MEDICARE FRAUD DETECTION

VARIABLES

I chose 6 Variables for analysis:

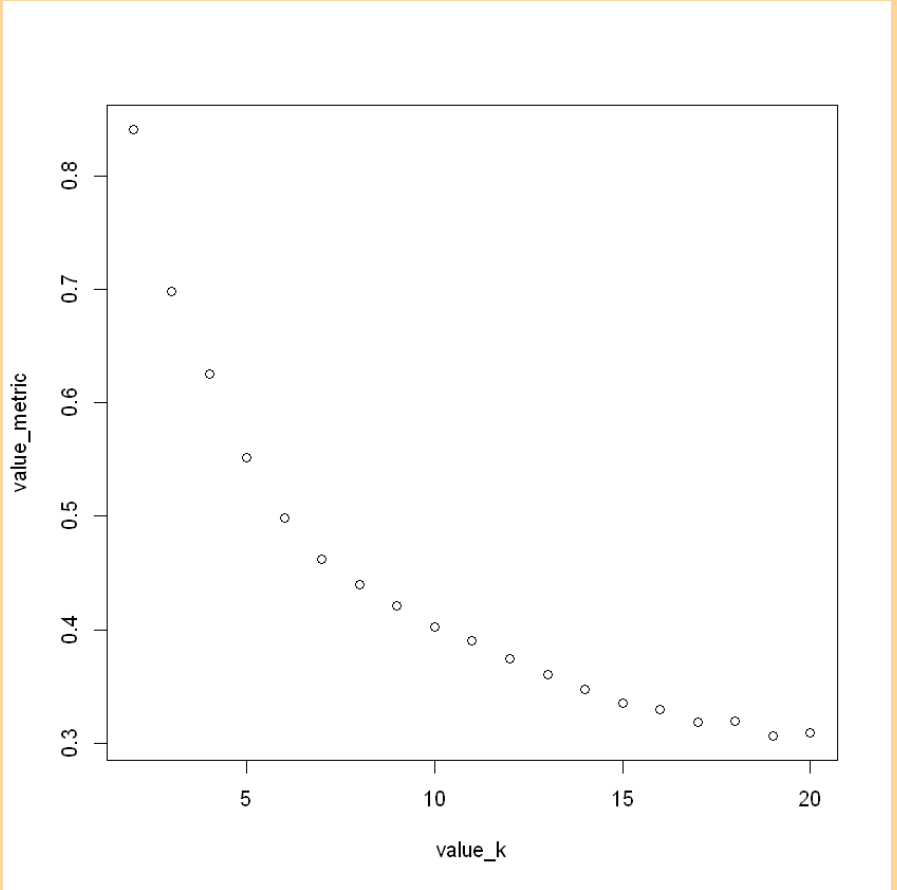
BY City and Provider

- *Ratio total discharges*
- *Ratio average covered charges*
- *Ratio average total payments*
- *Ratio average Medicare payments*
- *Ratio payment to Charge*
- *percent of DRG by Provider*

SCALE VARIABLES

train <- scale(data)

OPTIMAL NUMBER OF CLUSTERS



```
seg.k$center
```

ratio.total.discharges	ratio.average.covered.charges	ratio.average.total.payments	ratio.average.medicare.payments	numberofDRGs	payments.to.charges
0.70946543	-0.72896921	-1.45767616	-1.45736559	0.66870985	-0.21163809
2.92056452	0.13580321	-0.02270212	-0.08523607	0.88576354	-0.15365113
-1.22981191	0.26596396	-1.16627528	-1.17969081	-0.43802038	-0.52150506
-0.74940323	-0.61625450	2.77250128	3.00323848	-0.13549041	0.97252083
0.47613235	0.62379088	1.48189523	1.42798025	0.67299366	-0.09730207
-1.16521543	-1.84640221	-1.32042044	-1.22661996	-0.83888238	0.59484358
-0.10969208	-0.62089171	0.12035116	0.16316999	0.05227521	3.29239188
-0.03690331	-0.24386824	0.04862950	0.06984779	0.49604721	0.57102439
-0.15998824	2.33377012	-0.07240259	-0.16632775	0.22997825	-0.82826117
-0.13501416	0.02642084	0.03885347	0.03930699	-0.88280204	-0.46295266
0.12062027	3.01558200	3.52596442	3.35606259	0.40180904	-0.30162360
-0.16848185	-0.13448829	0.04160576	0.06420949	-1.65553967	0.77656567
0.03007155	0.03672661	-0.01186799	-0.02860994	0.66570463	-0.60121382

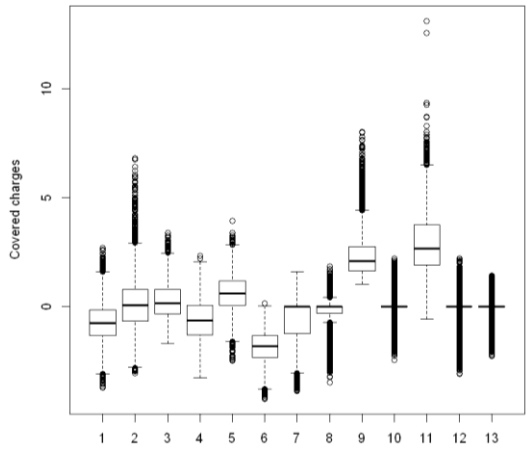
(By examining whether the clusters fall above or below the mean level for each interest category, we can begin to notice patterns that distinguish the clusters from each other.

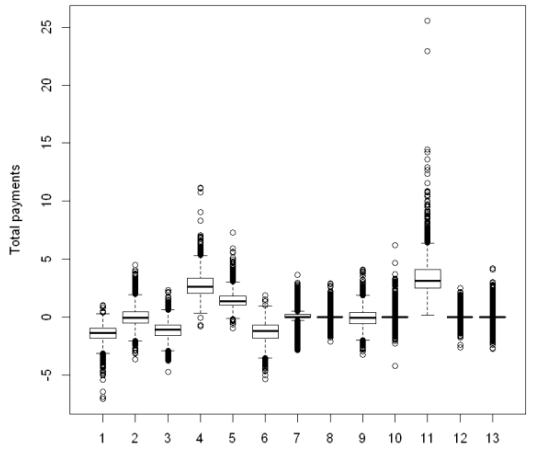
```
seg.k[7]
```

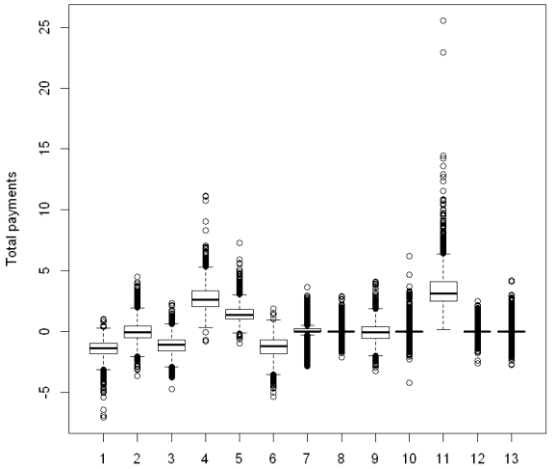
$size =

9284 6110 8318 3922 7558 6549 5832 22561 6895 26408 2120 15484 42024

13 clusters
(between_SS / total_SS = 64.4 %)







Centroids of each cluster.

Cluster 11 consists of 2120 observations, which is around 1.3% of the whole observations.
have the highest

- **“ratio.average.covered.charges“**
- **"ratio.average.total.payments“**
- **"ratio.average.medicare.payments"**