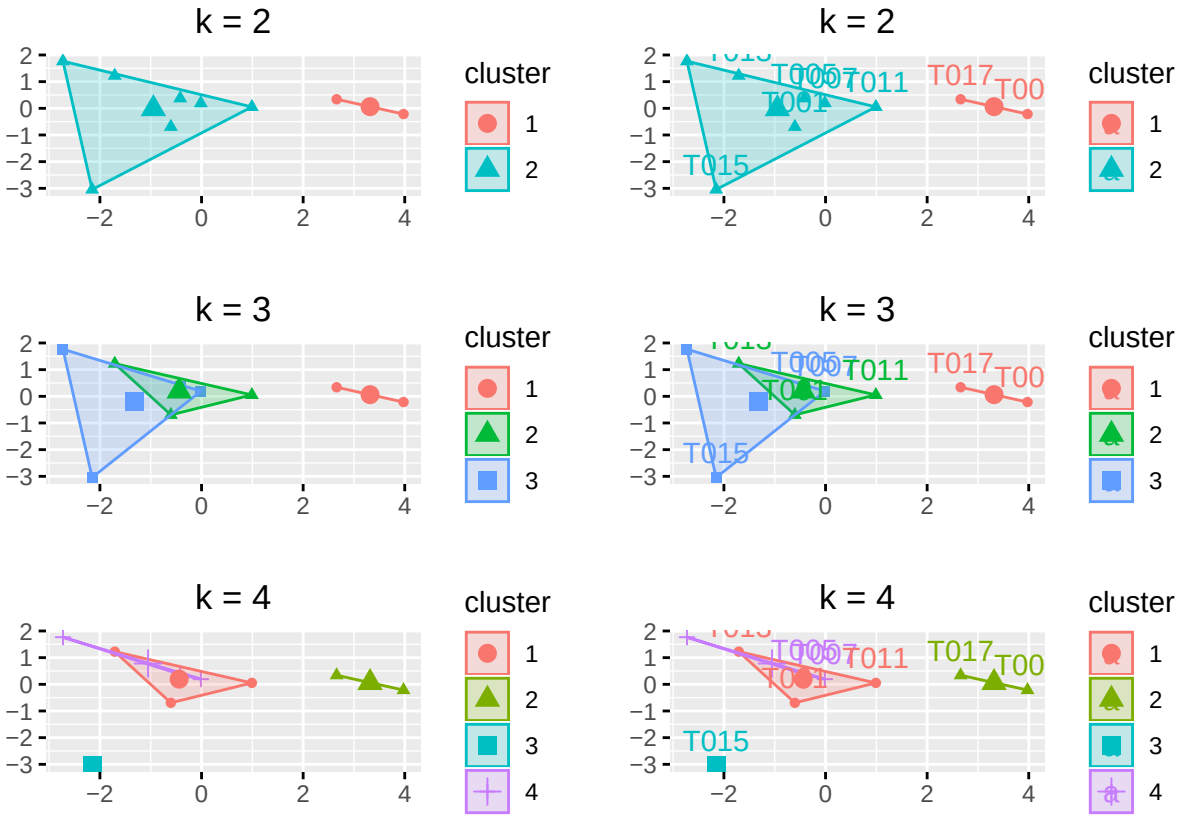
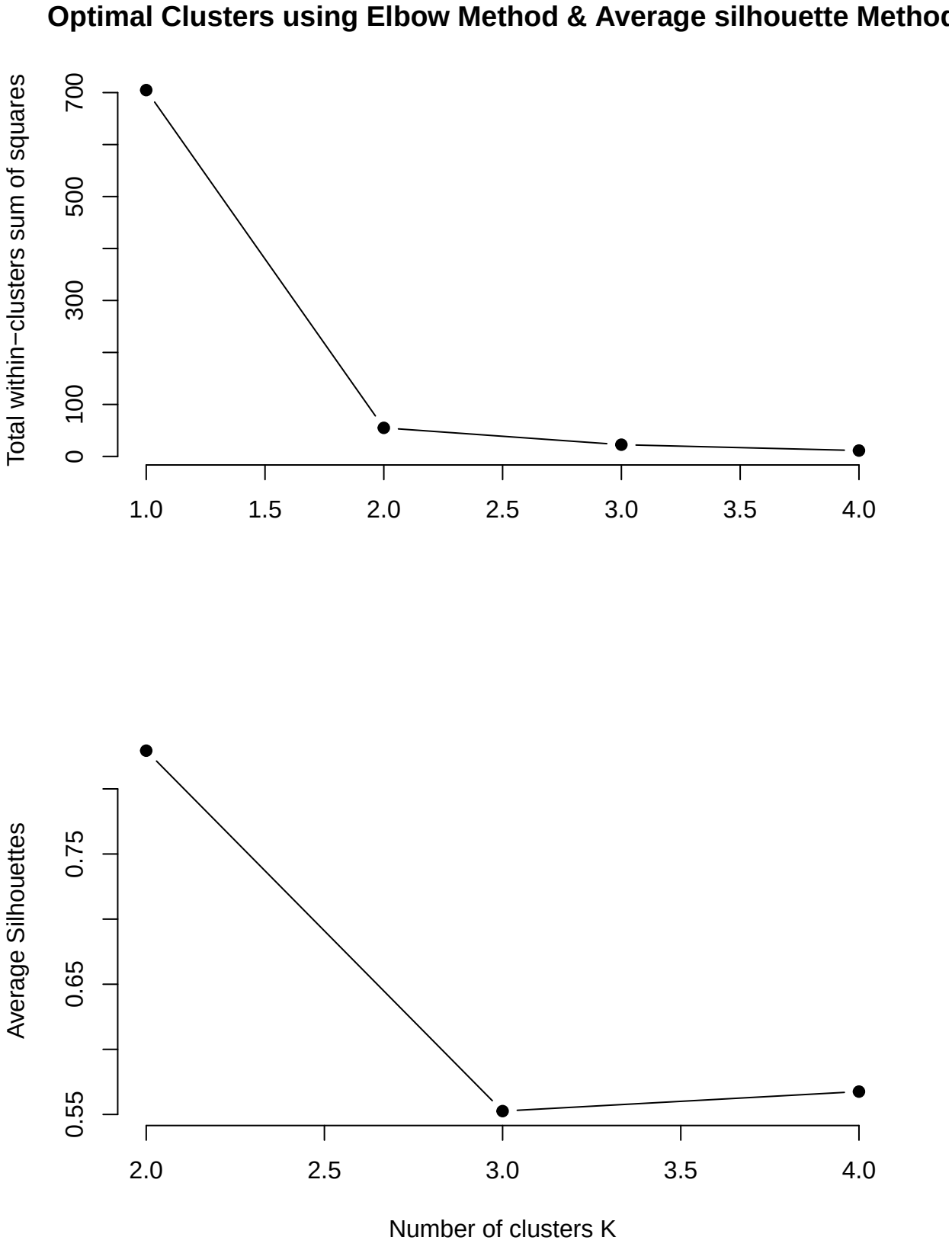
Clustering

Clustering the Subject based on Physiological, Activity and Psychometric Data.

