

Untitled

ref: <http://www.sthda.com/english/articles/31-principal-component-methods-in-r-practical-guide/118-principal-component-analysis-in-r-prcomp-vs-princomp/>

```
library(factoextra)
```

```
## Loading required package: ggplot2
```

```
## Welcome! Related Books: `Practical Guide To Cluster Analysis in R` at https://goo.gl/13EFCZ
```

```
decathlon2.active <-read.csv('../data/select_table.txt',sep = ',',row.names = 1)
head(decathlon2.active)
```

```
##           time.time.1.month time.time.3.month time.time.6.month
## 2009-01-06             0.05             0.14             0.31
## 2009-02-06             0.21             0.28             0.44
## 2009-03-06             0.09             0.21             0.39
## 2009-04-06             0.16             0.20             0.40
## 2009-05-06             0.14             0.19             0.32
## 2009-07-06             0.15             0.19             0.28
##           time.time.1.year time.time.2.year time.time.3.year
## 2009-01-06             0.45             0.80             1.10
## 2009-02-06             0.57             0.99             1.44
## 2009-03-06             0.67             0.91             1.34
## 2009-04-06             0.60             0.94             1.37
## 2009-05-06             0.51             0.96             1.43
## 2009-07-06             0.48             0.96             1.48
##           time.time.5.year time.time.7.year time.time.10.year
## 2009-01-06             1.68             2.07             2.51
## 2009-02-06             1.97             2.40             3.05
## 2009-03-06             1.83             2.49             2.83
## 2009-04-06             1.90             2.55             2.95
## 2009-05-06             2.06             2.70             3.18
## 2009-07-06             2.40             3.12             3.52
##           time.time.20.year time.time.30.year
## 2009-01-06             3.41             3.04
## 2009-02-06             3.94             3.70
## 2009-03-06             3.74             3.50
## 2009-04-06             3.82             3.73
## 2009-05-06             4.12             4.09
## 2009-07-06             4.29             4.35
```

```
res.pca <- princomp(decathlon2.active, scale = TRUE,cor=FALSE)
```

```
## Warning: In princomp.default(decathlon2.active, scale = TRUE, cor = FALSE) :
## extra argument 'scale' will be disregarded
```

```
summary(res.pca,loadings=TRUE)
```

```
## Importance of components:
```

```
##           Comp.1    Comp.2    Comp.3    Comp.4
## Standard deviation 1.790162 1.2027566 0.34402068 0.103799330
## Proportion of Variance 0.669160 0.3020651 0.02471236 0.002249749
## Cumulative Proportion 0.669160 0.9712251 0.99593742 0.998187171
##           Comp.5    Comp.6    Comp.7    Comp.8
```

```
## Standard deviation      0.0686055312 0.0436944087 0.0254521666 0.0238024768
## Proportion of Variance 0.0009827959 0.0003986546 0.0001352678 0.0001183013
## Cumulative Proportion  0.9991699670 0.9995686217 0.9997038895 0.9998221908
##                          Comp.9      Comp.10      Comp.11
## Standard deviation      1.817289e-02 1.764564e-02 1.448882e-02
## Proportion of Variance  6.895936e-05 6.501592e-05 4.383398e-05
## Cumulative Proportion  9.998912e-01 9.999562e-01 1.000000e+00
##
## Loadings:
##               Comp.1 Comp.2 Comp.3 Comp.4 Comp.5 Comp.6 Comp.7 Comp.8
## time.time.1.month -0.345 -0.150  0.333  0.405 -0.145 -0.438  0.178 -0.433
## time.time.3.month -0.360 -0.157  0.318  0.255 -0.169              0.277
## time.time.6.month -0.379 -0.164  0.254              0.313          0.387
## time.time.1.year  -0.396 -0.151  0.131 -0.311  0.150  0.521          -0.213
## time.time.2.year  -0.390          -0.153 -0.393  0.308 -0.223 -0.152 -0.131
## time.time.3.year  -0.370          -0.376 -0.259          -0.425
## time.time.5.year  -0.295  0.228 -0.431  0.280              0.190  0.552
## time.time.7.year  -0.227  0.350 -0.308  0.305              0.430  0.316 -0.445
## time.time.10.year -0.145  0.432          0.178 -0.134          -0.843
## time.time.20.year          0.545  0.318 -0.486 -0.522          0.257
## time.time.30.year          0.489  0.400  0.108  0.729          0.151  0.101
##               Comp.9 Comp.10 Comp.11
## time.time.1.month  0.366          0.111
## time.time.3.month -0.666 -0.346
## time.time.6.month  0.263  0.404 -0.530
## time.time.1.year          0.602
## time.time.2.year   0.182 -0.567 -0.355
## time.time.3.year  -0.380  0.567
## time.time.5.year   0.332 -0.181  0.333
## time.time.7.year  -0.210          -0.319
## time.time.10.year  0.103  0.103
## time.time.20.year          -0.104
## time.time.30.year
```

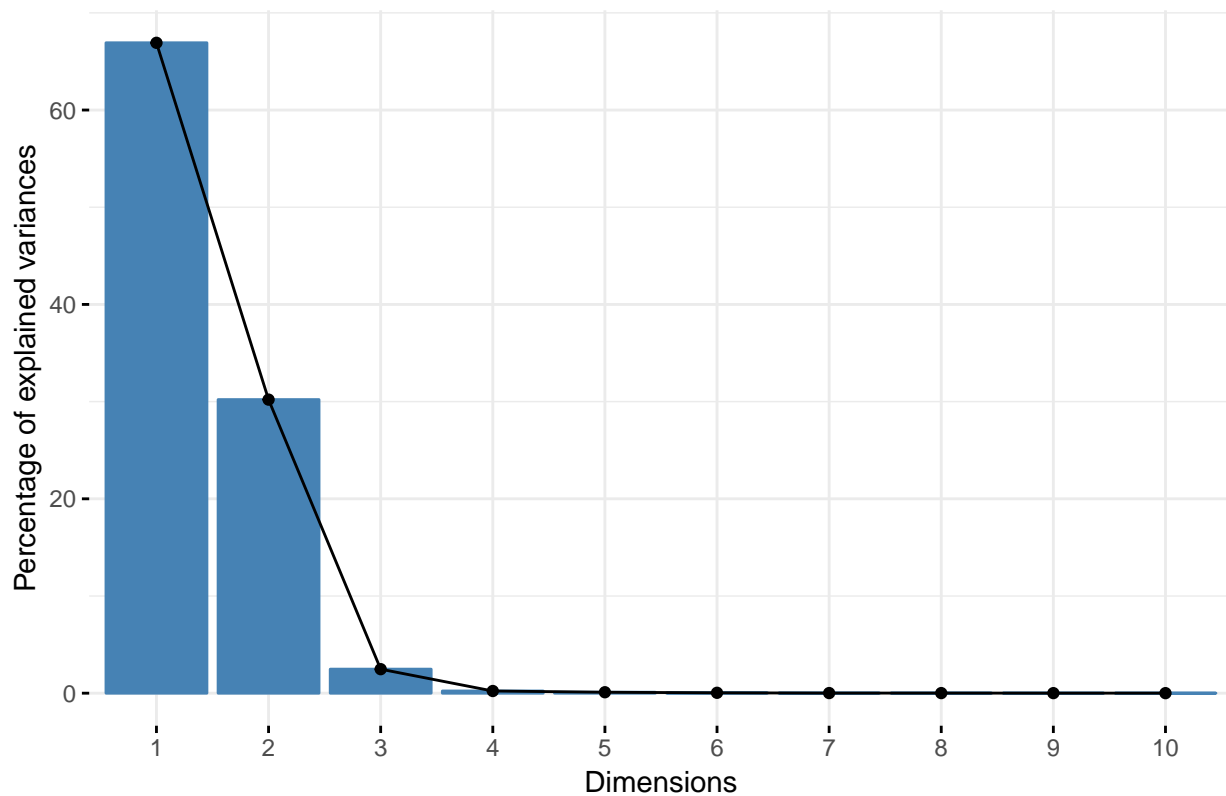
```
res.pca.loadings<-loadings(res.pca)
res.pca.loadings
```

```
##
## Loadings:
##               Comp.1 Comp.2 Comp.3 Comp.4 Comp.5 Comp.6 Comp.7 Comp.8
## time.time.1.month -0.345 -0.150  0.333  0.405 -0.145 -0.438  0.178 -0.433
## time.time.3.month -0.360 -0.157  0.318  0.255 -0.169              0.277
## time.time.6.month -0.379 -0.164  0.254              0.313          0.387
## time.time.1.year  -0.396 -0.151  0.131 -0.311  0.150  0.521          -0.213
## time.time.2.year  -0.390          -0.153 -0.393  0.308 -0.223 -0.152 -0.131
## time.time.3.year  -0.370          -0.376 -0.259          -0.425
## time.time.5.year  -0.295  0.228 -0.431  0.280              0.190  0.552
## time.time.7.year  -0.227  0.350 -0.308  0.305              0.430  0.316 -0.445
## time.time.10.year -0.145  0.432          0.178 -0.134          -0.843
## time.time.20.year          0.545  0.318 -0.486 -0.522          0.257
## time.time.30.year          0.489  0.400  0.108  0.729          0.151  0.101
##               Comp.9 Comp.10 Comp.11
## time.time.1.month  0.366          0.111
## time.time.3.month -0.666 -0.346
## time.time.6.month  0.263  0.404 -0.530
```

```
## time.time.1.year      0.602
## time.time.2.year    0.182 -0.567 -0.355
## time.time.3.year   -0.380  0.567
## time.time.5.year    0.332 -0.181  0.333
## time.time.7.year   -0.210      -0.319
## time.time.10.year   0.103  0.103
## time.time.20.year      -0.104
## time.time.30.year
##
##               Comp.1 Comp.2 Comp.3 Comp.4 Comp.5 Comp.6 Comp.7 Comp.8
## SS loadings    1.000  1.000  1.000  1.000  1.000  1.000  1.000  1.000
## Proportion Var  0.091  0.091  0.091  0.091  0.091  0.091  0.091  0.091
## Cumulative Var  0.091  0.182  0.273  0.364  0.455  0.545  0.636  0.727
##               Comp.9 Comp.10 Comp.11
## SS loadings    1.000  1.000  1.000
## Proportion Var  0.091  0.091  0.091
## Cumulative Var  0.818  0.909  1.000
```

```
fviz_eig(res.pca)
```

