.67932 | 0.74287 | 0.12289 | 0.758 | 0.80228 | 0.65988 | 0.80484 | 0.0002 | 0.86254 | 0.52859 | 1.6985 | 0.22923 | 0.28852 |
| 11.0 | 1.0 | 0.80588 | 0.67959 | 0.71767 | 0.11837 | 0.76325 | 0.80376 | 0.62838 | 0.80803 | 0.0002 | 0.86806 | 0.52626 | 1.69663 | 0.22703 | 0.28906 |
| 12.0 | 1.0 | 0.79861 | 0.66808 | 0.76509 | 0.13185 | 0.75985 | 0.79775 | 0.68413 | 0.79948 | 0.00022 | 0.87764 | 0.50808 | 1.67099 | 0.21514 | 0.2979 |
| 13.0 | 1.0 | 0.82637 | 0.70641 | 0.81858 | 0.12316 | 0.79623 | 0.82535 | 0.63028 | 0.8274 | 0.00025 | 0.90162 | 0.55208 | 1.64689 | 0.21448 | 0.30193 |
| 14.0 | 1.0 | 0.84608 | 0.73574 | 0.82054 | 0.11487 | 0.82062 | 0.84536 | 0.58687 | 0.84679 | 0.00027 | 0.91595 | 0.58803 | 1.64339 | 0.22083 | 0.28928 |
| 15.0 | 1.0 | 0.85852 | 0.7541 | 0.8175 | 0.10618 | 0.83594 | 0.85771 | 0.54651 | 0.85934 | 0.00028 | 0.92455 | 0.61092 | 1.64127 | 0.22936 | 0.29012 |
| 16.0 | 1.0 | 0.88448 | 0.79465 | 0.87155 | 0.09767 | 0.86735 | 0.88402 | 0.5033 | 0.88493 | 0.0003 | 0.94182 | 0.66446 | 1.62142 | 0.22905 | 0.29368 |
| 17.0 | 1.0 | 0.88865 | 0.80112 | 0.86395 | 0.09654 | 0.87242 | 0.88823 | 0.49594 | 0.88908 | 0.00031 | 0.94469 | 0.67285 | 1.62092 | 0.23673 | 0.29655 |
| 18.0 | 1.0 | 0.89156 | 0.80573 | 0.86268 | 0.09447 | 0.87609 | 0.89112 | 0.48664 | 0.89201 | 0.00032 | 0.94702 | 0.67925 | 1.6177 | 0.2421 | 0.29932 |
| 19.0 | 1.0 | 0.89146 | 0.80521 | 0.85225 | 0.09431 | 0.87627 | 0.89084 | 0.48461 | 0.89208 | 0.00032 | 0.94767 | 0.67827 | 1.617 | 0.24425 | 0.33299 |
| 20.0 | 1.0 | 0.89046 | 0.80355 | 0.84966 | 0.09586 | 0.87557 | 0.88981 | 0.48288 | 0.89111 | 0.00033 | 0.94846 | 0.67591 | 1.6115 | 0.23209 | 0.33482 |