Clustering with PP HR and Trait Anxiety

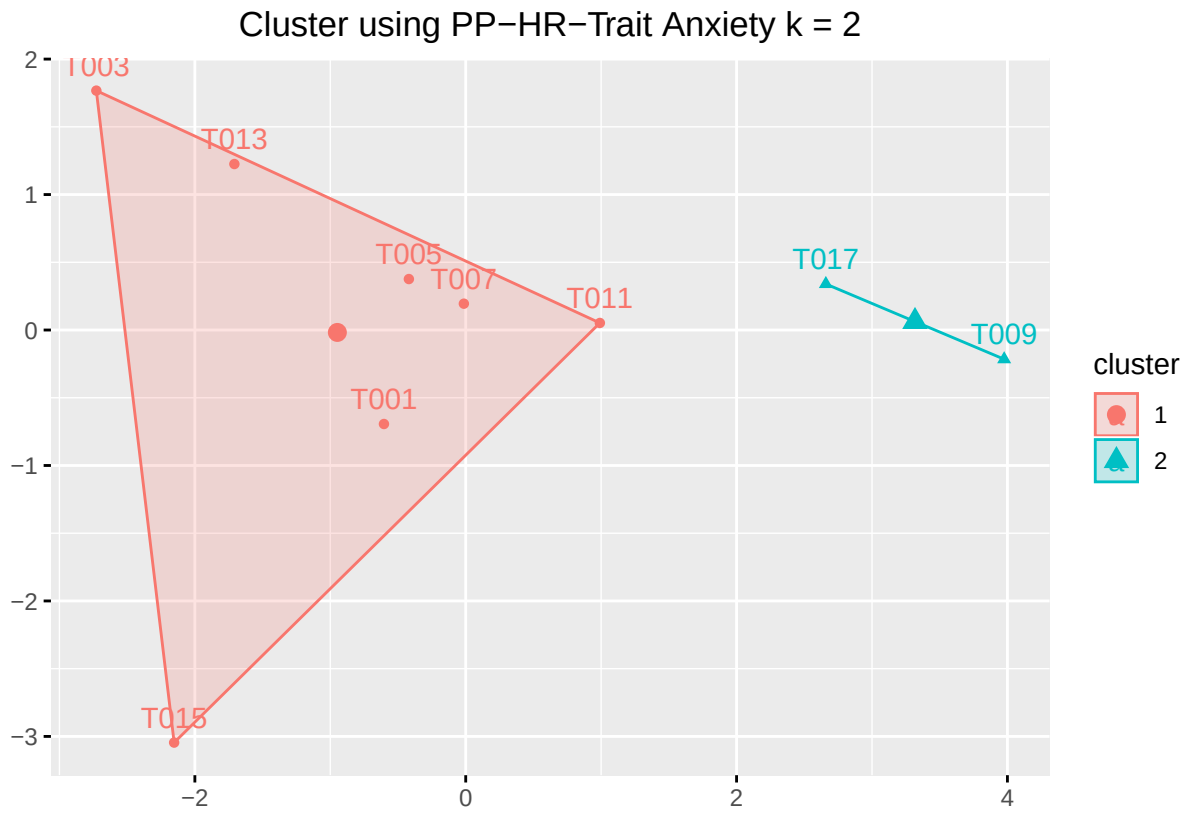


Determining Optimal Clusters

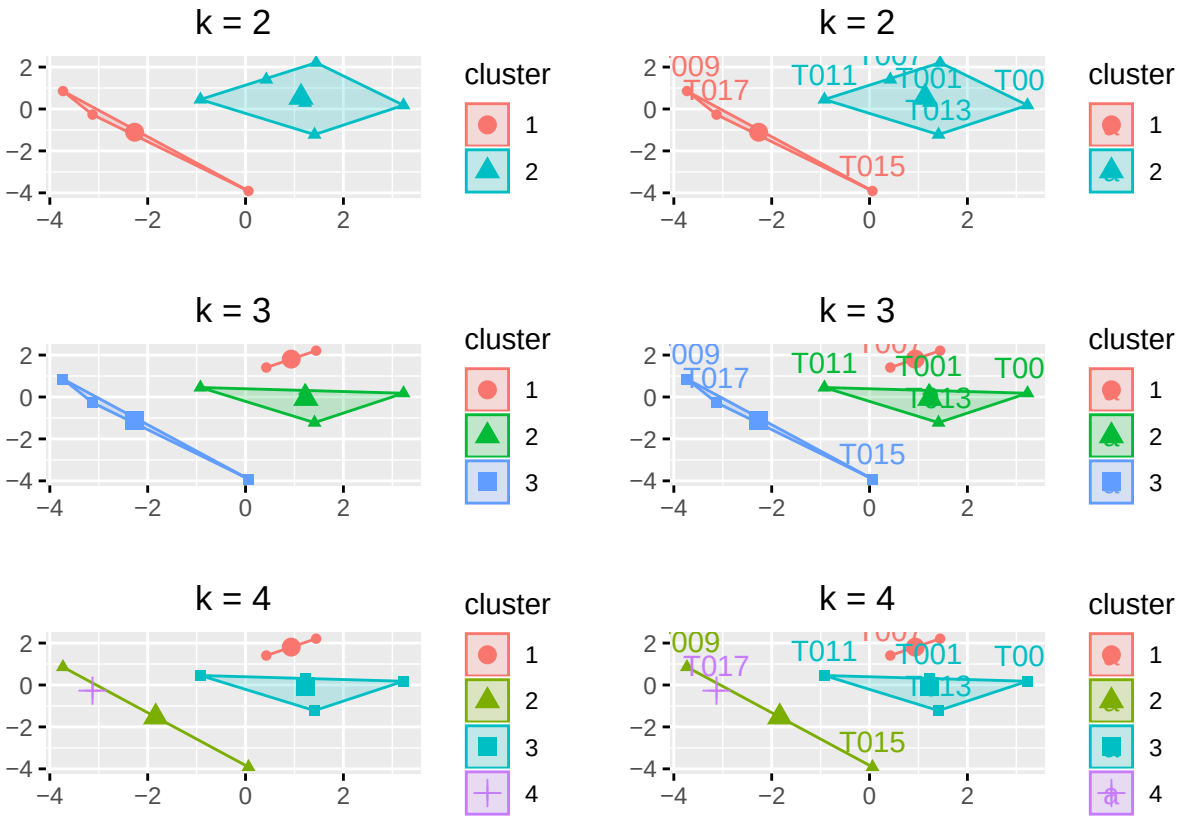


Final PP HR and Trait Anxiety

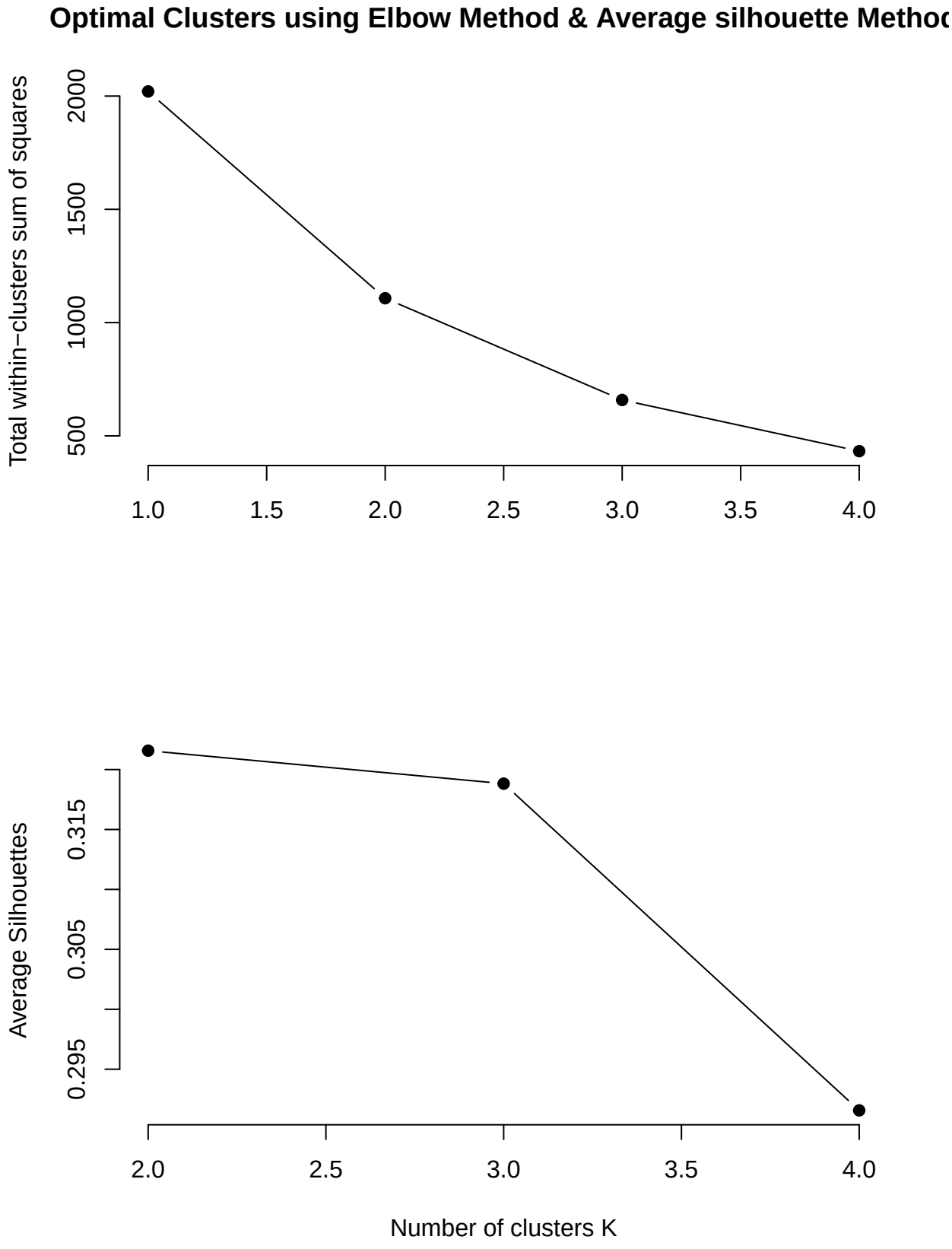
```
## K-means clustering with 2 clusters of sizes 7, 2
##
## Cluster means:
##     Day1_PP   Day2_PP   Day3_PP   Day4_PP  Day1_HR  Day2_HR  Day3_HR
## 1 -5.624334 -5.636737 -5.637874 -5.639547 3.493020 2.981094 3.534542
## 2 -5.472227 -5.481596 -5.427028 -5.421749 3.674625 3.426601 3.700917
##    Day4_HR Trait_anxiety
## 1 3.499192      36.57143
## 2 3.678182      57.00000
##
## Clustering vector:
## T001 T003 T005 T007 T009 T011 T013 T015 T017
##    1    1    1    1    2    1    1    1    2
##
## Within cluster sum of squares by cluster:
## [1] 52.835982  2.109722
##  (between_SS / total_SS =  92.2 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"        "withinss"
## [5] "tot.withinss" "betweenss"    "size"         "iter"
## [9] "ifault"
```



