

# Multi-view Banded Spectral Clustering (mvBSC)

```
# devtools::install_github("celehs/mvBSC")

library(mvBSC)
library(data.table)

va_cosK <- readRDS(paste0("data/va_I00-I25_cosineMat.rds"))
bio_cosK <- readRDS(paste0("data/biobank_I00-I25_cosineMat.rds"))
this.R <- readRDS(paste0("data/I00-I25_distR_wt_avg_1.rds"))
icd.info <- readRDS("data/rollable_new_icd_info_20190130.rds")
codes_in_use <- colnames(bio_cosK)
length(codes_in_use)

## [1] 208

mvbsc(codes = codes_in_use,
      distance = this.R,
      similarity = list(va_cosK, bio_cosK),
      K0 = c(15, 20),
      delta = c(5, 10),
      h = 1:5)

## $summary
##      K0 delta h      ratio
## 9   15     5 3 0.8795127
## 11  15    10 3 0.8795127
## 5   15     5 2 0.8650460
## 7   15    10 2 0.8650460
## 1   15     5 1 0.8469891
## 13  15     5 4 0.8446031
## 2   20     5 1 0.8437923
## 4   20    10 1 0.8437923
## 15  15    10 4 0.8413106
## 17  15     5 5 0.8409211
## 6   20     5 2 0.8381913
## 8   20    10 2 0.8381913
## 3   15    10 1 0.8359611
## 19  15    10 5 0.8248256
## 18  20     5 5 0.7850573
## 10  20     5 3 0.7832861
## 12  20    10 3 0.7832861
## 14  20     5 4 0.7751756
## 20  20    10 5 0.7706106
## 16  20    10 4 0.7611275
##
## $optimal
## $optimal$ratio
## [1] 0.8795127
##
## $optimal$K0
## [1] 15
##
## $optimal$delta
```

```

## [1] 5
##
## $optimal$h
## [1] 3
##
## $optimal$wt
## [1] 0.5 0.5
##
## $optimal$size
## cluster
## 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
## 20 3 2 2 3 2 1 1 1 1 1 3 3 1 2 3 2 2 1 1 2 2 1 1 11
## 26 27 28 29 30 31 32 33 34 35 36 37 38
## 10 9 16 14 17 6 3 6 20 5 9 8 13
##
## $optimal$cluster
## 394.9 395.9 396.0 396.1 396.2 396.3 396.8 396.9 397.0
## 26 21 31 31 31 31 31 33 31
## 397.1 397.9 398.99 401.0 401.1 401.9 402.00 402.01 402.10
## 33 33 33 4 9 4 36 36 36
## 402.11 402.90 402.91 403.00 403.01 403.10 403.11 403.90 403.91
## 36 36 36 29 36 29 36 19 36
## 404.00 404.01 404.02 404.03 404.10 404.11 404.12 404.13 404.90
## 29 29 29 29 29 29 29 29 29
## 404.91 404.92 404.93 405.01 405.09 405.11 405.19 405.91 405.99
## 29 29 29 35 35 35 7 35 35
## 410.00 410.01 410.02 410.10 410.11 410.12 410.20 410.21 410.22
## 30 30 30 30 30 30 28 28 28
## 410.30 410.31 410.32 410.40 410.41 410.42 410.50 410.51 410.52
## 28 28 28 28 28 28 28 30 28
## 410.60 410.61 410.62 410.70 410.71 410.72 410.80 410.81 410.82
## 30 28 28 22 30 30 30 30 22
## 410.90 410.91 410.92 411.1 411.89 413.0 413.9 414.00 414.01
## 28 28 28 6 38 6 30 38 38
## 414.02 414.03 414.04 414.05 414.06 414.07 414.10 414.19 414.8
## 38 38 38 38 38 38 38 38 38
## 414.9 429.2 429.79 I00. I01.0 I01.1 I01.2 I01.8 I01.9
## 10 38 3 23 32 32 8 32 5
## I02.0 I02.9 I05.0 I05.1 I05.2 I05.8 I05.9 I06.0 I06.1
## 5 5 26 26 26 26 26 26 26
## I06.2 I06.8 I06.9 I07.1 I07.2 I07.8 I07.9 I08.0 I08.1
## 26 26 21 27 27 27 27 27 27
## I08.2 I08.3 I08.8 I08.9 I09.1 I09.2 I09.81 I09.89 I09.9
## 27 27 27 2 2 24 33 2 33
## I10. I11.0 I11.9 I12.0 I12.9 I13.0 I13.10 I13.11 I13.2
## 11 18 18 16 16 16 13 13 13
## I15.0 I15.1 I15.2 I15.8 I15.9 I20.0 I20.1 I20.8 I20.9
## 12 12 17 12 17 30 30 30 30
## I21.01 I21.02 I21.09 I21.11 I21.19 I21.21 I21.29 I21.3 I21.4
## 25 25 25 25 25 25 25 25 25
## I22.0 I22.1 I22.2 I22.8 I22.9 I23.1 I23.2 I23.6 I23.7
## 25 25 37 37 37 37 37 37 37
## I23.8 I24.0 I24.1 I24.8 I24.9 I25.10 I25.110 I25.111 I25.118
## 37 3 20 15 1 1 1 1 1

```

```
## I25.119 I25.2 I25.3 I25.41 I25.42 I25.5 I25.6 I25.700 I25.701
## 1 1 1 1 1 1 1 34 34
## I25.708 I25.709 I25.710 I25.711 I25.718 I25.719 I25.720 I25.721 I25.728
## 34 34 34 15 34 34 34 1 34
## I25.729 I25.739 I25.750 I25.758 I25.759 I25.760 I25.769 I25.790 I25.791
## 34 34 1 34 34 1 34 34 34
## I25.798 I25.799 I25.810 I25.811 I25.812 I25.82 I25.83 I25.84 I25.89
## 34 34 34 34 14 1 1 1 1
## I25.9
## 1
## 38 Levels: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 ... 38
```

```
proc.time()
```

```
## user system elapsed
## 7.366 0.417 7.963
```