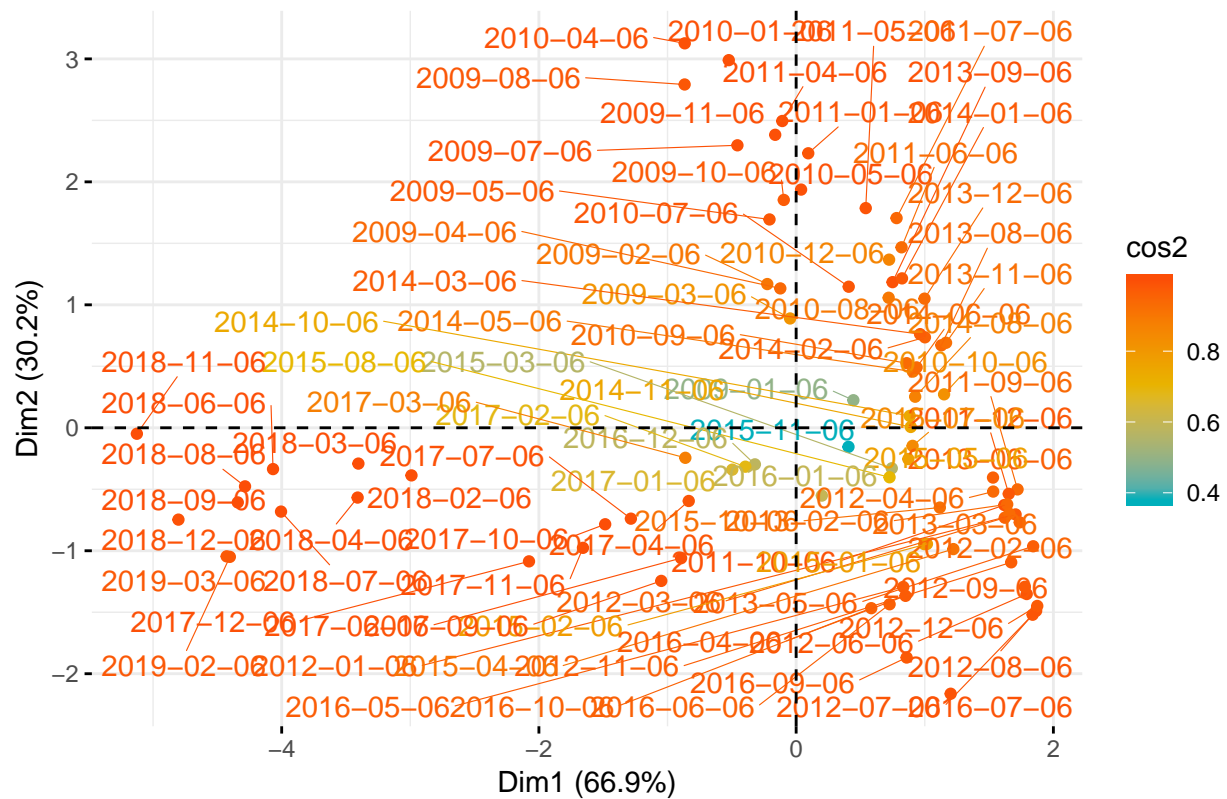
Scree plot



```
pdf( "../output/variance_explained.pdf", width = 6, height = 4 )
fviz_eig(res.pca)
```

```
fviz_pca_ind(res.pca,
  col.ind = "cos2", # Color by the quality of representation
  gradient.cols = c("#00AFBB", "#E7B800", "#FC4E07"),
  repel = TRUE      # Avoid text overlapping
)
```

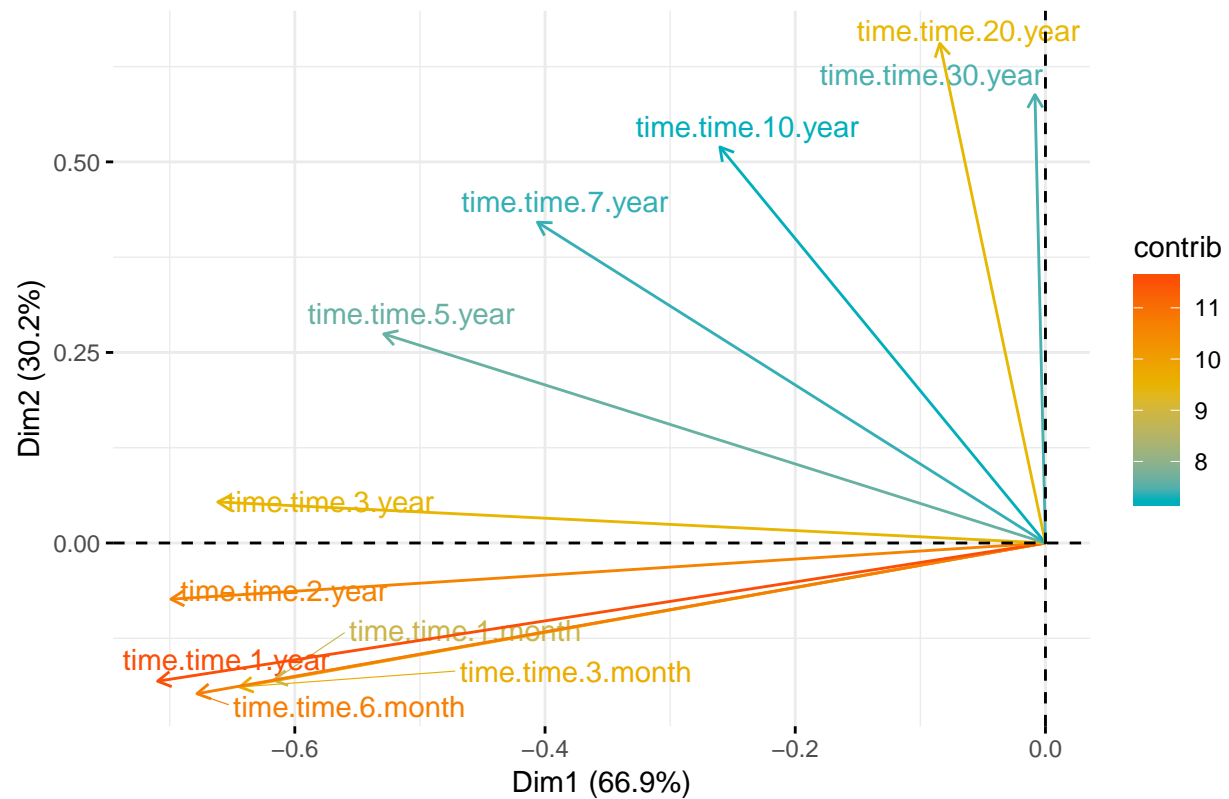
Individuals – PCA



```
pdf( "../output/fviz_pca_ind.pdf", width = 10, height = 10 )
fviz_pca_ind(res.pca,
  col.ind = "cos2", # Color by the quality of representation
  gradient.cols = c("#00AFBB", "#E7B800", "#FC4E07"),
  repel = TRUE      # Avoid text overlapping
)
```

```
fviz_pca_var(res.pca,
  col.var = "contrib", # Color by contributions to the PC
  gradient.cols = c("#00AFBB", "#E7B800", "#FC4E07"),
  repel = TRUE      # Avoid text overlapping
)
```