Clustering with PP HR and BFI

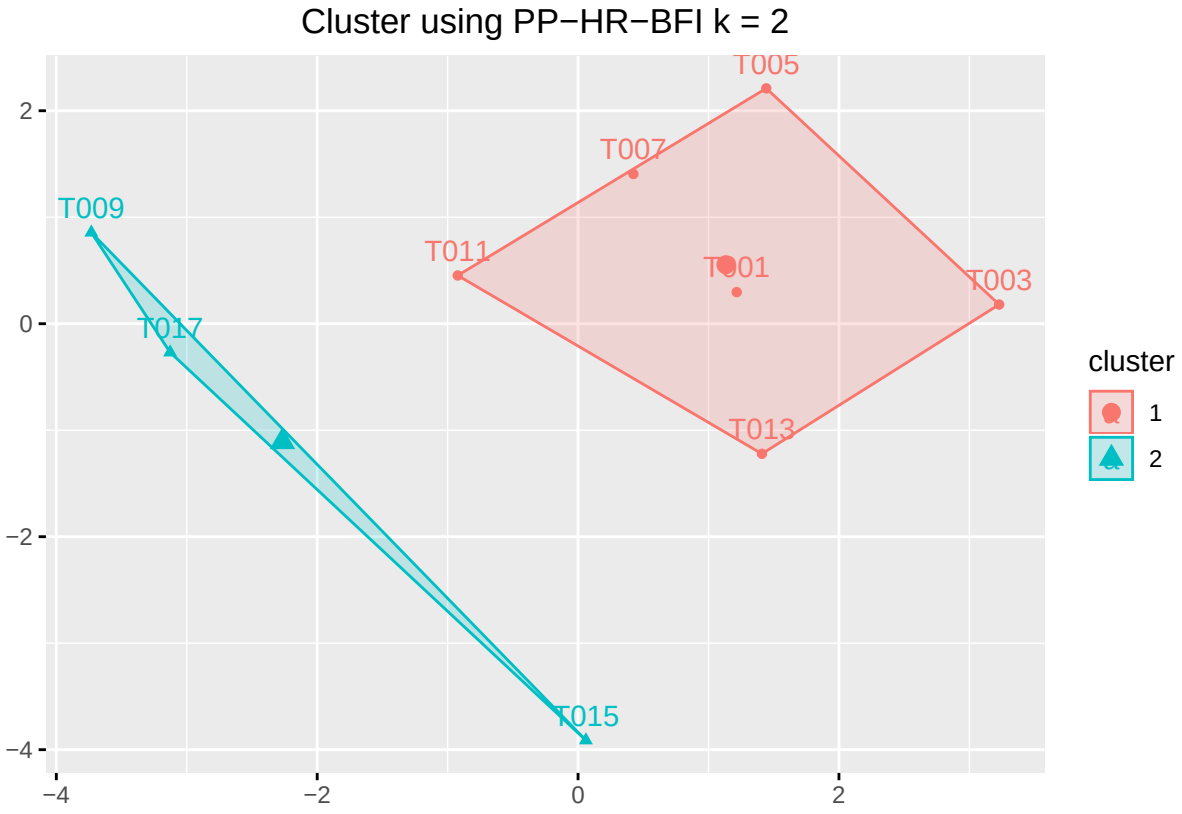


Determining Optimal Clusters

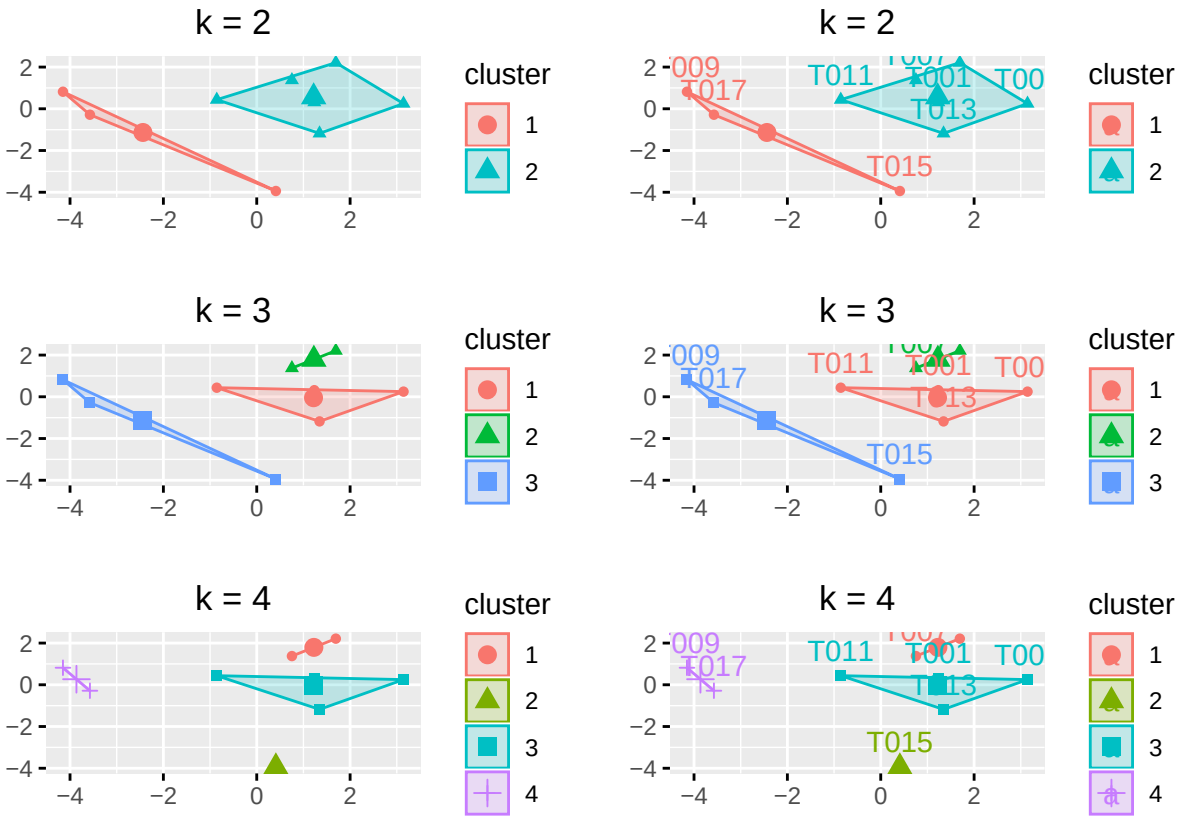


Final Clustering with PP HR and BFI

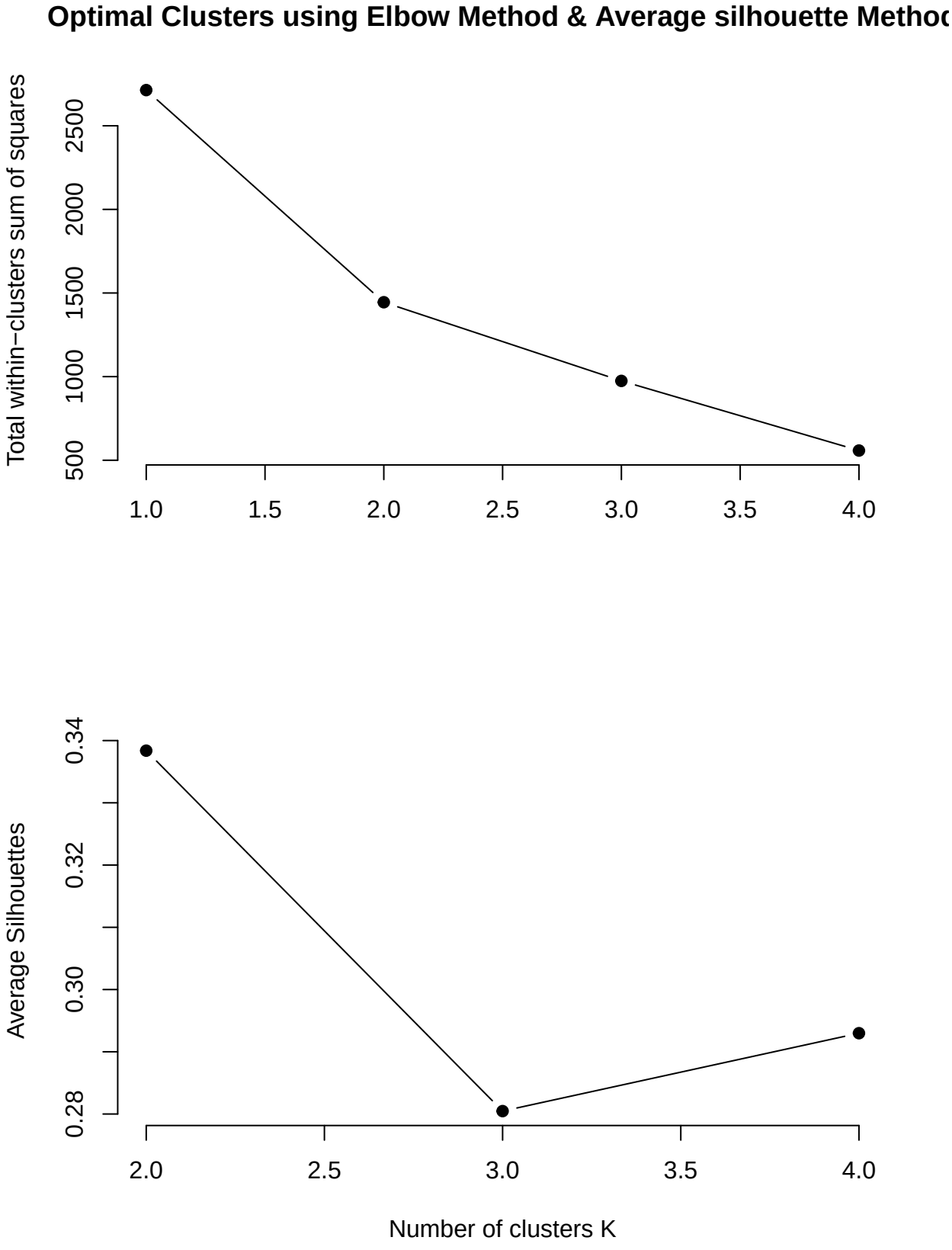
```
## K-means clustering with 2 clusters of sizes 6, 3
##
## Cluster means:
##     Day1_PP   Day2_PP   Day3_PP   Day4_PP  Day1_HR  Day2_HR  Day3_HR
## 1 -5.622476 -5.649931 -5.637849 -5.618427 3.501572 3.477943 3.531355
## 2 -5.526645 -5.506923 -5.497359 -5.536587 3.596986 2.284401 3.651832
##    Day4_HR Agreeableness Conscientiousness Extraversion Neuroticism
## 1 3.553700          35.5          40.83333     28.66667    20.16667
## 2 3.509502          31.0          25.33333     21.66667    29.33333
##   Openness
## 1 38.50000
## 2 30.66667
##
## Clustering vector:
## T001 T003 T005 T007 T009 T011 T013 T015 T017
##    1    1    1    1    2    1    1    2    2
##
## Within cluster sum of squares by cluster:
## [1] 820.5991 286.9559
##  (between_SS / total_SS =  45.2 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"        "withinss"
## [5] "tot.withinss" "betweenss"    "size"         "iter"
## [9] "ifault"
```


Cluster using PP−HR−BFI k = 2
T005
T007
T009
T011
T001
T003
T017
T013
T015
2
0
−2
−4
−4
−2
0
2
cluster
1
2