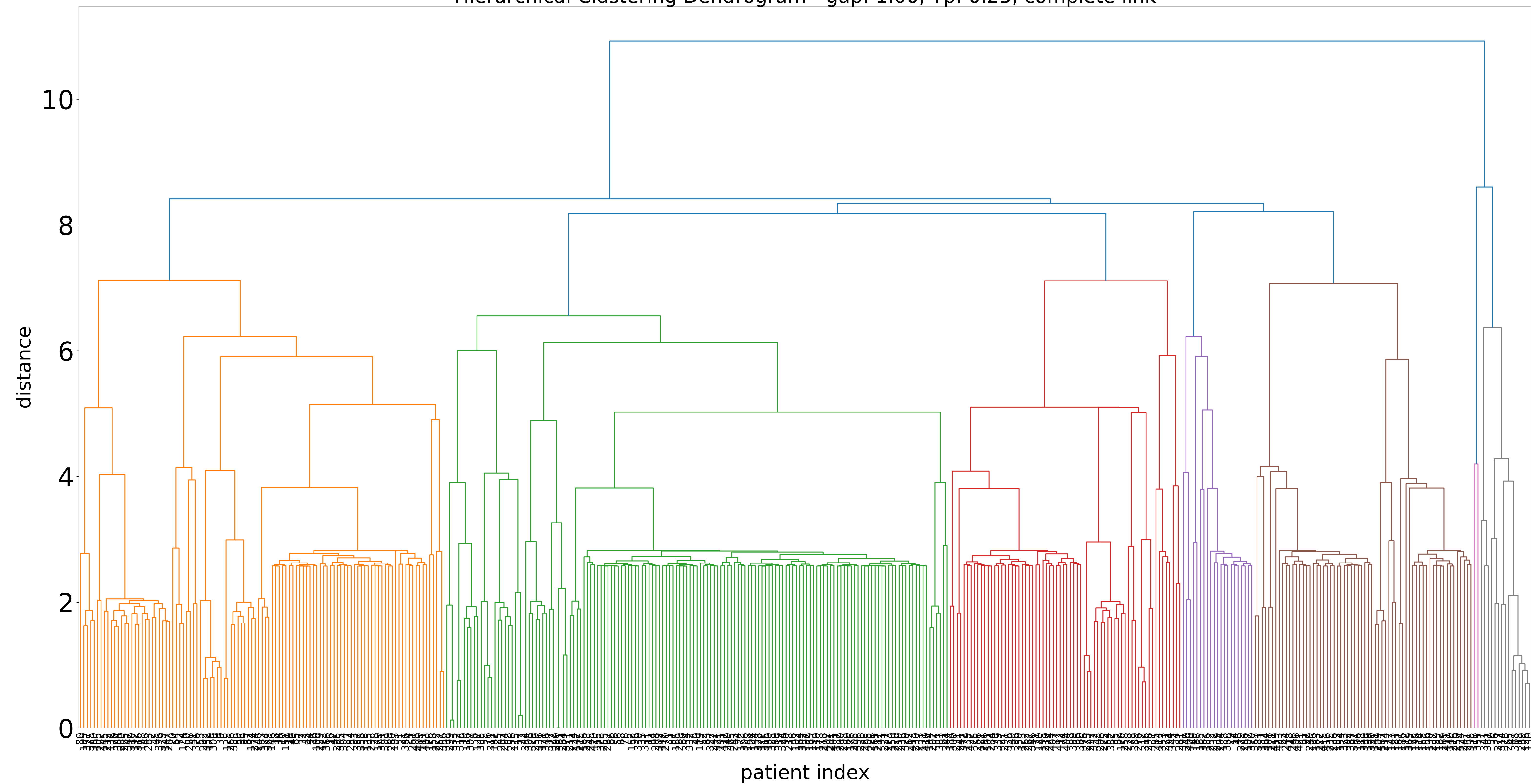
Standard deviation of Adjusted Rand versus number of clusters
gap: 0.90, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 0.90, Tp: 0.25, complete link