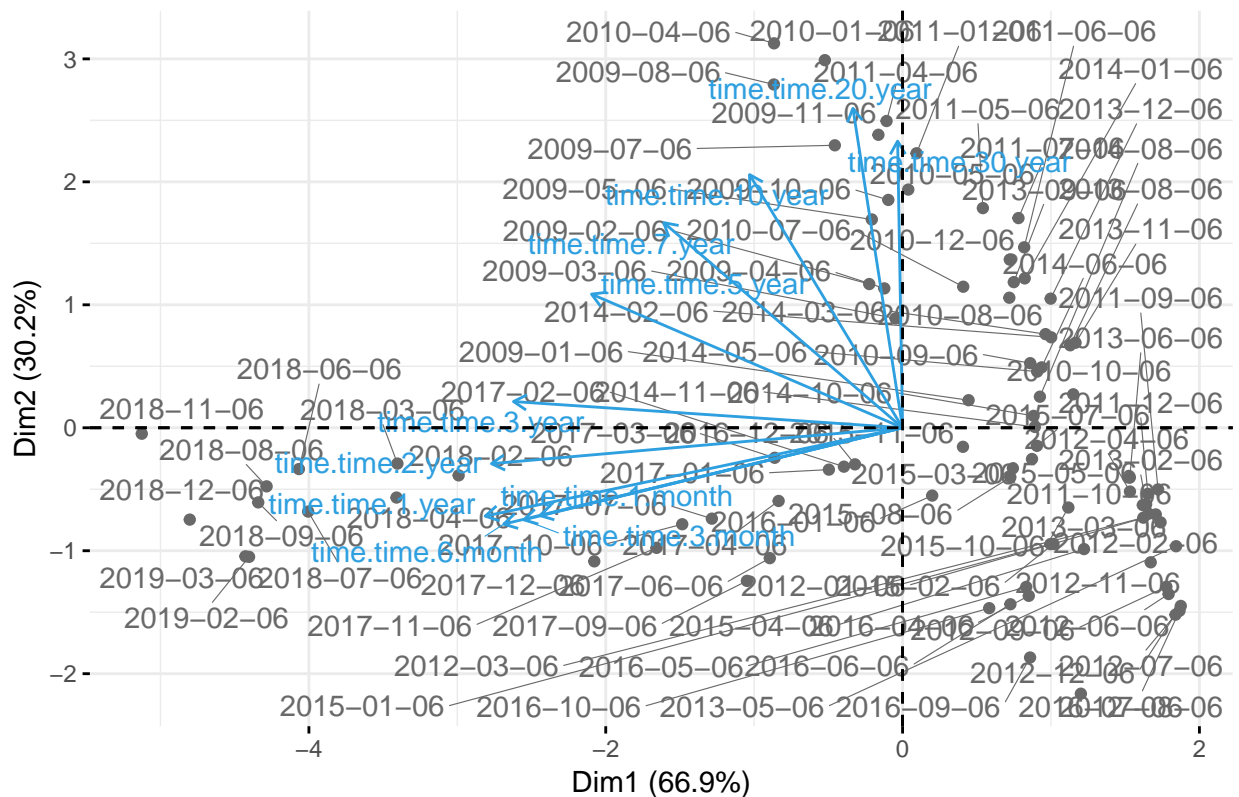
Variables – PCA



```
pdf( "../output/fviz_pca_var.pdf", width = 6, height = 6 )
fviz_pca_var(res.pca,
  col.var = "contrib", # Color by contributions to the PC
  gradient.cols = c("#00AFBB", "#E7B800", "#FC4E07"),
  repel = TRUE        # Avoid text overlapping
)
```

```
fviz_pca_biplot(res.pca, repel = TRUE,
  col.var = "#2E9FDF", # Variables color
  col.ind = "#696969"  # Individuals color
)
```

PCA – Biplot



```
pdf( "../output/fviz_pca_biplot.pdf", width = 10, height = 10)
fviz_pca_biplot(res.pca, repel = TRUE,
  col.var = "#2E9FDF", # Variables color
  col.ind = "#696969" # Individuals color
)
```

Eigenvalues

```
eig.val <- get_eigenvalue(res.pca)
eig.val
```

##	eigenvalue	variance.percent	cumulative.variance.percent
## Dim.1	3.2046816530	66.915996197	66.91600
## Dim.2	1.4466234553	30.206510384	97.12251
## Dim.3	0.1183502273	2.471235591	99.59374
## Dim.4	0.0107743010	0.224974946	99.81872
## Dim.5	0.0047067189	0.098279585	99.91700
## Dim.6	0.0019092013	0.039865461	99.95686
## Dim.7	0.0006478128	0.013526784	99.97039
## Dim.8	0.0005665579	0.011830126	99.98222
## Dim.9	0.0003302541	0.006895936	99.98912
## Dim.10	0.0003113685	0.006501592	99.99562
## Dim.11	0.0002099258	0.004383398	100.00000

Results for Variables

```
res.var <- get_pca_var(res.pca)
res.var$coord # Coordinates
```

##	Dim.1	Dim.2	Dim.3	Dim.4
----	-------	-------	-------	-------

```

## time.time.1.month -0.61674247 -0.18013186 0.114509498 0.042052805
## time.time.3.month -0.64401561 -0.18891409 0.109300801 0.026506248
## time.time.6.month -0.67823056 -0.19777334 0.087264336 -0.003856864
## time.time.1.year -0.70967366 -0.18131880 0.045158072 -0.032310132
## time.time.2.year -0.69904015 -0.07373328 -0.052611726 -0.040840291
## time.time.3.year -0.66159833 0.05384609 -0.129513175 -0.026842166
## time.time.5.year -0.52892676 0.27428122 -0.148109890 0.029049813
## time.time.7.year -0.40604835 0.42091550 -0.105999908 0.031651417
## time.time.10.year -0.26021543 0.51959646 0.004648119 0.018427857
## time.time.20.year -0.08443907 0.65554616 0.109316061 -0.050446616
## time.time.30.year -0.00840166 0.58825108 0.137662771 0.011219593
##
## Dim.5 Dim.6 Dim.7 Dim.8
## time.time.1.month -0.009978656 -0.019153869 0.0045376023 -0.0102950503
## time.time.3.month -0.011589519 -0.002031973 -0.0022364408 0.0065942062
## time.time.6.month -0.003499373 0.013674122 0.0006795216 0.0092016109
## time.time.1.year 0.010293922 0.022786591 -0.0005418448 -0.0050711733
## time.time.2.year 0.021160793 -0.009758297 -0.0038729577 -0.0031186222
## time.time.3.year 0.002909750 -0.018564017 0.0006716758 -0.0008160353
## time.time.5.year -0.002089225 -0.001747287 0.0048356562 0.0131275931
## time.time.7.year -0.004740159 0.018767019 0.0080528435 -0.0105985411
## time.time.10.year -0.009209845 0.001845165 -0.0214557860 -0.0021796374
## time.time.20.year -0.035827058 -0.004312083 0.0065339912 0.0010363395
## time.time.30.year 0.050031378 -0.003858966 0.0038391846 0.0024125782
##
## Dim.9 Dim.10 Dim.11
## time.time.1.month 0.0066442307 0.0013346692 0.0016123740
## time.time.3.month -0.0121079994 -0.0061028772 0.0004706368
## time.time.6.month 0.0047747727 0.0071315884 -0.0076753292
## time.time.1.year 0.0007688094 0.0006698822 0.0087227505
## time.time.2.year 0.0032992898 -0.0100041559 -0.0051397762
## time.time.3.year -0.0069076077 0.0100020584 0.0007744912
## time.time.5.year 0.0060424591 -0.0031860813 0.0048285862
## time.time.7.year -0.0038235598 -0.0011754595 -0.0046236455
## time.time.10.year 0.0018677798 0.0018228371 0.0003221156
## time.time.20.year 0.0007465671 -0.0018323914 0.0004149755
## time.time.30.year -0.0015289984 0.0016420116 0.0003479210

```

```
res.var$contrib      # Contributions to the PCs
```

```

## Dim.1 Dim.2 Dim.3 Dim.4
## time.time.1.month 11.869237268 2.2429809 11.07934098 16.4134863
## time.time.3.month 12.942193783 2.4670230 10.09433218 6.5208979
## time.time.6.month 14.353896823 2.7038338 6.43434705 0.1380637
## time.time.1.year 15.715654568 2.2726375 1.72306508 9.6892097
## time.time.2.year 15.248227019 0.3758128 2.33881576 15.4806276
## time.time.3.year 13.658528447 0.2004255 14.17290267 6.6872260
## time.time.5.year 8.729837859 5.2003986 18.53527458 7.8324493
## time.time.7.year 5.144824933 12.2471301 9.49383939 9.2981643
## time.time.10.year 2.112911006 18.6628028 0.01825515 3.1518139
## time.time.20.year 0.222485645 29.7064706 10.09715102 23.6197325
## time.time.30.year 0.002202649 23.9204844 16.01267614 1.1683289
## Dim.5 Dim.6 Dim.7 Dim.8 Dim.9
## time.time.1.month 2.11556237 19.2159248 3.17836189 18.7073659 13.3672249
## time.time.3.month 2.85372802 0.2162640 0.77208530 7.6750418 44.3911735
## time.time.6.month 0.26017295 9.7937078 0.07127824 14.9445700 6.9033079
## time.time.1.year 2.25135240 27.1961218 0.04532109 4.5391298 0.1789737

