To Print

# Rank is final rank for the year  
# Team is the team name  
# GP is games played (82 for all full seasons)  
# TOI is time on ice  
# GF is goals for  
# GA is goals against  
# GF60 is goals for per 60 minutes of play  
# GA60 is goals against per 60 minutes of play  
# GF. is goals for percentage, out of all the goals they're involved with  
# SF is shots for (while on ice)  
# SA is shots against (while on ice)  
# Sh. is shot percentage by team while on ice  
# Sv. is save percentage while on the ice  
# PDO is shooting percentage + save percentage while on ice  
# CF is corsi for while on ice  
# CA is corsi against while on ice  
# CF60 is corsi for per 60 minutes of play  
# CA60 is corsi against per 60 minutes of play  
# CF. is corsi for percentage, out of all the corsi events they're involved with  
# CPDO is corsi pdo = fenwick shooting percentage + fenwick save percentage  
# OZFO. is offensive zone faceoff percentage - percentage of faceoffs in offensive zone  
# DZFO. is defensive zone faceoff percentage - percentage of faceoffs in defensive zone  
# NFZO. is neutral zone faceoff percentage - percentage of faceoffs in neutral zone  
# X is   
  
team07<-read.csv("C:\\Users\\Bridget\\Documents\\Math642\\Hockey\\200708Team.csv", header=T)  
team08<-read.csv("C:\\Users\\Bridget\\Documents\\Math642\\Hockey\\200809Team.csv", header=T)  
team09<-read.csv("C:\\Users\\Bridget\\Documents\\Math642\\Hockey\\200910Team.csv", header=T)  
team10<-read.csv("C:\\Users\\Bridget\\Documents\\Math642\\Hockey\\201011Team.csv", header=T)  
team11<-read.csv("C:\\Users\\Bridget\\Documents\\Math642\\Hockey\\201112Team.csv", header=T)  
team12<-read.csv("C:\\Users\\Bridget\\Documents\\Math642\\Hockey\\201213Team.csv", header=T)  
#note that this was the lockout year. don't think it will make a difference in percentages, but might in counts.  
team13<-read.csv("C:\\Users\\Bridget\\Documents\\Math642\\Hockey\\201314Team.csv", header=T)  
team14<-read.csv("C:\\Users\\Bridget\\Documents\\Math642\\Hockey\\201415Team.csv", header=T)  
team15<-read.csv("C:\\Users\\Bridget\\Documents\\Math642\\Hockey\\201516Team.csv", header=T)  
team16<-read.csv("C:\\Users\\Bridget\\Documents\\Math642\\Hockey\\201617Team.csv", header=T)  
#allyears is all bt the current year, as that has not finished yet. that will be the "new data"  
allyears<-rbind(team07, team08, team09, team10, team11, team12, team13, team14, team15)  
allyears$Cup<-as.factor(allyears$Cup)  
str(which(allyears$Year==200809))

## int [1:30] 31 32 33 34 35 36 37 38 39 40 ...

lockout<-which(allyears$Year==201213)  
library(reshape)

## Warning: package 'reshape' was built under R version 3.3.3

cors<-cor(allyears[-lockout,-c(2,24, 25)], use="complete")  
x <- subset(melt(cors), value != 1 | value!=NA)  
x <- x[with(x, order(-abs(x$value))),]  
x