Clustering with PP HR Trait Anxiety and BFI

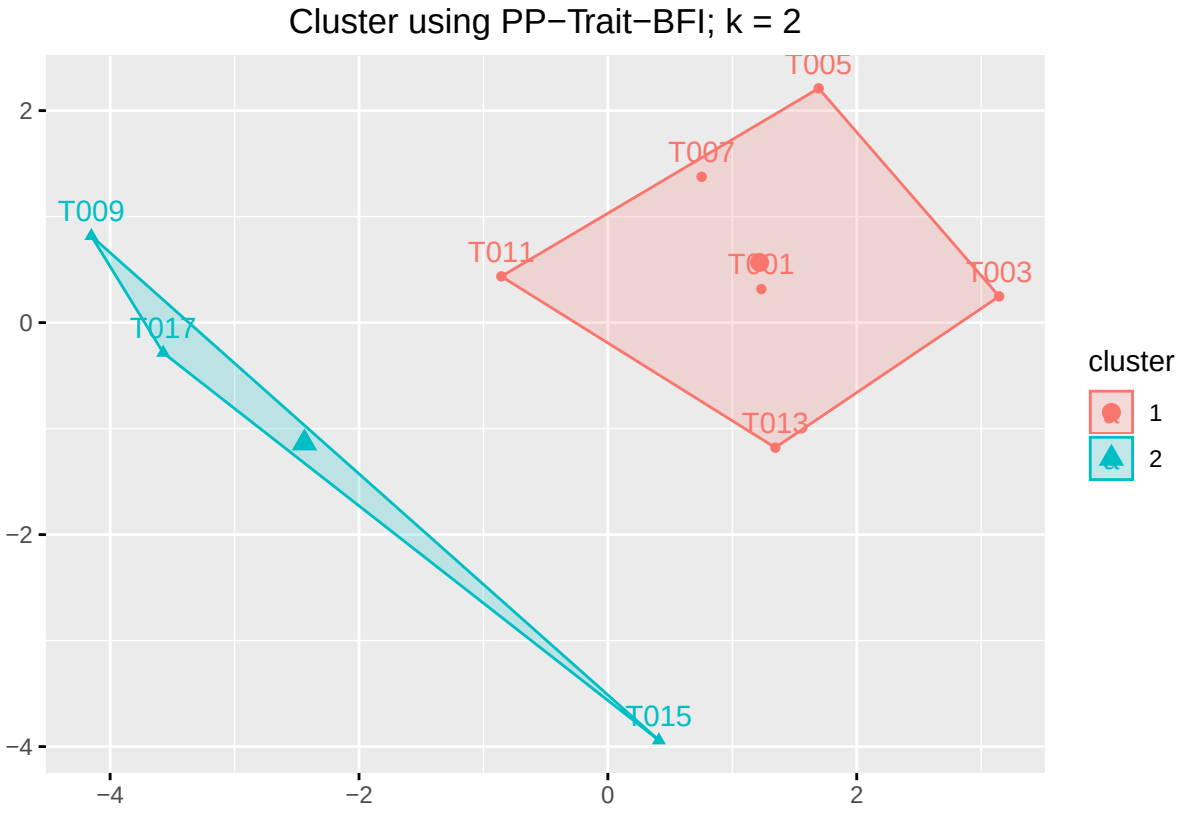


Determining Optimal Clusters

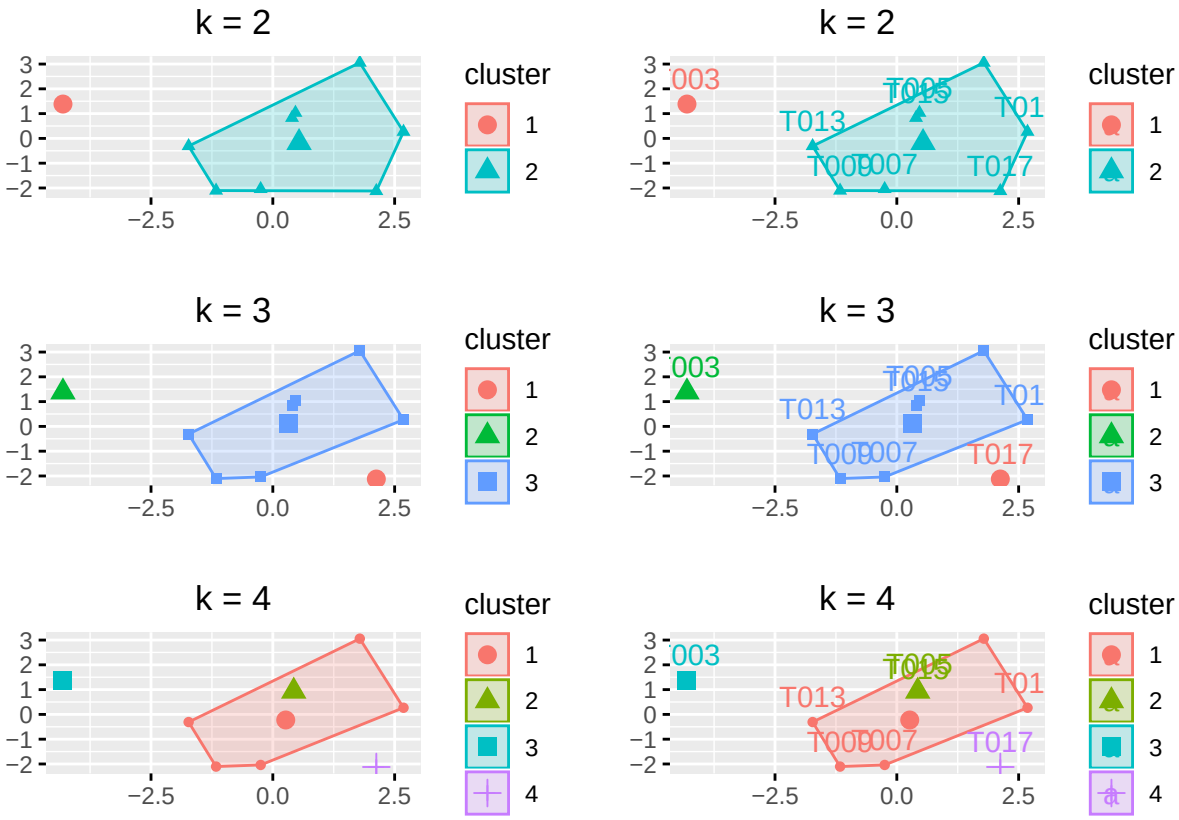


Final Clustering with PP HR Trait Anxiety and BFI

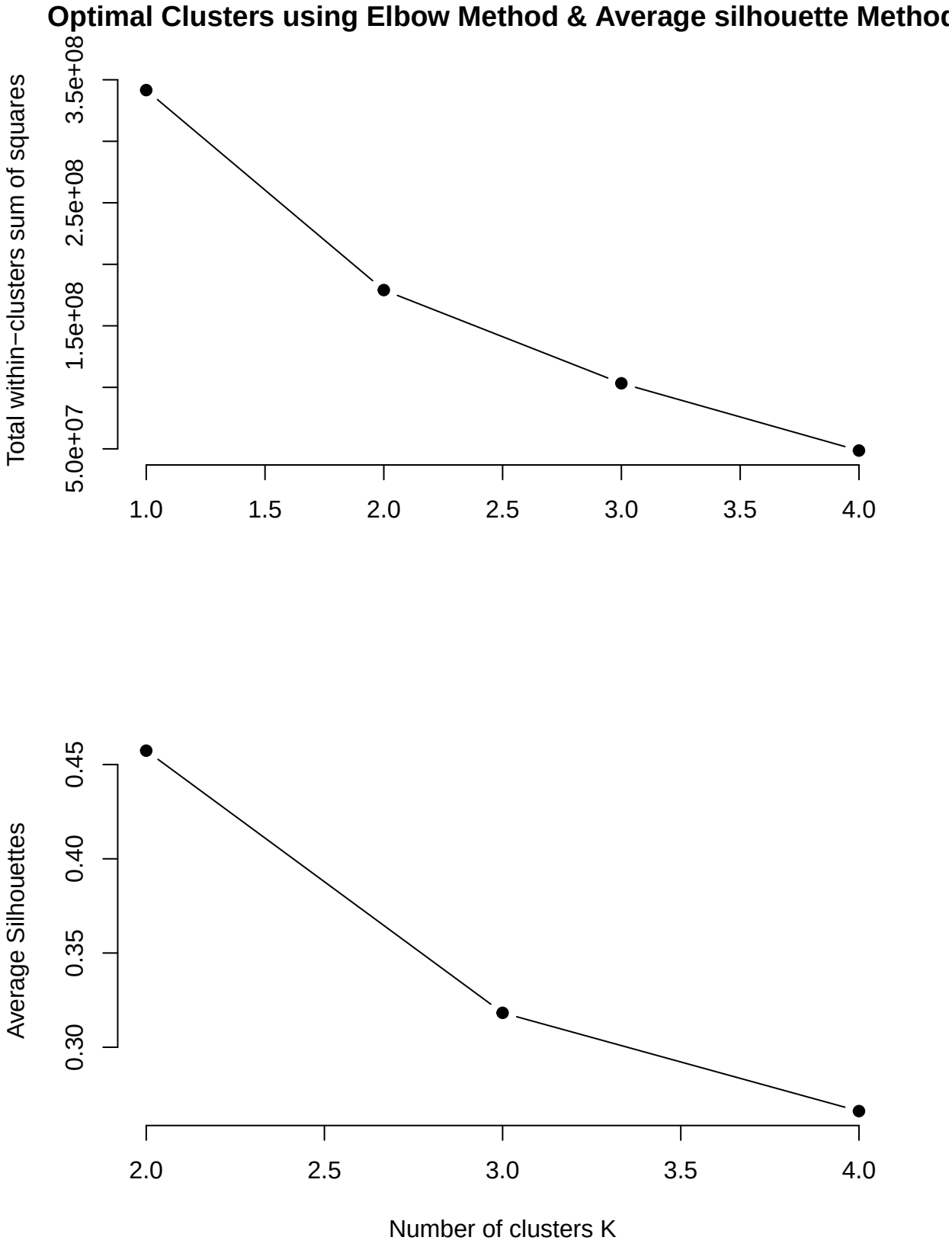
```
## K-means clustering with 2 clusters of sizes 6, 3
##
## Cluster means:
##     Day1_PP   Day2_PP   Day3_PP   Day4_PP  Day1_HR  Day2_HR  Day3_HR
## 1 -5.622476 -5.649931 -5.637849 -5.618427 3.501572 3.477943 3.531355
## 2 -5.526645 -5.506923 -5.497359 -5.536587 3.596986 2.284401 3.651832
##    Day4_HR Agreeableness Conscientiousness Extraversion Neuroticism
## 1 3.553700          35.5          40.83333     28.66667    20.16667
## 2 3.509502          31.0          25.33333     21.66667    29.33333
##   Openness Trait_anxiety
## 1 38.50000      36.66667
## 2 30.66667      50.00000
##
## Clustering vector:
## T001 T003 T005 T007 T009 T011 T013 T015 T017
##    1    1    1    1    2    1    1    2    2
##
## Within cluster sum of squares by cluster:
## [1] 861.9325 582.9559
##  (between_SS / total_SS =  46.7 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"        "withinss"
## [5] "tot.withinss" "betweenss"    "size"         "iter"
## [9] "ifault"
```


Cluster using PP−Trait−BFI; k = 2
T005
T007
T009
T011
T001
T003
T017
T013
T015
2
0
−2
−4
−4
−2
0
2
cluster
1
2