```

```
## time.time.2.year    9.51361635  4.9876540  2.31545310  1.7166480  3.2960423
## time.time.3.year    0.17988422 18.0506231  0.06964179  0.1175367 14.4479814
## time.time.5.year    0.09273678  0.1599104  3.60961857 30.4176679 11.0555227
## time.time.7.year    0.47738376 18.4475561 10.01034396 19.8265832  4.4267768
## time.time.10.year   1.80213125  0.1783277 71.06231318  0.8385408  1.0563387
## time.time.20.year   27.27118597  0.9739180  6.59033627  0.1895657  0.1687678
## time.time.30.year   53.18224594  0.7799922  2.27524661  1.0273501  0.7078902
##                      Dim.10    Dim.11
## time.time.1.month   0.5721010  1.23841375
## time.time.3.month   11.9617475  0.10551298
## time.time.6.month   16.3342016 28.06262013
## time.time.1.year    0.1441193 36.24441505
## time.time.2.year    32.1429897 12.58411333
## time.time.3.year    32.1295127  0.28573747
## time.time.5.year    3.2601612 11.10642208
## time.time.7.year    0.4437524 10.18364497
## time.time.10.year   1.0671392  0.04942626
## time.time.20.year   1.0783552  0.08203122
## time.time.30.year   0.8659200  0.05766277
```

```
res.var$cos2          # Quality of representation
```

```
##                      Dim.1    Dim.2    Dim.3    Dim.4
## time.time.1.month   3.803713e-01 0.032447487 1.311243e-02 0.0017684384
## time.time.3.month   4.147561e-01 0.035688534 1.194667e-02 0.0007025812
## time.time.6.month   4.599967e-01 0.039114294 7.615064e-03 0.0000148754
## time.time.1.year    5.036367e-01 0.032876507 2.039251e-03 0.0010439446
## time.time.2.year    4.886571e-01 0.005436597 2.767994e-03 0.0016679294
## time.time.3.year    4.377124e-01 0.002899402 1.677366e-02 0.0007205019
## time.time.5.year    2.797635e-01 0.075230185 2.193654e-02 0.0008438917
## time.time.7.year    1.648753e-01 0.177169857 1.123598e-02 0.0010018122
## time.time.10.year   6.771207e-02 0.269980483 2.160501e-05 0.0003395859
## time.time.20.year   7.129957e-03 0.429740771 1.195000e-02 0.0025448611
## time.time.30.year   7.058789e-05 0.346039338 1.895104e-02 0.0001258793
##                      Dim.5    Dim.6    Dim.7    Dim.8
## time.time.1.month   9.957357e-05 3.668707e-04 2.058983e-05 1.059881e-04
## time.time.3.month   1.343170e-04 4.128915e-06 5.001667e-06 4.348356e-05
## time.time.6.month   1.224561e-05 1.869816e-04 4.617495e-07 8.466964e-05
## time.time.1.year    1.059648e-04 5.192287e-04 2.935958e-07 2.571680e-05
## time.time.2.year    4.477792e-04 9.522436e-05 1.499980e-05 9.725805e-06
## time.time.3.year    8.466644e-06 3.446227e-04 4.511484e-07 6.659136e-07
## time.time.5.year    4.364860e-06 3.053012e-06 2.338357e-05 1.723337e-04
## time.time.7.year    2.246911e-05 3.522010e-04 6.484829e-05 1.123291e-04
## time.time.10.year   8.482125e-05 3.404635e-06 4.603508e-04 4.750819e-06
## time.time.20.year   1.283578e-03 1.859406e-05 4.269304e-05 1.074000e-06
## time.time.30.year   2.503139e-03 1.489162e-05 1.473934e-05 5.820533e-06
##                      Dim.9    Dim.10    Dim.11
## time.time.1.month   4.414580e-05 1.781342e-06 2.599750e-06
## time.time.3.month   1.466036e-04 3.724511e-05 2.214990e-07
## time.time.6.month   2.279845e-05 5.085955e-05 5.891068e-05
## time.time.1.year    5.910679e-07 4.487422e-07 7.608638e-05
## time.time.2.year    1.088531e-05 1.000831e-04 2.641730e-05
## time.time.3.year    4.771504e-05 1.000412e-04 5.998367e-07
## time.time.5.year    3.651131e-05 1.015111e-05 2.331524e-05
## time.time.7.year    1.461961e-05 1.381705e-06 2.137810e-05
```



```
## time.time.10.year 3.488601e-06 3.322735e-06 1.037585e-07
## time.time.20.year 5.573624e-07 3.357658e-06 1.722047e-07
## time.time.30.year 2.337836e-06 2.696202e-06 1.210490e-07
```

Results for individuals

```
res.ind <- get_pca_ind(res.pca)
res.ind$coord      # Coordinates
```

##	Dim.1	Dim.2	Dim.3	Dim.4
## 2009-01-06	0.44482285	0.224148077	-0.22963989	-0.3003600455
## 2009-02-06	-0.22446372	1.168870742	-0.02695049	-0.3132367669
## 2009-03-06	-0.04713997	0.889115890	-0.15282173	-0.3268743727
## 2009-04-06	-0.12308685	1.133509069	-0.08477844	-0.2540416033
## 2009-05-06	-0.20716526	1.694181260	-0.02497588	-0.2326333233
## 2009-07-06	-0.45642511	2.297239708	-0.16769053	-0.0016186262
## 2009-08-06	-0.86714738	2.791753206	-0.40266565	-0.0488608879
## 2009-10-06	-0.09605865	1.852929456	-0.30713816	-0.0711472337
## 2009-11-06	-0.16281518	2.382519933	-0.12914790	-0.0418915583
## 2010-01-06	-0.52359515	2.989528123	-0.24349432	-0.0532187591
## 2010-04-06	-0.86608537	3.126391795	-0.19623809	-0.0157241755
## 2010-05-06	0.03849672	1.937050065	-0.10323920	0.0520027819
## 2010-07-06	0.40877032	1.147108909	0.14786415	0.0439858725
## 2010-08-06	0.71932140	1.057507708	0.42741328	0.0213717993
## 2010-09-06	0.85978511	0.525376471	0.27562959	0.0270221239
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##	2015-04-06	0.0005558974	0.0013458580	-0.0040370422
##	2015-05-06	-0.0040288183	-0.0068361734	0.0145117592
##	2015-07-06	0.0029246609	-0.0103175721	0.0165750964
##	2015-08-06	0.0281360440	0.0304797728	-0.0005399930
##	2015-10-06	-0.0064482434	-0.0032359823	0.0168424268
##	2015-11-06	0.0313042344	0.0312050954	-0.0365153784
##	2016-01-06	0.0453883084	0.0422367226	-0.0063380635
##	2016-04-06	0.0050366443	-0.0045723907	0.0168480854
##	2016-05-06	0.0403602038	0.0225822760	-0.0228792298
##	2016-06-06	-0.0059597350	-0.0077454426	0.0005199354
##	2016-07-06	0.0088394221	-0.0061968738	0.0017087564
##	2016-09-06	-0.0052555030	-0.0168314923	-0.0265376604
##	2016-10-06	-0.0056915701	-0.0228612844	-0.0010355535
##	2016-12-06	-0.0362935972	0.0064460872	0.0044876609
##	2017-01-06	-0.0043147061	-0.0270136758	0.0227572788
##	2017-02-06	-0.0103318196	-0.0173882405	-0.0085163354
##	2017-03-06	-0.0634715466	-0.0149154844	-0.0229109735
##	2017-04-06	0.0350445499	0.0117263025	0.0047479241
##	2017-06-06	-0.0272059124	-0.0124777752	-0.0183782220
##	2017-07-06	-0.0175093309	0.0023393488	-0.0129943560
##	2017-09-06	0.0081205365	0.0079369066	0.0033873940
##	2017-10-06	0.0316958727	-0.0142803916	-0.0062797428
##	2017-11-06	-0.0218200335	-0.0243941962	0.0340754618
##	2017-12-06	0.0028982571	0.0106588663	0.0282952477
##	2018-02-06	0.0191914960	0.0168252523	0.0021716088
##	2018-03-06	0.0050865002	0.0070727144	0.0032286129
##	2018-04-06	0.0311390739	0.0033915293	-0.0089491146
##	2018-06-06	-0.0036311295	-0.0057472593	-0.0075082617

```
## 2018-07-06 -0.0007287062 -0.0058968054 0.0081530620
## 2018-08-06 -0.0023301087 -0.0098954912 -0.0043362099
## 2018-09-06 -0.0119656454 -0.0064799751 0.0057671997
## 2018-11-06 -0.0111978678 -0.0026411665 -0.0054394123
## 2018-12-06 0.0146120519 0.0111725089 0.0122742453
## 2019-02-06 0.0054587066 0.0090288618 0.0057973907
## 2019-03-06 -0.0121043183 0.0011895639 -0.0199691462
```

```
res.ind$contrib      # Contributions to the PCs
```