## X1 X2 value  
## 95 GA60 GA 0.954446292  
## 137 GA GA60 0.954446292  
## 72 GF60 GF 0.953200255  
## 114 GF GF60 0.953200255  
## 8 GF. Rank -0.953020889  
## 155 Rank GF. -0.953020889  
## 283 CPDO PDO 0.950863488  
## 409 PDO CPDO 0.950863488  
## 325 CA60 CA 0.932707813  
## 367 CA CA60 0.932707813  
## 302 CF60 CF 0.925831955  
## 344 CF CF60 0.925831955  
## 190 CF SF 0.916171538  
## 295 SF CF 0.916171538  
## 213 CA SA 0.890823958  
## 318 SA CA 0.890823958  
## 192 CF60 SF 0.853165662  
## 339 SF CF60 0.853165662  
## 215 CA60 SA 0.836127465  
## 362 SA CA60 0.836127465  
## 121 Sh. GF60 0.801997454  
## 226 GF60 Sh. 0.801997454  
## 144 Sv. GA60 -0.790212176  
## 249 GA60 Sv. -0.790212176  
## 370 CF. CA60 -0.772595396  
## 391 CA60 CF. -0.772595396  
## 394 OZFO. CF. 0.748618282  
## 436 CF. OZFO. 0.748618282  
## 100 Sv. GA -0.742531205  
## 247 GA Sv. -0.742531205  
## 167 PDO GF. 0.742015812  
## 272 GF. PDO 0.742015812  
## 77 Sh. GF 0.733639399  
## 224 GF Sh. 0.733639399  
## 348 CF. CF60 0.726109861  
## 390 CF60 CF. 0.726109861  
## 96 GF. GA -0.724201611  
## 159 GA GF. -0.724201611  
## 140 GF. GA60 -0.723815062  
## 161 GA60 GF. -0.723815062  
## 118 GF. GF60 0.715628400  
## 160 GF60 GF. 0.715628400  
## 7 GA60 Rank 0.709403281  
## 133 Rank GA60 0.709403281  
## 395 DZFO. CF. -0.709037713  
## 458 CF. DZFO. -0.709037713  
## 5 GA Rank 0.705123838  
## 89 Rank GA 0.705123838  
## 173 CPDO GF. 0.704678129  
## 404 GF. CPDO 0.704678129  
## 74 GF. GF 0.700680112  
## 158 GF GF. 0.700680112  
## 255 PDO Sv. 0.697094220  
## 276 Sv. PDO 0.697094220  
## 239 CPDO Sh. 0.693078662  
## 407 Sh. CPDO 0.693078662  
## 13 PDO Rank -0.686599369  
## 265 Rank PDO -0.686599369  
## 196 OZFO. SF 0.683291073  
## 427 SF OZFO. 0.683291073  
## 329 DZFO. CA 0.683154734  
## 455 CA DZFO. 0.683154734  
## 66 NZFO. TOI -0.681336134  
## 465 TOI NZFO. -0.681336134  
## 219 DZFO. SA 0.678502659  
## 450 SA DZFO. 0.678502659  
## 373 DZFO. CA60 0.673000667  
## 457 CA60 DZFO. 0.673000667  
## 233 PDO Sh. 0.672887210  
## 275 Sh. PDO 0.672887210  
## 326 CF. CA -0.672070761  
## 389 CA CF. -0.672070761  
## 306 OZFO. CF 0.667365069  
## 432 CF OZFO. 0.667365069  
## 19 CPDO Rank -0.664895197  
## 397 Rank CPDO -0.664895197  
## 6 GF60 Rank -0.664688758  
## 111 Rank GF60 -0.664688758  
## 194 CF. SF 0.658345145  
## 383 SF CF. 0.658345145  
## 4 GF Rank -0.650107582  
## 67 Rank GF -0.650107582  
## 216 CF. SA -0.646624429  
## 384 SA CF. -0.646624429  
## 350 OZFO. CF60 0.629215046  
## 434 CF60 OZFO. 0.629215046  
## 304 CF. CF 0.612713290  
## 388 CF CF. 0.612713290  
## 261 CPDO Sv. 0.611225002  
## 408 Sv. CPDO 0.611225002  
## 439 DZFO. OZFO. -0.583718450  
## 460 OZFO. DZFO. -0.583718450  
## 462 NZFO. DZFO. -0.578712315  
## 483 DZFO. NZFO. -0.578712315  
## 172 CF. GF. 0.568639057  
## 382 GF. CF. 0.568639057  
## 103 CA GA 0.568311336  
## 313 GA CA 0.568311336  
## 105 CA60 GA 0.564387062  
## 357 GA CA60 0.564387062  
## 75 SF GF 0.556938916  
## 180 GF SF 0.556938916  
## 18 CF. Rank -0.552521526  
## 375 Rank CF. -0.552521526  
## 58 CF TOI 0.552307383  
## 289 TOI CF 0.552307383  
## 129 CPDO GF60 0.549943759  