Clustering Day1 on PP HR and Activity Data

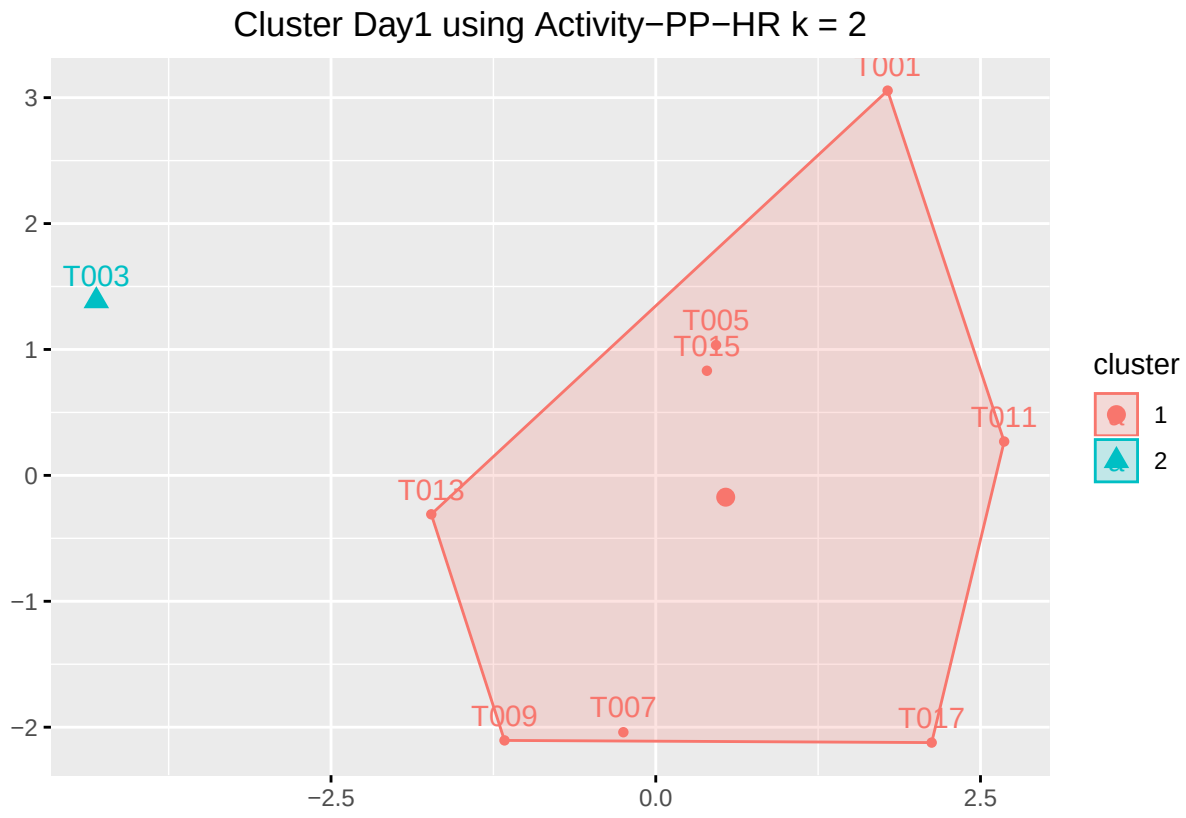


Determining Optimal Clusters

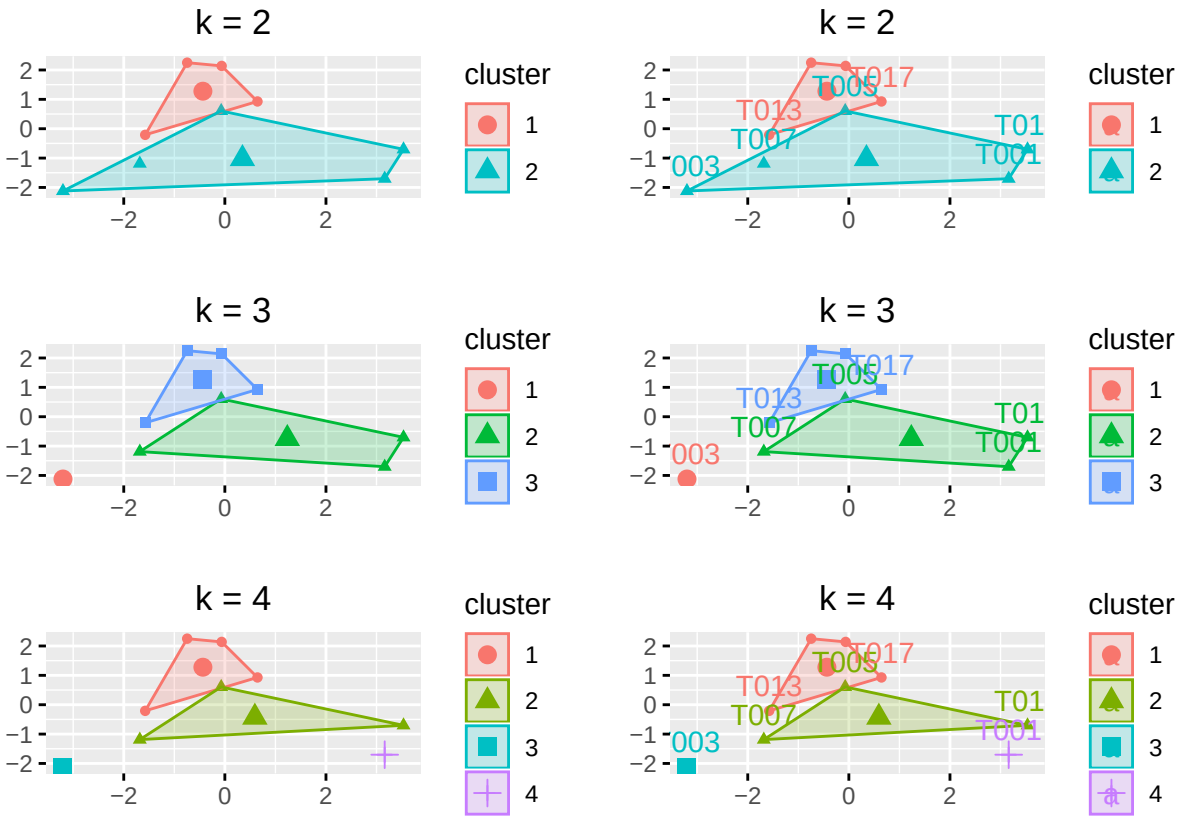


Final Clustering Day1 on PP HR and Activity Data

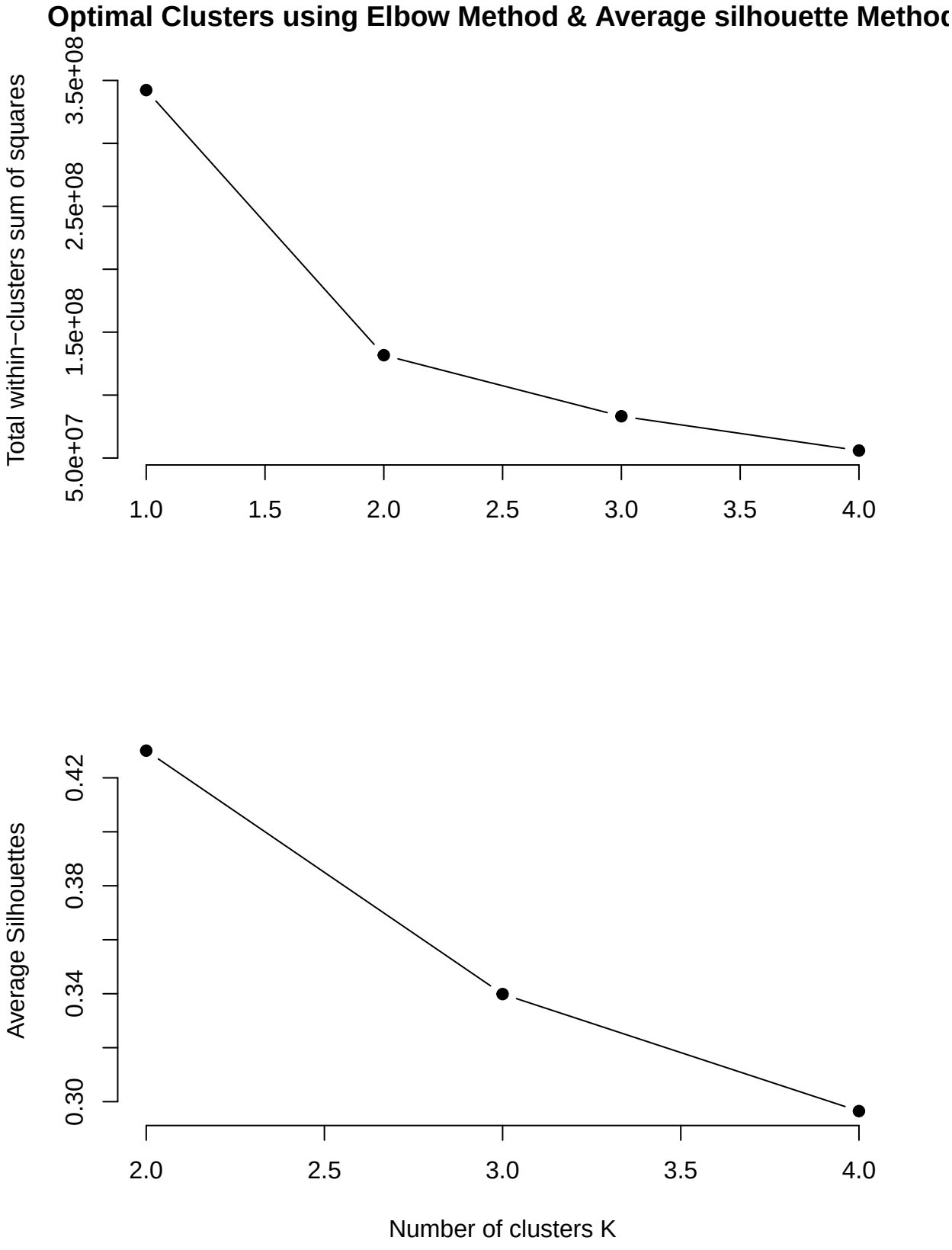
```
## K-means clustering with 2 clusters of sizes 8, 1
##
## Cluster means:
##          R         W      Out     SA  SP       I Mental Physically Hurried
## 1 6936.375  2573.125 3001.875 76.875 434 499.375 13.125       2.25      10
## 2    0.000 13766.000    0.000  0.000   0   0.000 18.000      15.00      18
##   Successful  Hard Insecure        PP       HR
## 1         15 13.25    7.625 -5.562416 3.536297
## 2         12 18.00   17.000 -5.815462 3.510015
##
## Clustering vector:
## T001 T003 T005 T007 T009 T011 T013 T015 T017
##    1    2    1    1    1    1    1    1    1
##
## Within cluster sum of squares by cluster:
## [1] 179068558         0
##  (between_SS / total_SS =  47.6 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"        "withinss"
## [5] "tot.withinss" "betweenss"    "size"         "iter"
## [9] "ifault"
```