##		Dim.1	Dim.2	Dim.3	Dim.4
##	2009-01-06	0.0693744066	3.902335e-02	0.5006515372	9.408171e+00
##	2009-02-06	0.0176651537	1.061176e+00	0.0068956346	1.023214e+01
##	2009-03-06	0.0007791187	6.140040e-01	0.2217231941	1.114250e+01
##	2009-04-06	0.0053118816	9.979401e-01	0.0682357194	6.730240e+00
##	2009-05-06	0.0150473134	2.229329e+00	0.0059221923	5.643711e+00
##	2009-07-06	0.0730405721	4.098898e+00	0.2669672530	2.732210e-04
##	2009-08-06	0.2636397765	6.053528e+00	1.5393241105	2.489680e-01
##	2009-10-06	0.0032351773	2.666688e+00	0.8955883943	5.278821e-01
##	2009-11-06	0.0092942613	4.408873e+00	0.1583491082	1.830096e-01
##	2010-01-06	0.0961205687	6.941603e+00	0.5628835571	2.953591e-01
##	2010-04-06	0.2629943994	7.591739e+00	0.3656011236	2.578438e-02
##	2010-05-06	0.0005196042	2.914313e+00	0.1011882689	2.820162e-01
##	2010-07-06	0.0585846461	1.022030e+00	0.2075709919	2.017657e-01
##	2010-08-06	0.1814141096	8.686035e-01	1.7343506962	4.763247e-02
##	2010-09-06	0.2591820591	2.143857e-01	0.7212611895	7.614824e-02
##	2010-10-06	0.4638064885	5.752230e-02	2.7955030748	2.227846e-01
##	2010-12-06	0.1831325958	1.451914e+00	3.5338986379	2.262387e-02
##	2011-01-06	0.0031109315	3.870754e+00	0.6194142320	3.371035e-01
##	2011-04-06	0.0040838203	4.834216e+00	0.0254877125	2.934046e-02
##	2011-05-06	0.1026726148	2.478466e+00	0.3557954554	7.890564e-02
##	2011-06-06	0.2354855613	1.672880e+00	1.9929606152	2.493849e-02
##	2011-07-06	0.2137366473	2.258815e+00	1.8902766209	1.893652e-02
##	2011-09-06	1.0388953520	1.950699e-01	1.9779511211	1.247090e-01
##	2011-10-06	0.9185878561	3.067473e-01	0.1214764958	7.285145e-02
##	2011-12-06	0.9579411890	2.241249e-01	0.5133172659	1.409093e-01
##	2012-01-06	1.0204309239	3.858428e-01	0.7406976854	3.509064e-02
##	2012-02-06	1.0594734993	4.593710e-01	1.8902323440	1.506864e-01
##	2012-03-06	0.9228656604	4.153515e-01	1.4625769936	3.793567e-01
##	2012-04-06	0.8230226875	2.089436e-01	1.6496039702	6.161524e-01
##	2012-06-06	1.1266762747	1.419498e+00	0.6419710266	2.032556e-01
##	2012-07-06	1.1855715752	1.794655e+00	0.7854091452	1.119681e+00
##	2012-08-06	1.2206872279	1.720912e+00	0.7729058867	3.153107e-01
##	2012-09-06	1.1078253189	1.298510e+00	1.2600113696	2.522240e-01
##	2012-11-06	0.9802517770	9.295295e-01	1.3230850777	3.608093e-01
##	2012-12-06	1.2320748211	1.630498e+00	1.4477516006	8.682985e-01
##	2013-02-06	0.9442127763	3.009595e-01	1.9039975203	2.641799e-01
##	2013-03-06	0.9634887531	3.794125e-01	2.1907960228	1.933067e-01
##	2013-05-06	1.1907666711	7.209183e-01	1.3851717700	5.598314e-01
##	2013-06-06	0.8215129278	1.272667e-01	0.9808588708	1.118216e-01
##	2013-08-06	0.4469908588	3.494617e-01	0.8923737974	1.175580e+00
##	2013-09-06	0.1969562216	1.089716e+00	0.0008634445	1.752003e+00
##	2013-11-06	0.4762802740	3.713541e-01	1.4109549306	9.307533e-01
##	2013-12-06	0.3491417879	8.565232e-01	1.0691781246	2.257673e+00
##	2014-01-06	0.2374966384	1.146590e+00	0.1710653835	2.904011e+00

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## 2014-02-06 0.3515593602 4.204961e-01 0.2973734102 3.266316e+00
## 2014-03-06 0.3254284636 4.503793e-01 0.1187135024 3.400156e+00
## 2014-05-06 0.2885152026 1.621673e-01 0.5953336099 4.357162e+00
## 2014-06-06 0.3076127241 1.872604e-01 0.2834625379 4.147696e+00
## 2014-08-06 0.3002225199 4.960107e-02 0.9366744160 3.275173e+00
## 2014-10-06 0.2733004997 7.249108e-03 2.2457345298 2.915007e+00
## 2014-11-06 0.2784382541 3.698925e-05 2.0862826166 3.170473e+00
## 2015-01-06 0.3480414931 6.953349e-01 4.8965980716 7.019298e-01
## 2015-02-06 0.3624862633 6.928368e-01 4.8913472495 1.927765e-01
## 2015-03-06 0.1938156606 8.428743e-02 4.7815513884 1.335683e-01
## 2015-04-06 0.5238748546 7.556158e-01 2.1545886405 6.568056e-01
## 2015-05-06 0.2666273844 5.011787e-02 2.2420882949 8.758920e-02
## 2015-07-06 0.2873916934 1.679342e-02 1.4333459839 3.256598e-01
## 2015-08-06 0.1849381331 1.257710e-01 2.8852851974 1.299030e-01
## 2015-10-06 0.4375749415 3.266970e-01 1.3522976826 4.343935e-02
## 2015-11-06 0.0580407592 1.860224e-02 2.6429708997 8.089880e-01
## 2016-01-06 0.0139898037 2.362412e-01 1.8243440036 1.377581e+00
## 2016-04-06 0.2536191018 1.450516e+00 0.5802285230 2.764446e-01
## 2016-05-06 0.2432940615 1.300935e+00 0.6393749447 1.910904e-01
## 2016-06-06 0.1850470820 1.599551e+00 0.8162098547 4.704697e-01
## 2016-07-06 0.5060992399 3.632878e+00 0.5769578092 3.678145e-01
## 2016-09-06 0.2587609613 2.710661e+00 1.0302030850 1.619254e-02
## 2016-10-06 0.1195614456 1.671539e+00 1.0296643085 5.725445e-01
## 2016-12-06 0.0360445565 6.875074e-02 1.1295619161 2.963418e-01
## 2017-01-06 0.0864084901 8.995512e-02 1.7398058852 1.156839e-03
## 2017-02-06 0.0547319223 7.768294e-02 1.0772791324 3.041274e-02
## 2017-03-06 0.2602016205 4.631426e-02 0.9487057829 1.117650e-05
## 2017-04-06 0.2444637097 2.752208e-01 0.0745889553 4.391831e-01
## 2017-06-06 0.2805157828 8.729108e-01 0.0101313225 5.770304e-03
## 2017-07-06 0.5788561375 4.241850e-01 0.0299279104 7.593120e-01
## 2017-09-06 0.3855347911 1.204205e+00 0.1451408178 9.471596e-01
## 2017-10-06 0.7727907581 4.781505e-01 0.0108286650 4.556949e-02
## 2017-11-06 0.9630984736 7.402112e-01 0.0446231288 3.956145e-02
## 2017-12-06 1.5126008176 9.163858e-01 0.1860838772 1.279680e-01
## 2018-02-06 3.1363780784 1.163995e-01 0.1428219766 5.892951e-02
## 2018-03-06 4.0614640093 6.581576e-02 0.0475098472 6.725320e-03
## 2018-04-06 4.0759558167 2.501297e-01 0.0111423354 9.699481e-02
## 2018-06-06 5.8000376974 8.757063e-02 0.0096195736 5.951634e-03
## 2018-07-06 5.6240054738 3.608550e-01 0.0236933405 5.601999e-02
## 2018-08-06 6.4375979784 1.762126e-01 0.0023961541 3.456404e-01
## 2018-09-06 6.6076809382 2.861154e-01 0.1120131012 2.798577e-01
## 2018-11-06 9.2118325385 1.826586e-03 0.5422008493 4.605243e-01
## 2018-12-06 8.0870602133 4.332398e-01 1.8013023929 6.978642e-02
## 2019-02-06 6.7972577361 8.556348e-01 3.8432265445 1.908302e+00
## 2019-03-06 6.8738597775 8.487019e-01 4.5646667644 2.565315e+00
##
##          Dim.5          Dim.6          Dim.7          Dim.8
## 2009-01-06 2.423078e+01 0.2032027982 4.079790e-02 5.412605e+00
## 2009-02-06 7.795206e+00 5.8075198962 5.843069e+00 7.993921e+00
## 2009-03-06 7.446565e+00 9.3047190569 2.585346e+00 6.408842e+00
## 2009-04-06 1.606355e+00 1.0644635841 2.286124e+00 4.641176e+00
## 2009-05-06 8.069580e-02 1.1304620901 3.868364e+00 1.600415e-01
## 2009-07-06 4.549326e-03 1.1289118938 3.300955e+00 8.720975e-01
## 2009-08-06 4.400935e-01 2.1175142699 5.383472e-01 6.309713e-02
## 2009-10-06 2.526482e-02 1.0895681729 1.405204e+00 7.282524e-02

```