## 402 GF60 CPDO 0.549943759  
## 123 PDO GF60 0.547123951  
## 270 GF60 PDO 0.547123951  
## 98 SA GA 0.543689161  
## 203 GA SA 0.543689161  
## 59 CA TOI 0.543217994  
## 311 TOI CA 0.543217994  
## 101 PDO GA -0.542105198  
## 269 GA PDO -0.542105198  
## 85 CPDO GF 0.535626955  
## 400 GF CPDO 0.535626955  
## 145 PDO GA60 -0.528635970  
## 271 GA60 PDO -0.528635970  
## 79 PDO GF 0.525469886  
## 268 GF PDO 0.525469886  
## 149 CA60 GA60 0.520715527  
## 359 GA60 CA60 0.520715527  
## 166 Sv. GF. 0.520500590  
## 250 GF. Sv. 0.520500590  
## 12 Sv. Rank -0.501720989  
## 243 Rank Sv. -0.501720989  
## 165 Sh. GF. 0.495970256  
## 228 GF. Sh. 0.495970256  
## 372 OZFO. CA60 -0.495689903  
## 435 CA60 OZFO. -0.495689903  
## 330 NZFO. CA -0.495439702  
## 477 CA NZFO. -0.495439702  
## 53 SF TOI 0.495021457  
## 179 TOI SF 0.495021457  
## 82 CF60 GF 0.489029281  
## 334 GF CF60 0.489029281  
## 80 CF GF 0.484336479  
## 290 GF CF 0.484336479  
## 107 CPDO GA -0.478223412  
## 401 GA CPDO -0.478223412  
## 220 NZFO. SA -0.473892139  
## 472 SA NZFO. -0.473892139  
## 54 SA TOI 0.473363451  
## 201 TOI SA 0.473363451  
## 151 CPDO GA60 -0.470856803  
## 403 GA60 CPDO -0.470856803  
## 150 CF. GA60 -0.463968710  
## 381 GA60 CF. -0.463968710  
## 106 CF. GA -0.456879333  
## 379 GA CF. -0.456879333  
## 171 CA60 GF. -0.441868553  
## 360 GF. CA60 -0.441868553  
## 11 Sh. Rank -0.438202837  
## 221 Rank Sh. -0.438202837  
## 17 CA60 Rank 0.437831933  
## 353 Rank CA60 0.437831933  
## 126 CF60 GF60 0.431577638  
## 336 GF60 CF60 0.431577638  
## 308 NZFO. CF -0.428529408  
## 476 CF NZFO. -0.428529408  
## 147 CA GA60 0.420568605  
## 315 GA60 CA 0.420568605  
## 163 SF GF. 0.418250422  
## 184 GF. SF 0.418250422  
## 142 SA GA60 0.417429937  
## 205 GA60 SA 0.417429937  
## 9 SF Rank -0.414417994  
## 177 Rank SF -0.414417994  
## 170 CF60 GF. 0.412658867  
## 338 GF. CF60 0.412658867  
## 20 OZFO. Rank -0.412116546  
## 419 Rank OZFO. -0.412116546  
## 119 SF GF60 0.408744913  
## 182 GF60 SF 0.408744913  
## 174 OZFO. GF. 0.407655562  
## 426 GF. OZFO. 0.407655562  
## 152 OZFO. GA60 -0.404946829  
## 425 GA60 OZFO. -0.404946829  
## 164 SA GF. -0.403641346  
## 206 GF. SA -0.403641346  
## 10 SA Rank 0.402334761  
## 199 Rank SA 0.402334761  
## 21 DZFO. Rank 0.398955541  
## 441 Rank DZFO. 0.398955541  
## 169 CA GF. -0.398034614  
## 316 GF. CA -0.398034614  
## 175 DZFO. GF. -0.397407577  
## 448 GF. DZFO. -0.397407577  
## 16 CF60 Rank -0.392081146  
## 331 Rank CF60 -0.392081146  
## 15 CA Rank 0.389871187  
## 309 Rank CA 0.389871187  
## 351 DZFO. CF60 -0.374153230  
## 456 CF60 DZFO. -0.374153230  
## 128 CF. GF60 0.352065697  
## 380 GF60 CF. 0.352065697  
## 84 CF. GF 0.345992957  
## 378 GF CF. 0.345992957  
## 64 OZFO. TOI 0.344216561  
## 421 TOI OZFO. 0.344216561  
## 131 DZFO. GF60 -0.338806961  
## 446 GF60 DZFO. -0.338806961  
## 168 CF GF. 0.336254673  
## 294 GF. CF 0.336254673  
## 198 NZFO. SF -0.335194673  
## 471 SF NZFO. -0.335194673  
## 440 NZFO. OZFO. -0.324370965  
## 482 OZFO. NZFO. -0.324370965  
## 14 CF Rank -0.321445163  
## 287 Rank CF -0.321445163  
## 124 CF GF60 0.318272635  
## 