Clustering Day2 on PP HR and Activity Data

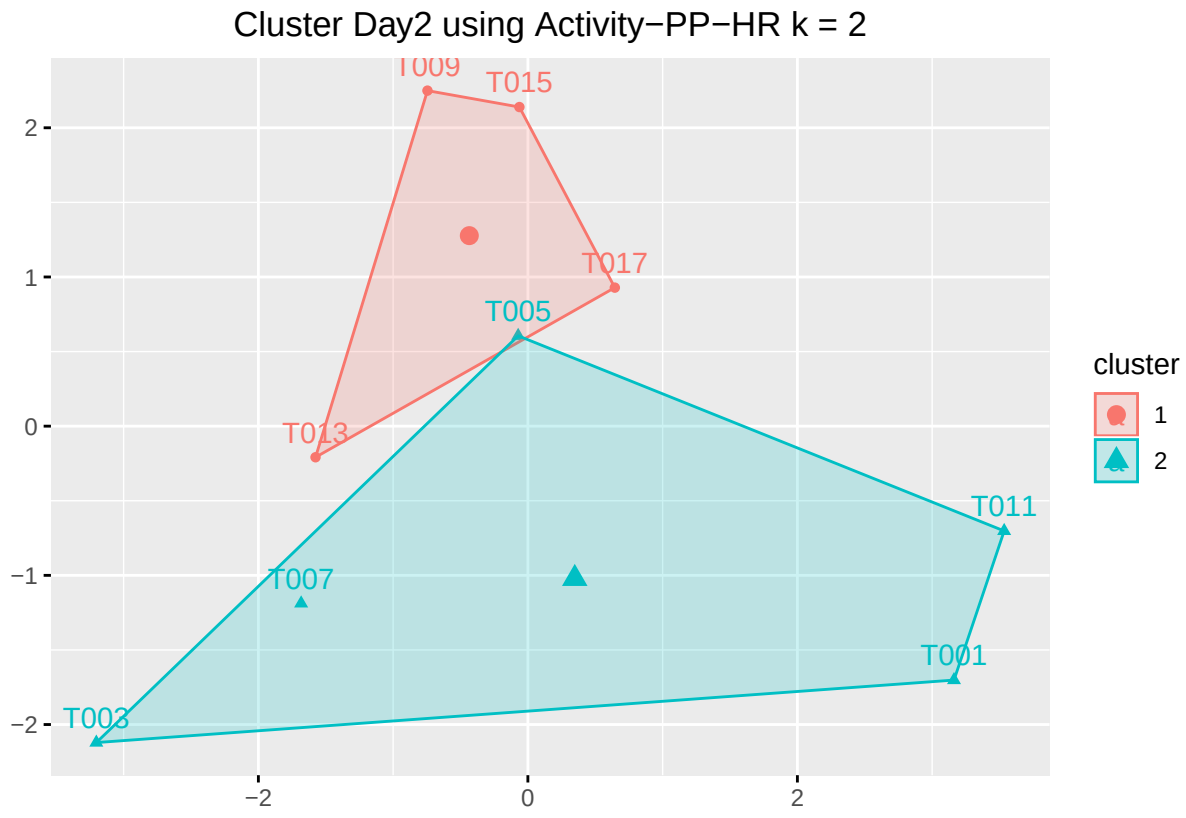


Determining Optimal Clusters

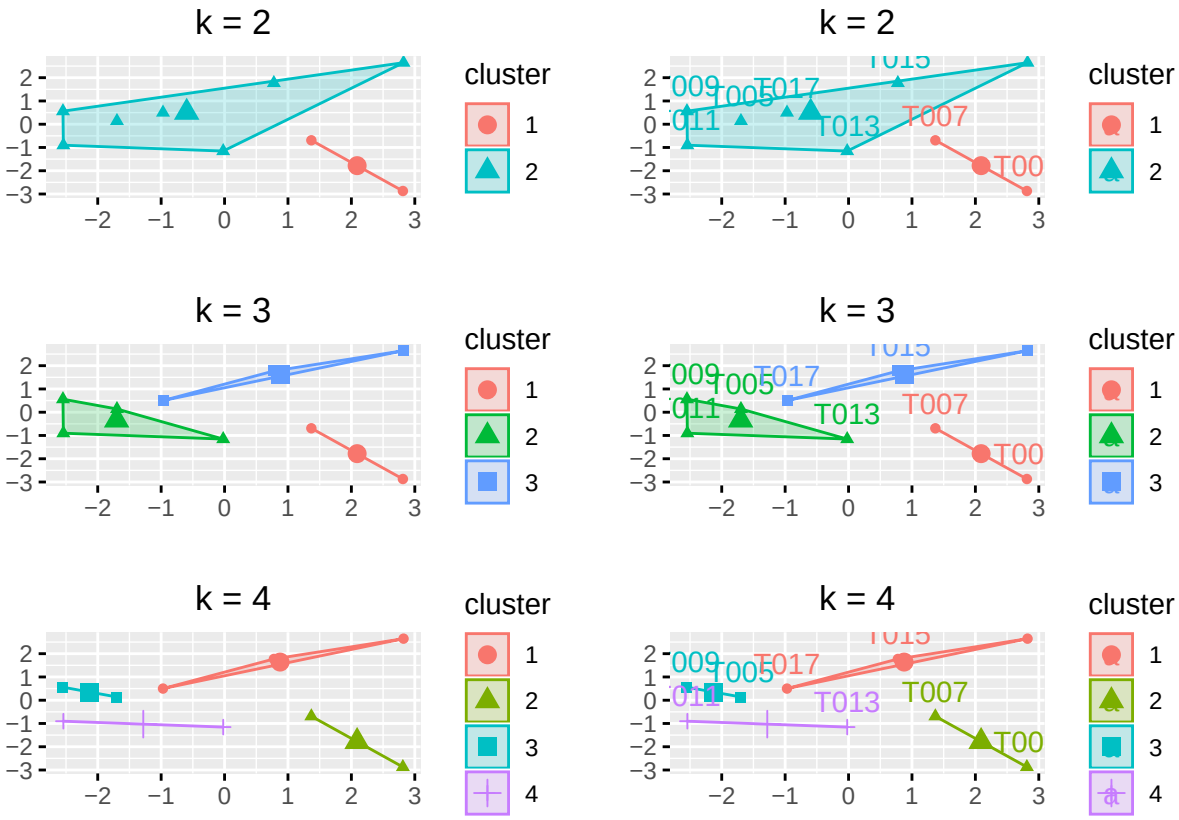


Final Clustering Day2 on PP HR and Activity Data

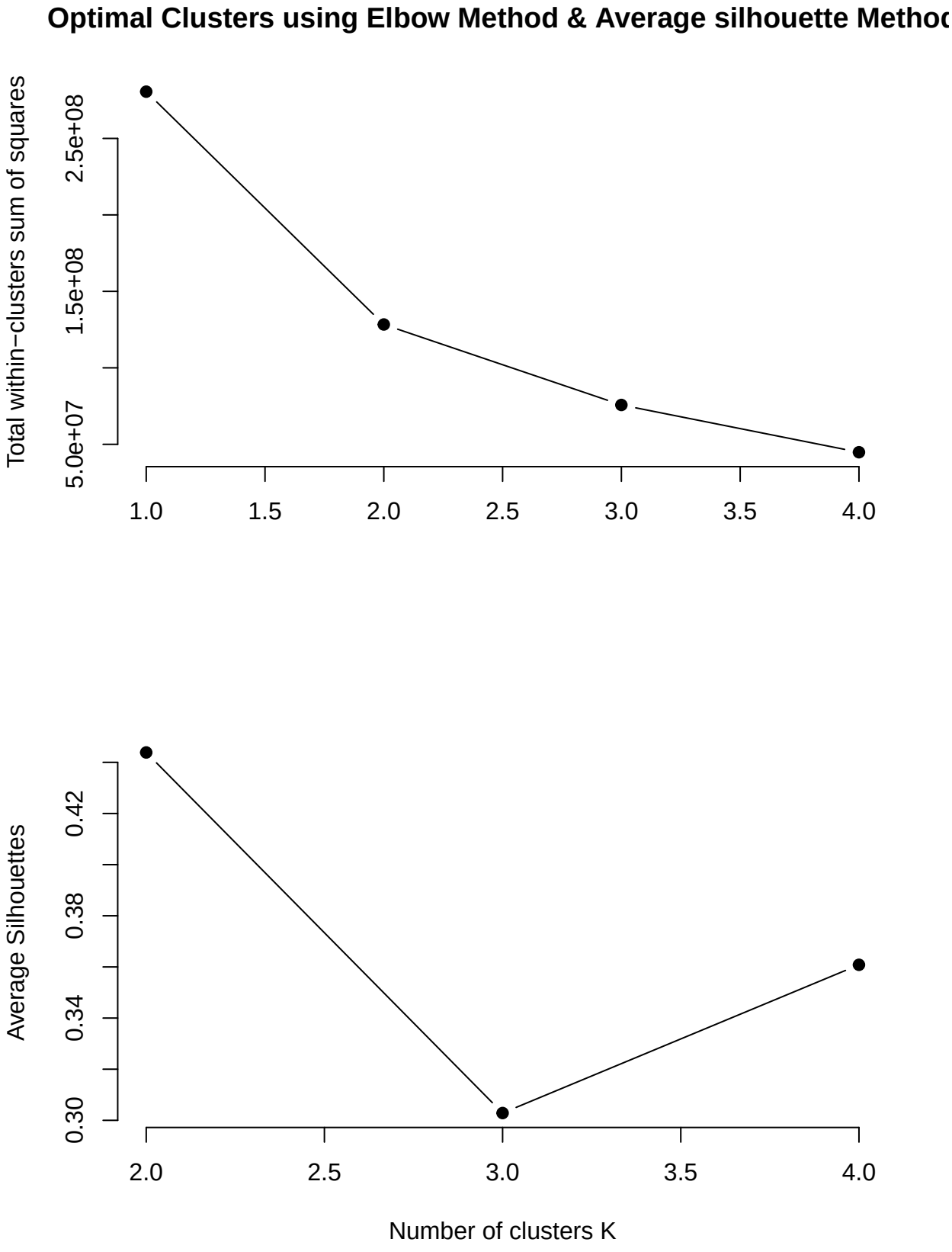
```
## K-means clustering with 2 clusters of sizes 4, 5
##
## Cluster means:
##        R       W    Out     SP       I Mental Physically Hurried
## 1 9820.0 2293.75 2023.0 207.75   91.25   17.0       5.75    12.5
## 2 1971.6 7962.40 1898.2 484.40 1071.00   13.2       6.80    11.2
##   Successful  Hard Insecure        PP       HR
## 1       17.0 13.75    13.75 -5.581690 2.614419
## 2       15.8 12.20     8.00 -5.618719 3.452636
##
## Clustering vector:
## T001 T003 T005 T007 T009 T011 T013 T015 T017
##    2    2    2    2    1    2    1    1    1
##
## Within cluster sum of squares by cluster:
## [1] 39290355 92405619
##  (between_SS / total_SS =  61.5 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"        "withinss"
## [5] "tot.withinss" "betweenss"    "size"         "iter"
## [9] "ifault"
```