Hierarchical Clustering Dendrogram - gap: 1.00, Tp: 0.25, complete link

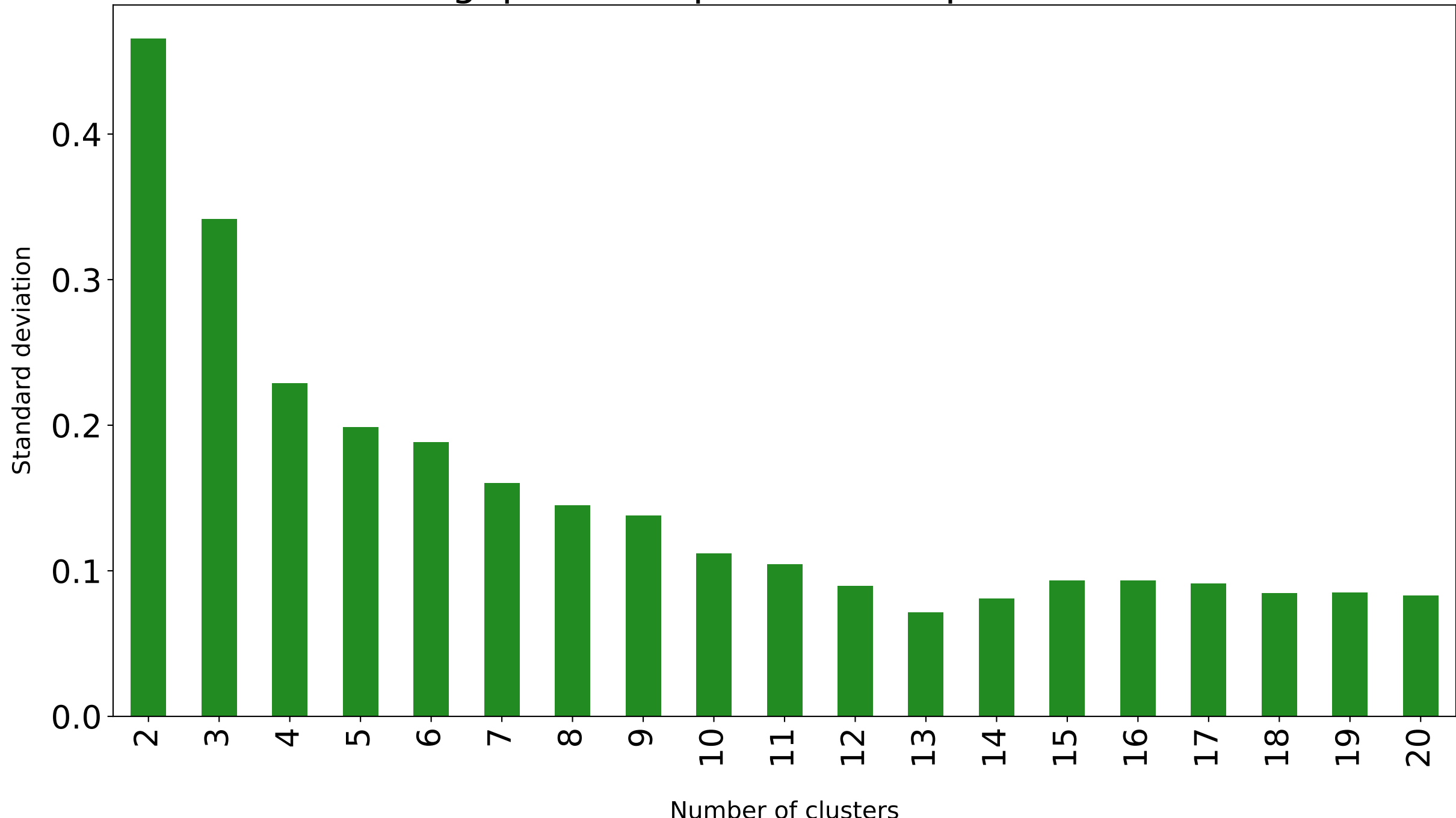


Cophenetic Correlation Coefficient: 0.6886325360317476

Average values of 20 clustering indices
gap: 1.00, Tp: 0.25, complete link

| k | AR | FM | J | AW | VD | H | F | VI | K | Phi | RT | SS | CVNN | S | Dunn |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.0 | 1.0 | 0.92614 | 0.86824 | 0.61041 | 0.0527 | 0.49817 | 0.92208 | 0.28316 | 0.93033 | 0.00033 | 0.79924 | 0.79199 | 1.06536 | 0.27114 | 0.20692 |
| 3.0 | 0.99999 | 0.7645 | 0.60181 | 0.12023 | 0.16137 | 0.2277 | 0.74106 | 0.68978 | 0.78914 | 8e-05 | 0.4717 | 0.44999 | 1.99986 | 0.30032 | 0.21155 |
| 4.0 | 1.00025 | 0.64054 | 0.46958 | 0.22366 | 0.23562 | 0.31649 | 0.6285 | 1.03277 | 0.65293 | 5e-05 | 0.48172 | 0.31743 | 1.94107 | 0.24111 | 0.21336 |
| 5.0 | 1.00001 | 0.65876 | 0.49919 | 0.43021 | 0.22269 | 0.48192 | 0.65469 | 1.01219 | 0.66288 | 9e-05 | 0.62542 | 0.34613 | 1.8583 | 0.2272 | 0.21689 |
| 6.0 | 1.00001 | 0.68068 | 0.51594 | 0.44543 | 0.19877 | 0.54342 | 0.67243 | 0.94224 | 0.68907 | 0.0001 | 0.66989 | 0.35706 | 1.849 | 0.22974 | 0.21754 |
| 7.0 | 1.0 | 0.78458 | 0.65935 | 0.72339 | 0.14463 | 0.71629 | 0.78334 | 0.76015 | 0.78583 | 0.00016 | 0.8156 | 0.51244 | 1.75706 | 0.2384 | 0.2501 |
| 8.0 | 1.0 | 0.76359 | 0.6285 | 0.71828 | 0.16409 | 0.69802 | 0.76244 | 0.83139 | 0.76475 | 0.00016 | 0.81587 | 0.47303 | 1.74549 | 0.21442 | 0.25037 |
| 9.0 | 1.0 | 0.77223 | 0.63867 | 0.71464 | 0.16016 | 0.71286 | 0.77114 | 0.79461 | 0.77332 | 0.00017 | 0.82954 | 0.48248 | 1.73597 | 0.21977 | 0.25182 |
| 10.0 | 1.0 | 0.78724 | 0.65801 | 0.73078 | 0.13127 | 0.73624 | 0.78616 | 0.70778 | 0.78833 | 0.00019 | 0.84914 | 0.50316 | 1.71783 | 0.23486 | 0.27165 |