```

## 2009-11-06 8.700368e-03 0.1055248245 9.325017e-02 1.100105e+00
## 2010-01-06 9.467428e-01 0.0641112900 6.714325e-02 2.904377e-01
## 2010-04-06 3.845758e+00 2.2352953418 1.804498e+00 4.830907e-01
## 2010-05-06 4.220214e-03 0.6767732722 1.121273e+01 1.076846e+00
## 2010-07-06 3.159334e-01 0.0002277129 9.820306e-03 7.304235e-01
## 2010-08-06 1.949607e-01 0.0295290368 1.511441e-02 4.580653e-01
## 2010-09-06 4.660821e-02 0.0014906881 6.698573e-03 8.473649e-01
## 2010-10-06 3.741587e-01 0.1463741466 2.785500e+00 1.564445e-01
## 2010-12-06 5.811950e-01 0.5694628343 4.028573e+00 2.290360e-01
## 2011-01-06 4.716519e-01 0.0042793343 5.108005e-01 1.106109e+00
## 2011-04-06 2.751338e+00 1.3759149740 1.581982e-01 3.358335e+00
## 2011-05-06 8.351500e-01 0.1573222761 1.037531e-06 6.851697e-01
## 2011-06-06 1.397611e+00 0.2901192098 1.075796e-02 1.797033e+00
## 2011-07-06 1.179745e+00 1.6784516977 7.368282e-02 4.730446e-02
## 2011-09-06 4.853666e-01 0.0702017390 5.190921e+00 4.503771e-01
## 2011-10-06 1.615394e+00 0.0019034832 4.109950e-03 1.411185e+00
## 2011-12-06 1.042934e-01 0.8335368863 3.313983e+00 4.255790e+00
## 2012-01-06 2.285486e-01 0.0012198960 1.659218e+00 3.252099e+00
## 2012-02-06 3.456346e-03 0.0654215557 9.063739e-01 9.456959e-01
## 2012-03-06 1.200204e-02 0.0738221658 9.590661e-01 3.105387e-01
## 2012-04-06 2.186986e-01 0.1136652951 1.921616e+00 1.890246e-01
## 2012-06-06 2.250454e-03 0.3043138393 4.465204e-01 1.284483e+00
## 2012-07-06 2.575596e-02 1.1009184757 3.221423e-01 3.853000e-01
## 2012-08-06 1.644494e-01 0.2998355224 3.556660e-01 7.202746e-01
## 2012-09-06 9.659564e-03 0.8452098599 5.441482e-02 2.299905e-01
## 2012-11-06 1.875426e-01 2.4301278699 6.955788e-02 2.646625e-01
## 2012-12-06 3.976407e-01 1.5932922882 2.263491e-01 3.227517e-01
## 2013-02-06 2.526228e-01 0.4229954093 6.601287e-01 3.150049e-02
## 2013-03-06 5.707288e-02 1.2512067449 2.381609e-05 3.525840e-02
## 2013-05-06 7.465907e-02 0.9998743142 1.742021e-04 1.189021e+00
## 2013-06-06 2.930750e-02 0.8212576171 5.623215e-01 8.142888e-01
## 2013-08-06 1.003332e-01 0.6736674397 5.573446e-01 6.184763e-02
## 2013-09-06 1.664140e-01 0.0125407088 2.402674e-01 3.924212e-01
## 2013-11-06 1.040765e-01 0.8801787726 4.363975e-01 6.445063e-02
## 2013-12-06 7.613958e-01 5.7739970103 1.995265e+00 4.699484e-02
## 2014-01-06 8.829422e-01 3.1436094507 2.985338e+00 5.999235e-01
## 2014-02-06 1.752284e+00 1.8051030898 1.979656e-01 1.800157e-01
## 2014-03-06 7.355740e-01 1.0357745886 1.280312e-01 6.280110e-03
## 2014-05-06 1.780022e+00 0.1264222612 9.810752e-04 4.085262e-01
## 2014-06-06 1.129959e+00 0.1220446013 6.186177e-01 1.787477e+00
## 2014-08-06 1.008662e+00 0.8334583817 6.597451e-01 7.997241e-01
## 2014-10-06 1.263257e+00 1.9861806343 2.598988e-01 9.343571e-01
## 2014-11-06 1.007076e+00 2.8183924211 3.648720e-01 3.502239e-01
## 2015-01-06 3.826837e-01 1.2153215159 5.894794e-01 5.657253e-02
## 2015-02-06 6.558195e-01 1.8084477245 2.775698e-02 9.871689e-01
## 2015-03-06 2.874041e-01 2.6808371175 2.041731e-01 8.237238e-01
## 2015-04-06 1.239314e+00 0.0241774233 8.747414e-02 4.772410e-01
## 2015-05-06 3.607611e-07 1.6075004897 2.291324e-01 4.592457e-01
## 2015-07-06 6.905600e-02 0.0261324035 1.497485e-01 5.129228e-01
## 2015-08-06 2.680266e-01 0.1297121205 2.195417e-01 1.614292e-02
## 2015-10-06 1.676422e+00 1.5911945796 4.328968e-01 1.887958e+00
## 2015-11-06 3.890863e+00 0.2568924518 2.497322e-02 2.159196e+00
## 2016-01-06 4.900243e+00 0.8473101573 7.318497e-01 5.071104e-02
## 2016-04-06 2.054188e+00 1.1507069015 4.810623e-02 8.257992e-01

```


##	2016-05-06	2.433101e+00	0.3963714423	3.829785e-01	2.802748e-01
##	2016-06-06	3.348265e+00	1.9364843288	3.022640e-01	7.370832e-01
##	2016-07-06	1.944543e-03	0.2066414996	9.707679e-01	7.193957e-01
##	2016-09-06	2.870932e-04	1.9002433050	2.323628e-01	1.530030e-02
##	2016-10-06	4.557788e-01	1.3570187702	1.630468e-01	9.529047e-01
##	2016-12-06	2.302810e+00	2.2147344874	3.333815e-02	2.582088e+00
##	2017-01-06	8.869302e-01	0.6068779989	2.319744e-01	2.661390e+00
##	2017-02-06	8.103249e-01	0.5482898438	3.962588e-01	1.974820e-01
##	2017-03-06	6.544120e-01	0.2033510848	3.881312e-02	7.983777e+00
##	2017-04-06	2.042481e-02	0.3260025524	3.396130e+00	2.985367e-01
##	2017-06-06	3.246739e-02	0.9638736122	1.341887e+00	6.436881e+00
##	2017-07-06	3.865371e-01	0.5482025039	4.929649e-01	7.265910e-01
##	2017-09-06	5.987141e-01	0.2130430371	4.200616e+00	1.834703e-03
##	2017-10-06	2.282525e-02	0.2022170819	2.662863e-01	6.231848e-05
##	2017-11-06	3.833160e-02	3.2778828118	3.313638e-01	2.282956e+00
##	2017-12-06	7.100320e-05	3.5933340747	1.954926e-02	8.187725e-01
##	2018-02-06	3.344426e-02	0.0269991119	4.308665e-01	1.318575e+00
##	2018-03-06	1.483197e-02	1.5639631511	4.248305e-01	4.938906e-01
##	2018-04-06	3.399093e-02	0.0664174653	2.529746e-01	1.135556e-01
##	2018-06-06	6.983302e-04	0.7710664710	1.808542e+00	2.285439e-01
##	2018-07-06	4.877680e-02	0.0242843338	3.092330e+00	3.000197e-01
##	2018-08-06	1.695511e-02	0.0194041989	3.061068e+00	6.770658e-02
##	2018-09-06	2.627888e-02	0.1587318146	1.318240e+00	2.720895e-01
##	2018-11-06	9.069720e-01	1.2091215267	6.932159e-01	2.798172e-03
##	2018-12-06	1.207205e-02	1.2589413288	6.694451e-01	4.537382e-01
##	2019-02-06	1.094037e+00	2.0515122273	2.102455e+00	1.736579e+00
##	2019-03-06	1.250696e+00	3.3953463269	4.858016e+00	3.456370e-01
##		Dim.9	Dim.10	Dim.11	
##	2009-01-06	1.173678e+01	10.841982293	0.003067875	
##	2009-02-06	1.004559e+00	5.427824689	0.547962678	
##	2009-03-06	6.876471e+00	2.236014267	0.963254235	
##	2009-04-06	4.959001e-01	6.948678096	2.345706091	
##	2009-05-06	2.942822e+00	1.439622428	0.692128585	
##	2009-07-06	4.740005e-01	0.916692553	0.226577874	
##	2009-08-06	5.798270e-01	8.252565600	10.102826537	
##	2009-10-06	3.295638e-01	1.743332893	0.896680295	
##	2009-11-06	7.876499e-02	0.088641416	0.369906509	
##	2010-01-06	1.935855e-02	0.780568180	0.580572788	
##	2010-04-06	4.745059e-05	0.165491911	0.032623706	
##	2010-05-06	2.033217e+00	1.436351610	0.804886538	
##	2010-07-06	1.320871e-03	0.002751446	0.256807393	
##	2010-08-06	1.349930e-01	0.035863715	2.107389354	
##	2010-09-06	6.030548e-01	0.048416684	1.247458848	
##	2010-10-06	1.228436e-02	0.013922635	0.609324648	
##	2010-12-06	