Clustering Day3 on PP HR and Activity Data

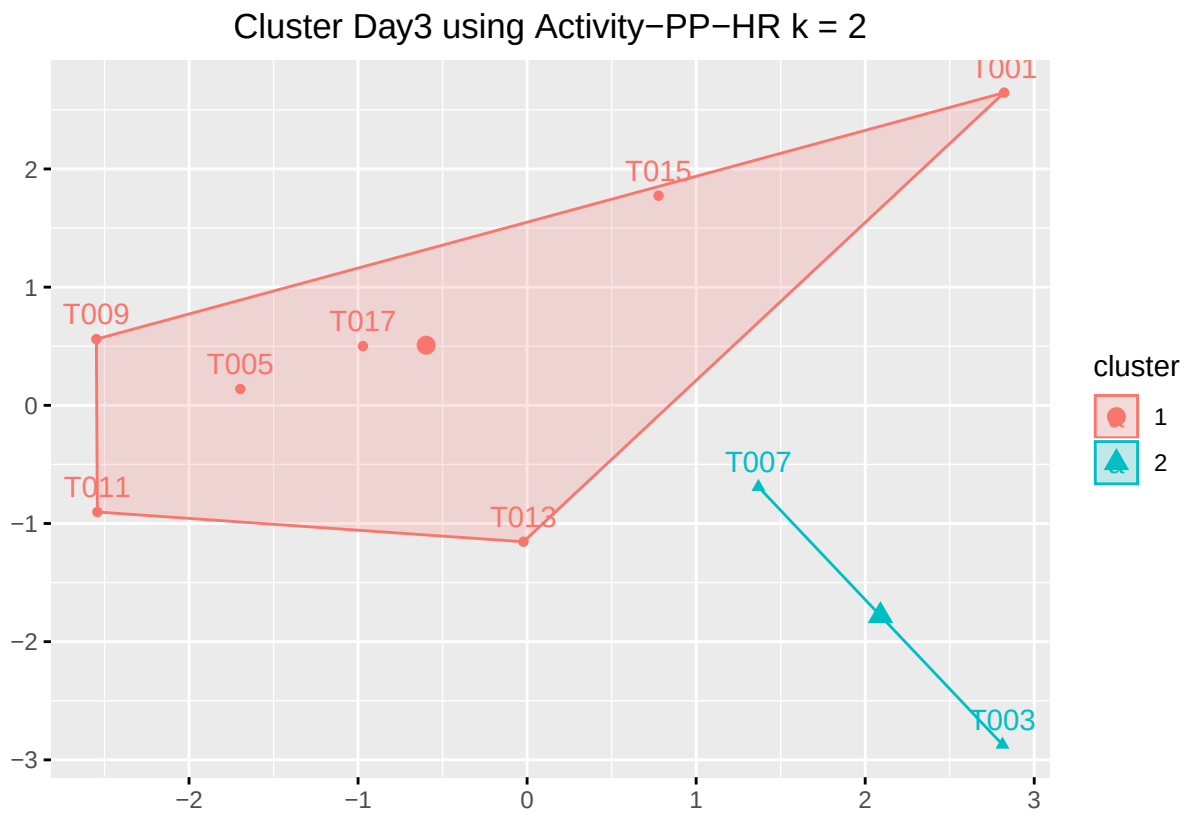


Determining Optimal Clusters

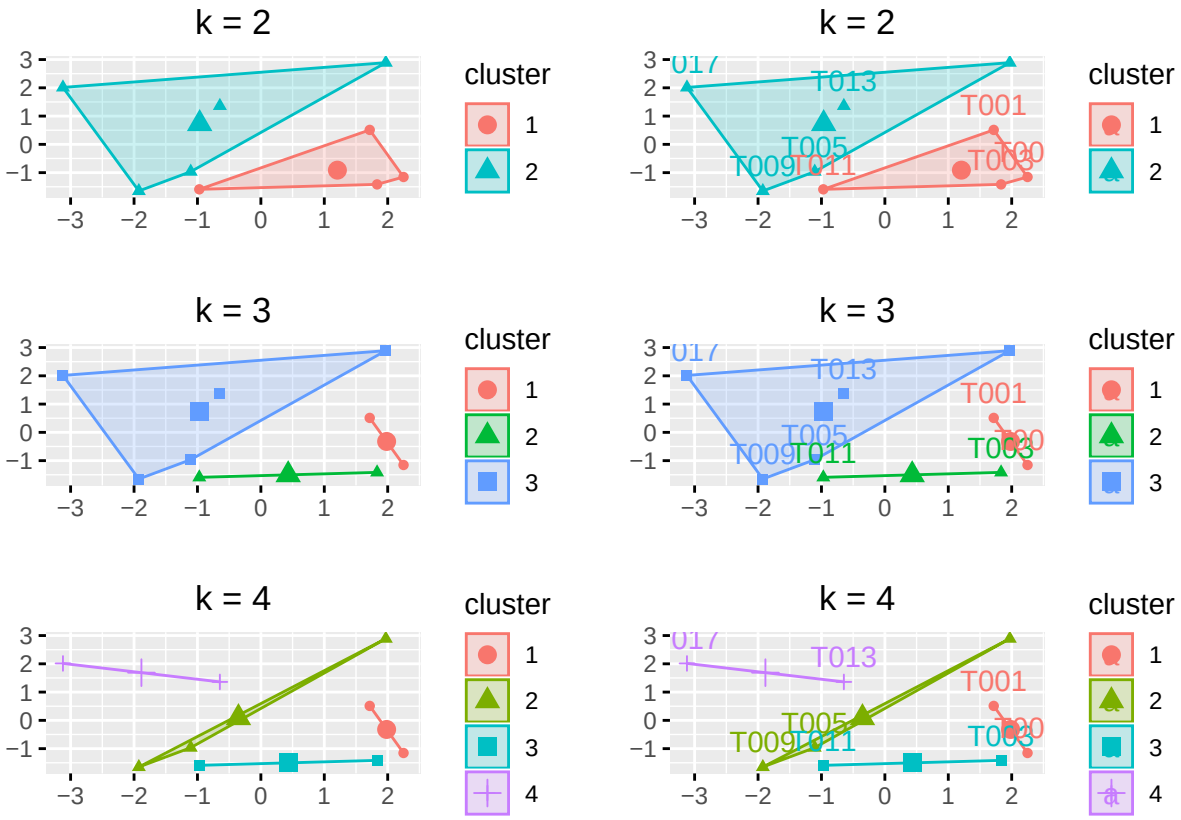


Final Clustering Day3 on PP HR and Activity Data

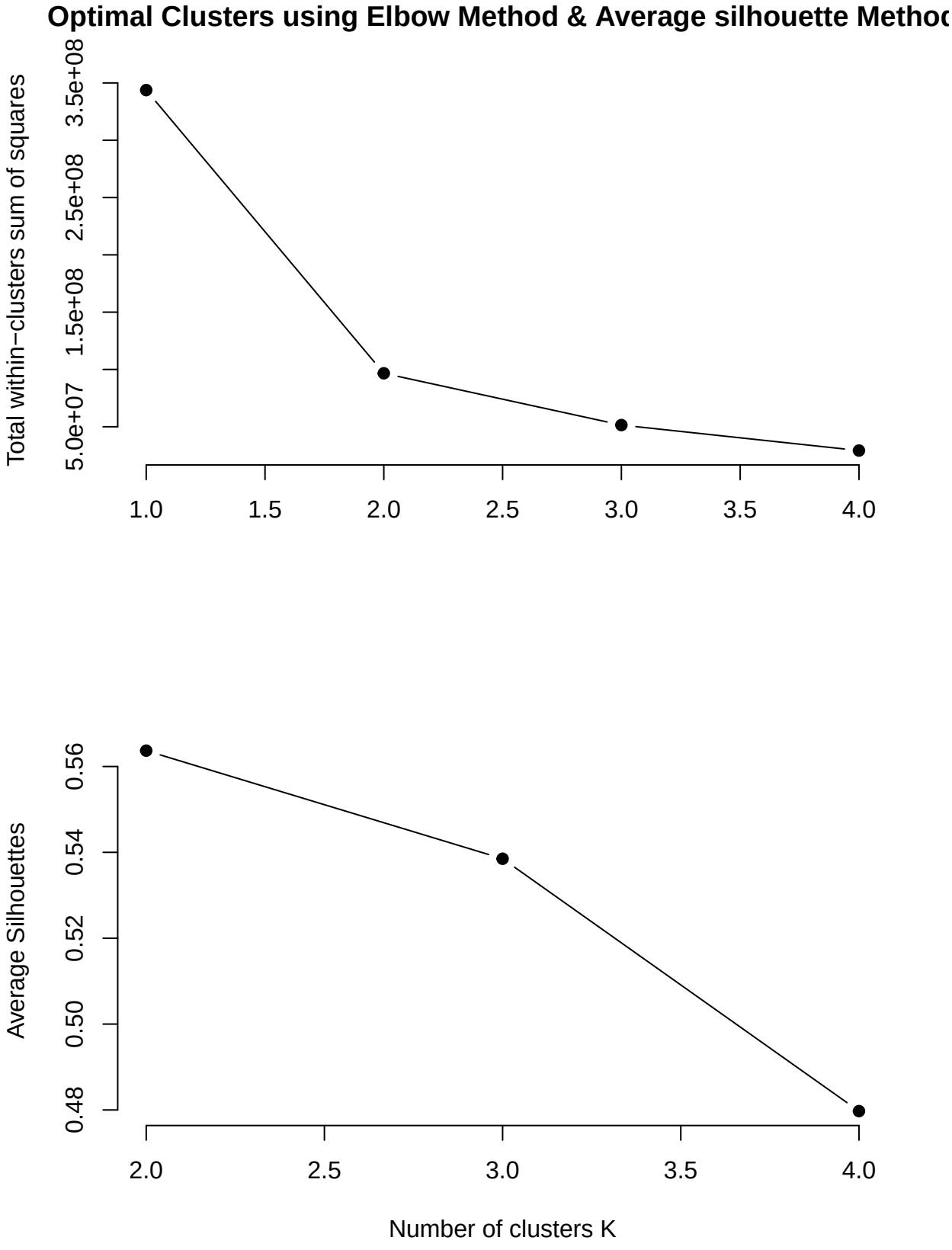
```
## K-means clustering with 2 clusters of sizes 7, 2
##
## Cluster means:
##          R    W      Out       SA       SP        I   Mental Physically
## 1 7553.857 1442 2341.286 17.57143 595.2857 973.5714 8.857143          4
## 2 1256.500 8832  563.500  0.00000 836.0000 364.0000 8.000000          5
##    Hurried Successful     Hard Insecure        PP       HR
## 1 6.285714   12.71429 10.14286 4.714286 -5.571515 3.601426
## 2 2.500000   18.00000  7.50000 2.000000 -5.659282 3.466822
##
## Clustering vector:
## T001 T003 T005 T007 T009 T011 T013 T015 T017
##    1    2    1    2    1    1    1    1    1
##
## Within cluster sum of squares by cluster:
## [1] 112202565  16140008
##  (between_SS / total_SS =  54.3 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"        "withinss"
## [5] "tot.withinss" "betweenss"    "size"         "iter"
## [9] "ifault"
```



