#################################################################   
# Implement correspondence analysis  
################################################################  
  
ca.out = ca(datacar)  
summary(ca.out)

##   
## Principal inertias (eigenvalues):  
##   
## dim value % cum% scree plot   
## 1 0.032622 61.7 61.7 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
## 2 0.017765 33.6 95.4 \*\*\*\*\*\*\*\*   
## 3 0.000985 1.9 97.2   
## 4 0.000727 1.4 98.6   
## 5 0.000380 0.7 99.3   
## 6 0.000182 0.3 99.7   
## 7 0.000118 0.2 99.9   
## 8 3.9e-050 0.1 100.0   
## 9 2e-05000 0.0 100.0   
## -------- -----   
## Total: 0.052838 100.0   
##   
##   
## Rows:  
## name mass qlt inr k=1 cor ctr k=2 cor ctr   
## 1 | BMW3 | 98 969 69 | -184 915 102 | -45 54 11 |  
## 2 | Frdx | 108 959 122 | 136 307 61 | 198 652 237 |  
## 3 | iJ30 | 91 943 38 | -43 84 5 | -138 859 97 |  
## 4 | JpGC | 111 986 117 | 108 208 39 | 208 778 270 |  
## 5 | LES3 | 104 916 57 | -64 141 13 | -150 775 132 |  
## 6 | ChTC | 76 981 210 | 371 942 321 | -75 39 24 |  
## 7 | MC28 | 102 940 33 | -56 181 10 | -114 759 75 |  
## 8 | S900 | 103 541 19 | -71 523 16 | 13 18 1 |  
## 9 | PrsB | 112 979 223 | -296 834 301 | 123 145 96 |  
## 10 | VV90 | 94 899 111 | 214 731 132 | -103 169 56 |  
##   
## Columns:  
## name mass qlt inr k=1 cor ctr k=2 cor ctr   
## 1 | exct | 64 949 58 | -201 849 79 | 69 100 17 |  
## 2 | dpnd | 73 876 39 | 78 214 14 | -138 662 78 |  
## 3 | lxrs | 69 921 36 | -97 351 20 | -124 570 60 |  
## 4 | otdr | 53 987 139 | 181 240 54 | 320 747 309 |  
## 5 | pwrf | 72 781 8 | -57 556 7 | 36 225 5 |  
## 6 | styl | 69 966 48 | -189 960 75 | -15 6 1 |  
## 7 | cmfr | 74 890 29 | 85 349 16 | -105 540 46 |  
## 8 | rggd | 51 980 115 | 188 295 55 | 287 685 234 |  
## 9 | fun | 69 941 47 | -175 856 66 | 55 85 12 |  
## 10 | safe | 75 919 53 | 132 463 40 | -131 457 72 |  
## 11 | prfr | 69 888 49 | -168 744 59 | -74 144 21 |  
## 12 | fmly | 69 986 201 | 375 912 297 | -107 74 44 |  
## 13 | vrst | 62 968 72 | 243 955 112 | 28 12 3 |  
## 14 | sprt | 60 919 65 | -164 477 50 | 158 442 85 |  
## 15 | stts | 71 945 41 | -160 842 56 | -56 104 13 |

#################################################################   
# Correspondence Analysis, BIPLOT  
################################################################  
fviz\_ca\_biplot(ca.out, repel=TRUE,   
 title = "Biplot, Correspondence Analysis",  
 arrows=c(TRUE,FALSE), map="colprincipal",  
 labelsize=4)