1.965130e-01	0.921069605	1.580706627	
##	2011-01-06	9.054245e-02	1.188514017	1.378620158	
##	2011-04-06	2.408008e-02	0.261051108	0.132720418	
##	2011-05-06	1.250616e+00	0.835842146	0.256914914	
##	2011-06-06	4.981706e-01	0.045037177	0.865022804	
##	2011-07-06	1.427830e+00	0.608706866	3.961081732	
##	2011-09-06	8.797265e-01	0.787131934	2.051369276	
##	2011-10-06	5.009390e-01	6.404086825	0.768875896	
##	2011-12-06	1.487287e-02	0.800494427	0.853709251	
##	2012-01-06	1.324753e-02	0.250921541	0.058539380	

##	2012-02-06	1.133792e+00	1.996638889	2.471612404
##	2012-03-06	6.557382e-04	0.439185183	1.954249830
##	2012-04-06	7.978350e-02	0.341801626	0.584505113
##	2012-06-06	1.374122e-01	0.011540653	1.324022703
##	2012-07-06	2.725497e-02	1.828066626	0.639699114
##	2012-08-06	8.881423e-01	0.002105731	0.409959820
##	2012-09-06	9.345559e-02	0.383362792	0.095788196
##	2012-11-06	5.097667e-02	0.761510368	0.002917895
##	2012-12-06	8.817553e-01	0.267592717	0.108983872
##	2013-02-06	2.285866e-02	0.068824518	0.319555949
##	2013-03-06	4.308218e-01	0.061632889	0.065884093
##	2013-05-06	2.813996e-01	0.021756305	0.004819676
##	2013-06-06	5.724579e-02	0.379618043	1.467317165
##	2013-08-06	7.619407e-01	0.254871490	0.044346033
##	2013-09-06	6.808831e-02	0.876327300	2.170324668
##	2013-11-06	2.145342e-01	0.187170974	1.563126200
##	2013-12-06	7.210586e-02	0.563319428	0.243171349
##	2014-01-06	1.368250e-01	0.257352415	1.075024403
##	2014-02-06	8.533910e-02	0.020986501	0.365922950
##	2014-03-06	8.698838e-01	0.005213909	0.112598469
##	2014-05-06	7.001760e-01	4.044241906	0.047543841
##	2014-06-06	4.435056e-01	0.887962940	0.173464286
##	2014-08-06	2.502511e-01	0.310832830	0.008700369
##	2014-10-06	1.118220e+00	0.742626074	1.307182176
##	2014-11-06	5.040857e-01	1.203041751	0.777289922
##	2015-01-06	1.889799e-02	0.049445704	0.258259710
##	2015-02-06	3.697275e-01	0.286528995	3.253838460
##	2015-03-06	9.347139e-03	0.141493762	1.378554424
##	2015-04-06	1.051359e-03	0.006536328	0.087230981
##	2015-05-06	5.522264e-02	0.168640354	1.127156749
##	2015-07-06	2.910133e-02	0.384140756	1.470470496
##	2015-08-06	2.693320e+00	3.352422996	0.001560704
##	2015-10-06	1.414636e-01	0.037787454	1.518285774
##	2015-11-06	3.334019e+00	3.513875645	7.136673022
##	2016-01-06	7.008900e+00	6.437478345	0.215009359
##	2016-04-06	8.630668e-02	0.075443534	1.519306161
##	2016-05-06	5.542026e+00	1.840224386	2.801734564
##	2016-06-06	1.208414e-01	0.216485017	0.001446915
##	2016-07-06	2.658334e-01	0.138573652	0.015628038
##	2016-09-06	9.397026e-02	1.022305287	3.769375920
##	2016-10-06	1.102113e-01	1.885977958	0.005739701
##	2016-12-06	4.481484e+00	0.149943523	0.107791434
##	2017-01-06	6.333799e-02	2.633314477	2.771946538
##	2017-02-06	3.631746e-01	1.091054975	0.388194790
##	2017-03-06	1.370629e+01	0.802805027	2.809514469
##	2017-04-06	4.178331e+00	0.496200895	0.120656779
##	2017-06-06	2.518190e+00	0.561836144	1.807803300
##	2017-07-06	1.043040e+00	0.019748100	0.903761239
##	2017-09-06	2.243527e-01	0.227320131	0.061415164
##	2017-10-06	3.417962e+00	0.735894565	0.211070678
##	2017-11-06	1.619842e+00	2.147377437	6.214807589
##	2017-12-06	2.857825e-02	0.409975013	4.285200914
##	2018-02-06	1.253082e+00	1.021547413	0.025241047
##	2018-03-06	8.802377e-02	0.180512633	0.055792541

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## 2018-04-06 3.298931e+00 0.041507494 0.428651478
## 2018-06-06 4.485856e-02 0.119194699 0.301733126
## 2018-07-06 1.806620e-03 0.125478392 0.355783401
## 2018-08-06 1.847201e-02 0.353354048 0.100638645
## 2018-09-06 4.871179e-01 0.151524211 0.178022203
## 2018-11-06 4.266115e-01 0.025172532 0.158360965
## 2018-12-06 7.264141e-01 0.450439821 0.806368933
## 2019-02-06 1.013774e-01 0.294172026 0.179890955
## 2019-03-06 4.984740e-01 0.005106354 2.134337925
```

```
res.ind$cos2          # Quality of representation
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##		Dim.1	Dim.2	Dim.3	Dim.4	Dim.5
##	2009-01-06	0.394067449	1.000614e-01	1.050246e-01	1.796721e-01	2.021492e-01
##	2009-02-06	0.032146778	8.717222e-01	4.634239e-04	6.260234e-02	2.083440e-02
##	2009-03-06	0.002273332	8.087254e-01	2.389211e-02	1.093065e-01	3.191160e-02
##	2009-04-06	0.010927666	9.267319e-01	5.184120e-03	4.654937e-02	4.853487e-03
##	2009-05-06	0.014431500	9.651557e-01	2.097583e-04	1.819791e-02	1.136676e-04
##	2009-07-06	0.037750279	9.562990e-01	5.095634e-03	4.747601e-07	3.453317e-06
##	2009-08-06	0.086227369	8.937444e-01	1.859296e-02	2.737676e-04	2.114036e-04
##	2009-10-06	0.002602512	9.683616e-01	2.660648e-02	1.427696e-03	2.985000e-05
##	2009-11-06	0.004632552	9.919815e-01	2.914776e-03	3.066786e-04	6.369075e-06
##	2010-01-06	0.029548143	9.632616e-01	6.390232e-03	3.052590e-04	4.274440e-04
##	2010-04-06	0.070868611	9.234626e-01	3.638305e-03	2.335976e-05	1.522028e-03
##	2010-05-06	0.000392444	9.936007e-01	2.822406e-03	7.161159e-04	4.681369e-06
##	2010-07-06	0.110767949	8.722977e-01	1.449376e-02	1.282572e-03	8.773223e-04
##	2010-08-06	0.284230633	6.143163e-01	1.003508e-01	2.509037e-04	4.486216e-04
##	2010-09-06	0.676328265	2.525335e-01	6.950713e-02	6.680618e-04	1.786275e-04
##	2010-10-06	0.779466488	4.363826e-02	1.735021e-01	1.258781e-03	9.235276e-04
##	2010-12-06	0.188527184	6.747141e-01	1.343528e-01	7.830320e-05	8.787463e-04
##	2011-01-06	0.001752022	9.840458e-01	1.288293e-02	6.382878e-04	3.901253e-04
##	2011-04-06	0.001862328	9.951449e-01	4.292445e-04	4.498428e-05	1.842752e-03
##	2011-05-06	0.083031584	9.047786e-01	1.062609e-02	2.145364e-04	9.919427e-04
##	2011-06-06	0.220702514	7.077476e-01	6.898043e-02	7.858096e-05	1.923812e-03
##	2011-07-06	0.163597191	7.804556e-01	5.343261e-02	4.873055e-05	1.326229e-03
##	2011-09-06	0.863872455	7.322150e-02	6.074039e-02	3.486420e-04	5.927630e-04
##	2011-10-06	0.862413876	1.300009e-01	4.211836e-03	2.299521e-04	2.227444e-03
##	2011-12-06	0.886365964	9.361274e-02	1.754059e-02	4.383469e-04	1.417309e-04
##	2012-01-06	0.834126615	1.423736e-01	2.236009e-02	9.643705e-05	2.743850e-04
##	2012-02-06	0.791822593	1.549787e-01	5.217196e-02	3.786308e-04	3.793922e-06
##	2012-03-06	0.791392190	1.607828e-01	4.631868e-02	1.093718e-03	1.511616e-05
##	2012-04-06	0.838771131	9.612388e-02	6.208627e-02	2.111174e-03	3.273490e-04
##	2012-06-06	0.628568873	3.574862e-01	1.322676e-02	