Clustering Day4 on PP HR and Activity Data

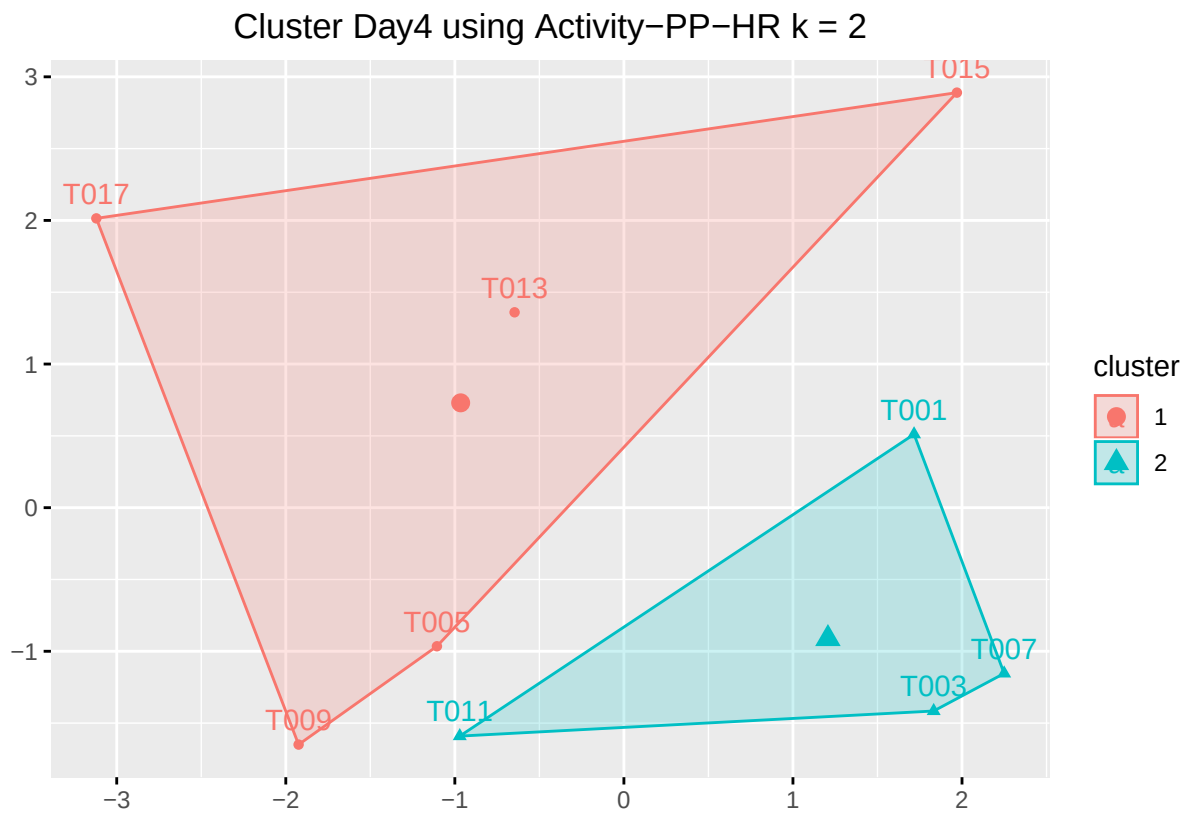


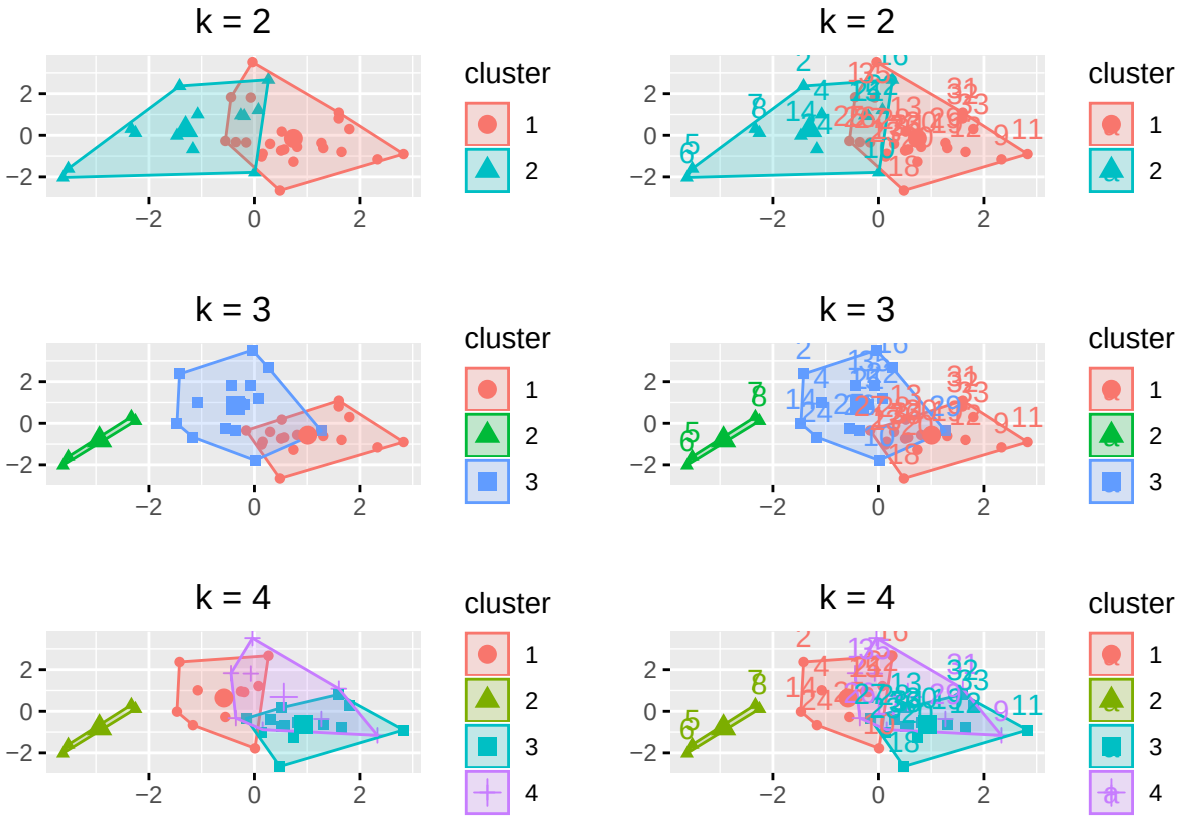
Determining Optimal Clusters



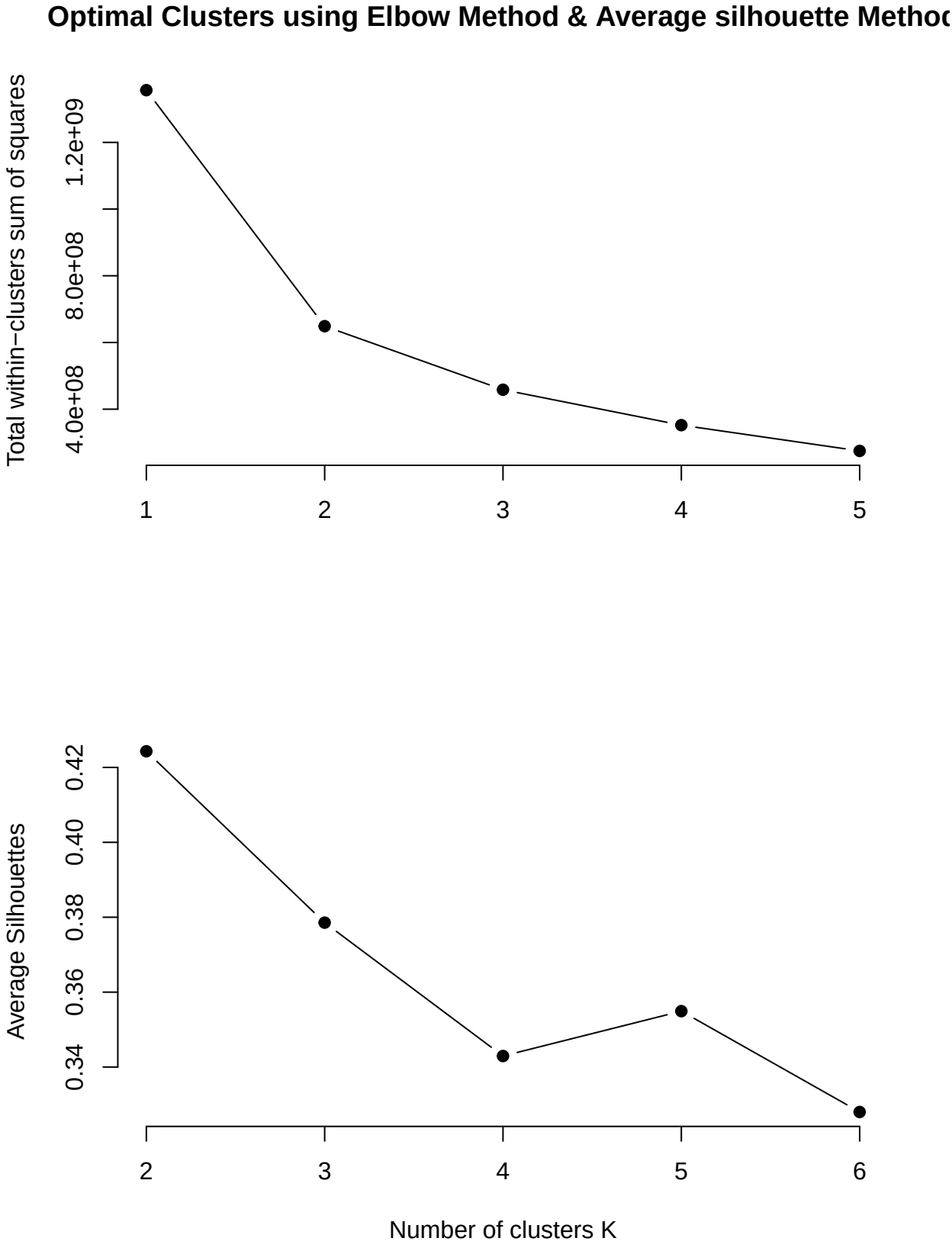
Final Clustering Day4 on PP HR and Activity Data

```
## K-means clustering with 2 clusters of sizes 5, 4
##
## Cluster means:
##         R       W    Out    SA     SP Mental Physically Hurried Successful
## 1 10295.4  875.20 1044.8   0.0 807.40  12.20       5.80    8.60      12.40
## 2  1852.0 7161.75 1151.0 187.5 221.75   9.25       3.75    5.25      15.25
##    Hard Insecure        PP       HR
## 1 11.40     3.80 -5.588139 3.532957
## 2  9.25     2.25 -5.594908 3.546480
##
## Clustering vector:
## T001 T003 T005 T007 T009 T011 T013 T015 T017
##    2    2    1    2    1    2    1    1    1
##
## Within cluster sum of squares by cluster:
## [1] 30019348 66623637
##  (between_SS / total_SS =  71.9 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"        "withinss"
## [5] "tot.withinss" "betweenss"    "size"         "iter"
## [9] "ifault"
```




k = 2
cluster
1
2
k = 2
cluster
1
2
k = 3
cluster
1
2
3
k = 3
cluster
1
2
3
k = 4
cluster
1
2
3
4
k = 4
cluster
1
2
3
4

Determining Optimal Clusters



```
## K-means clustering with 2 clusters of sizes 23, 13
##
## Cluster means:
##          R        W      Out       SA       SP        I   Mental
## 1 8473.826 1704.565 2224.783 32.08696 543.7826 485.8696 12.56522
## 2 1846.615 8070.308 1367.077 57.69231 383.1538 467.9231 11.07692
##   Physically
## 1   4.260870
## 2   5.692308
##
## Clustering vector:
##  [1] 1 2 1 2 2 2 2 2 1 2 1 1 1 2 2 2 1 1 1 1 2 2 1 2 1 1 1 1 1 1 1 1 1 1 1
## [36] 1
##
## Within cluster sum of squares by cluster:
## [1] 407360613 241521868
##  (between_SS / total_SS =  52.2 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"        "withinss"
## [5] "tot.withinss" "betweenss"    "size"         "iter"
## [9] "ifault"
```