| 11.0 | 1.0 | 0.78917 | 0.65537 | 0.78468 | 0.13504 | 0.74633 | 0.78767 | 0.71079 | 0.79069 | 0.00021 | 0.86614 | 0.49501 | 1.68038 | 0.22337 | 0.27955 |
| 12.0 | 1.0 | 0.80151 | 0.67204 | 0.76577 | 0.12987 | 0.76309 | 0.80063 | 0.68483 | 0.80238 | 0.00022 | 0.8788 | 0.51255 | 1.67958 | 0.21895 | 0.28584 |
| 13.0 | 1.0 | 0.80846 | 0.68014 | 0.74653 | 0.12534 | 0.77313 | 0.80726 | 0.66031 | 0.80967 | 0.00023 | 0.88659 | 0.52022 | 1.67786 | 0.21893 | 0.28603 |
| 14.0 | 1.0 | 0.81491 | 0.68849 | 0.74738 | 0.12494 | 0.7828 | 0.8136 | 0.65703 | 0.81623 | 0.00024 | 0.89519 | 0.52896 | 1.66777 | 0.21882 | 0.29049 |
| 15.0 | 1.0 | 0.864 | 0.76258 | 0.83444 | 0.11197 | 0.84243 | 0.86333 | 0.56721 | 0.86466 | 0.00028 | 0.92784 | 0.62187 | 1.6398 | 0.21906 | 0.2963 |
| 16.0 | 1.0 | 0.87037 | 0.77215 | 0.83404 | 0.10509 | 0.8503 | 0.86976 | 0.54088 | 0.87099 | 0.00029 | 0.93245 | 0.63388 | 1.63751 | 0.22741 | 0.30065 |
| 17.0 | 1.0 | 0.87116 | 0.77271 | 0.82316 | 0.1053 | 0.85162 | 0.87039 | 0.54054 | 0.87193 | 0.00029 | 0.93378 | 0.63378 | 1.63703 | 0.23625 | 0.30105 |
| 18.0 | 1.0 | 0.86935 | 0.76941 | 0.81257 | 0.1066 | 0.84988 | 0.86831 | 0.54454 | 0.8704 | 0.00029 | 0.93358 | 0.62933 | 1.63638 | 0.23444 | 0.30162 |
| 19.0 | 1.0 | 0.8911 | 0.80501 | 0.86378 | 0.10007 | 0.87573 | 0.89072 | 0.50442 | 0.89149 | 0.00032 | 0.94733 | 0.67802 | 1.61777 | 0.23683 | 0.30348 |
| 20.0 | 1.0 | 0.88999 | 0.80299 | 0.85569 | 0.09716 | 0.87485 | 0.88952 | 0.49101 | 0.89046 | 0.00032 | 0.94785 | 0.67508 | 1.61402 | 0.2441 | 0.34595 |

Standard deviation of Adjusted Rand versus number of clusters
gap: 1.00, Tp: 0.25, complete link



Standard deviation of Huberts index versus number of clusters
gap: 1.00, Tp: 0.25, complete link