3.812418e-04	1.843984e-06
##	2012-07-06	0.584165041	3.991713e-01	1.429183e-02	1.854839e-03	1.863884e-05
##	2012-08-06	0.601956873	3.830807e-01	1.407576e-02	5.227618e-04	1.191041e-04
##	2012-09-06	0.635954609	3.364888e-01	2.671244e-02	4.867942e-04	8.144150e-06
##	2012-11-06	0.675202749	2.890216e-01	3.365647e-02	8.355617e-04	1.897273e-04
##	2012-12-06	0.608058988	3.632448e-01	2.638681e-02	1.440728e-03	2.882257e-04
##	2013-02-06	0.819583366	1.179239e-01	6.103428e-02	7.709518e-04	3.220543e-04
##	2013-03-06	0.791557527	1.407078e-01	6.646943e-02	5.339332e-04	6.886507e-05
##	2013-05-06	0.758363091	2.072560e-01	3.257905e-02	1.198704e-03	6.983393e-05
##	2013-06-06	0.896368060	6.268409e-02	3.952416e-02	4.102057e-04	4.696605e-05
##	2013-08-06	0.695783867	2.455534e-01	5.129874e-02	6.152225e-03	2.293790e-04
##	2013-09-06	0.283231134	7.073837e-01	4.585534e-05	8.470527e-03	3.514752e-04
##	2013-11-06	0.680333407	2.394518e-01	7.443146e-02	4.469902e-03	2.183459e-04

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## 2013-12-06 0.443125116 4.907206e-01 5.011397e-02 9.633626e-03 1.419281e-03
## 2014-01-06 0.306388899 6.677198e-01 8.150080e-03 1.259558e-02 1.672943e-03
## 2014-02-06 0.619930807 3.347165e-01 1.936560e-02 1.936453e-02 4.538186e-03
## 2014-03-06 0.595617615 3.721011e-01 8.024100e-03 2.092257e-02 1.977296e-03
## 2014-05-06 0.718442563 1.822876e-01 5.474796e-02 3.647802e-02 6.510017e-03
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## 2014-08-06 0.810261979 6.042878e-02 9.335876e-02 2.971807e-02 3.998171e-03
## 2014-10-06 0.733026518 8.776764e-03 2.224446e-01 2.628591e-02 4.976276e-03
## 2014-11-06 0.753197181 4.516749e-05 2.084189e-01 2.883421e-02 4.001064e-03
## 2015-01-06 0.411127124 3.707744e-01 2.136111e-01 2.787681e-03 6.639240e-04
## 2015-02-06 0.421973207 3.640784e-01 2.102839e-01 7.544867e-04 1.121272e-03
## 2015-03-06 0.471331628 9.252756e-02 4.294284e-01 1.092057e-03 1.026512e-03
## 2015-04-06 0.552209781 3.595408e-01 8.387357e-02 2.327650e-03 1.918630e-03
## 2015-05-06 0.713808500 6.056758e-02 2.216736e-01 7.883729e-04 1.418502e-09
## 2015-07-06 0.822585818 2.169786e-02 1.515103e-01 3.133829e-03 2.902965e-04
## 2015-08-06 0.528658345 1.622930e-01 3.045942e-01 1.248453e-03 1.125278e-03
## 2015-10-06 0.684689607 2.307582e-01 7.814439e-02 2.285224e-04 3.852637e-03
## 2015-11-06 0.333240702 4.821263e-02 5.604044e-01 1.561605e-02 3.280985e-02
## 2016-01-06 0.069305482 5.283019e-01 3.337697e-01 2.294444e-02 3.565389e-02
## 2016-04-06 0.271329566 7.005002e-01 2.292442e-02 9.943231e-04 3.227668e-03
## 2016-05-06 0.283007618 6.831133e-01 2.746670e-02 7.473253e-04 4.156810e-03
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## 2016-07-06 0.233327613 7.560525e-01 9.823329e-03 5.701164e-04 1.316683e-06
## 2016-09-06 0.170011842 8.039448e-01 2.499698e-02 3.576840e-05 2.770364e-07
## 2016-10-06 0.130534835 8.238013e-01 4.151596e-02 2.101594e-03 7.308407e-04
## 2016-12-06 0.312238820 2.688408e-01 3.613611e-01 8.630666e-03 2.929804e-02
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## 2017-02-06 0.416256655 2.666962e-01 3.025749e-01 7.776431e-04 9.051343e-03
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## 2017-10-06 0.780730086 2.180591e-01 4.040156e-04 1.547809e-04 3.386788e-05
## 2017-11-06 0.739547852 2.565795e-01 1.265435e-03 1.021344e-04 4.323007e-05
## 2017-12-06 0.781228867 2.136500e-01 3.549334e-03 2.222079e-04 5.385986e-08
## 2018-02-06 0.981648925 1.644559e-02 1.650848e-03 6.201044e-05 1.537385e-05
## 2018-03-06 0.992026590 7.256734e-03 4.285569e-04 5.522781e-06 5.320751e-06
## 2018-04-06 0.972749986 2.694683e-02 9.820468e-05 7.782596e-05 1.191429e-05
## 2018-06-06 0.993013370 6.767891e-03 6.082251e-05 3.425821e-06 1.755976e-07
## 2018-07-06 0.971538537 2.813958e-02 1.511558e-04 3.253581e-05 1.237545e-05
## 2018-08-06 0.987497570 1.220168e-02 1.357410e-05 1.782547e-04 3.819848e-06
## 2018-09-06 0.980013594 1.915556e-02 6.135304e-04 1.395483e-04 5.724311e-06
## 2018-11-06 0.997331628 8.926976e-05 2.167894e-03 1.676295e-04 1.442184e-04
## 2018-12-06 0.968447465 2.341986e-02 7.966292e-03 2.809704e-05 2.123244e-06
## 2019-02-06 0.926630196 5.265405e-02 1.934875e-02 8.746291e-04 2.190474e-04
## 2019-03-06 0.923997034 5.149863e-02 2.266017e-02 1.159351e-03 2.469192e-04
##
##          Dim.6          Dim.7          Dim.8          Dim.9
## 2009-01-06 6.876506e-04 4.684613e-05 5.435469e-03 6.870421e-03
## 2009-02-06 6.296186e-03 2.149442e-03 2.571812e-03 1.883904e-04
## 2009-03-06 1.617444e-02 1.524904e-03 3.305965e-03 2.067703e-03
## 2009-04-06 1.304598e-03 9.506999e-04 1.687977e-03 1.051324e-04
## 2009-05-06 6.459150e-04 7.499711e-04 2.713592e-05 2.908572e-04
## 2009-07-06 3.476025e-04 3.448738e-04 7.968571e-05 2.524632e-05

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## 2009-08-06 4.125983e-04 3.559272e-05 3.648407e-06 1.954321e-05
## 2009-10-06 5.221748e-04 2.285066e-04 1.035705e-05 2.732106e-05
## 2009-11-06 3.133480e-05 9.395494e-06 9.693913e-05 4.045777e-06
## 2010-01-06 1.174127e-05 4.172351e-06 1.578433e-05 6.132674e-07
## 2010-04-06 3.588469e-04 9.829435e-05 2.301418e-05 1.317687e-09
## 2010-05-06 3.045195e-04 1.711910e-03 1.437865e-04 1.582531e-04
## 2010-07-06 2.564985e-07 3.753358e-06 2.441543e-04 2.573676e-07
## 2010-08-06 2.756233e-05 4.786913e-06 1.268781e-04 2.179587e-05
## 2010-09-06 2.317428e-06 3.533455e-06 3.909151e-04 1.621708e-04
## 2010-10-06 1.465520e-04 9.462991e-04 4.648151e-05 2.127533e-06
## 2010-12-06 3.492533e-04 8.383476e-04 4.168421e-05 2.084793e-05
## 2011-01-06 1.435794e-06 5.815206e-05 1.101302e-04 5.254902e-06
## 2011-04-06 3.738076e-04 1.458330e-05 2.707528e-04 1.131647e-06
## 2011-05-06 7.579591e-05 1.696112e-10 9.795943e-05 1.042260e-04
## 2011-06-06 1.619893e-04 2.038156e-06 2.977547e-04 4.811542e-05
## 2011-07-06 7.653719e-04 1.140060e-05 6.401155e-06 1.126255e-04
## 2011-09-06 3.477703e-05 8.725431e-04 6.620846e-05 7.538567e-05
## 2011-10-06 1.064660e-06 7.800029e-07 2.342278e-04 4.846667e-05
## 2011-12-06 4.594792e-04 6.198535e-04 6.961676e-04 1.418183e-06
## 2012-01-06 5.940705e-07 2.741678e-04 4.699715e-04 1.115955e-06
## 2012-02-06 2.912899e-05 1.369335e-04 1.249536e-04 8.732417e-05
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