292 GF60 CF 0.318272635  
## 218 OZFO. SA -0.315175406  
## 428 SA OZFO. -0.315175406  
## 264 NZFO. Sv. -0.312974234  
## 474 Sv. NZFO. -0.312974234  
## 109 DZFO. GA 0.303977801  
## 445 GA DZFO. 0.303977801  
## 197 DZFO. SF -0.301375656  
## 449 SF DZFO. -0.301375656  
## 328 OZFO. CA -0.299117112  
## 433 CA OZFO. -0.299117112  
## 108 OZFO. GA -0.290604897  
## 423 GA OZFO. -0.290604897  
## 65 DZFO. TOI 0.288071949  
## 443 TOI DZFO. 0.288071949  
## 242 NZFO. Sh. 0.286385224  
## 473 Sh. NZFO. 0.286385224  
## 374 NZFO. CA60 -0.286171560  
## 479 CA60 NZFO. -0.286171560  
## 86 OZFO. GF 0.279606997  
## 422 GF OZFO. 0.279606997  
## 87 DZFO. GF -0.249122926  
## 444 GF DZFO. -0.249122926  
## 49 GA TOI 0.232806790  
## 91 TOI GA 0.232806790  
## 153 DZFO. GA60 0.227252214  
## 447 GA60 DZFO. 0.227252214  
## 240 OZFO. Sh. -0.222827342  
## 429 Sh. OZFO. -0.222827342  
## 132 NZFO. GF60 0.218048051  
## 468 GF60 NZFO. 0.218048051  
## 307 DZFO. CF -0.207529501  
## 454 CF DZFO. -0.207529501  
## 61 CA60 TOI 0.205599609  
## 355 TOI CA60 0.205599609  
## 55 Sh. TOI -0.203015215  
## 223 TOI Sh. -0.203015215  
## 141 SF GA60 -0.198073949  
## 183 GA60 SF -0.198073949  
## 60 CF60 TOI 0.197739309  
## 333 TOI CF60 0.197739309  
## 352 NZFO. CF60 -0.196094359  
## 478 CF60 NZFO. -0.196094359  
## 263 DZFO. Sv. 0.187890213  
## 452 Sv. DZFO. 0.187890213  
## 393 CPDO CF. -0.179888098  
## 414 CF. CPDO -0.179888098  
## 25 TOI GP 0.177752461  
## 46 GP TOI 0.177752461  
## 130 OZFO. GF60 0.175889903  
## 424 GF60 OZFO. 0.175889903  
## 48 GF TOI 0.175180252  
## 69 TOI GF 0.175180252  
## 234 CF Sh. -0.169454257  
## 297 Sh. CF -0.169454257  
## 301 CA CF 0.169447169  
## 322 CF CA 0.169447169  
## 146 CF GA60 -0.167160197  
## 293 GA60 CF -0.167160197  
## 193 CA60 SF -0.166193292  
## 361 SF CA60 -0.166193292  
## 148 CF60 GA60 -0.161774712  
## 337 GA60 CF60 -0.161774712  
## 416 OZFO. CPDO -0.155729039  
## 437 CPDO OZFO. -0.155729039  
## 120 SA GF60 -0.155717464  
## 204 GF60 SA -0.155717464  
## 210 Sv. SA 0.154512462  
## 252 SA Sv. 0.154512462  
## 187 Sh. SF -0.151922084  
## 229 SF Sh. -0.151922084  
## 125 CA GF60 -0.148608716  
## 314 GF60 CA -0.148608716  
## 154 NZFO. GA60 0.141982843  
## 469 GA60 NZFO. 0.141982843  
## 371 CPDO CA60 0.136813798  
## 413 CA60 CPDO 0.136813798  
## 417 DZFO. CPDO 0.136524991  
## 459 CPDO DZFO. 0.136524991  
## 349 CPDO CF60 -0.129427760  
## 412 CF60 CPDO -0.129427760  
## 50 GF60 TOI -0.128712799  
## 113 TOI GF60 -0.128712799  
## 347 CA60 CF60 -0.127247192  
## 368 CF60 CA60 -0.127247192  
## 305 CPDO CF -0.124874884  
## 410 CF CPDO -0.124874884  
## 44 NZFO. GP -0.123891652  
## 464 GP NZFO. -0.123891652  
## 238 CF. Sh. -0.121548047  
## 385 Sh. CF. -0.121548047  
## 127 CA60 GF60 -0.113637207  
## 358 GF60 CA60 -0.113637207  
## 236 CF60 Sh. -0.109414743  
## 341 Sh. CF60 -0.109414743  
## 214 CF60 SA -0.103750823  
## 340 SA CF60 -0.103750823  
## 104 CF60 GA -0.102881195  
## 335 GA CF60 -0.102881195  
## 56 Sv. TOI 0.102258933  
## 245 TOI Sv. 0.102258933  
## 327 CPDO CA 0.101072888  
## 411 CA CPDO 0.101072888  
## 285 DZFO. PDO 0.100688499  
## 453 PDO DZFO. 0.100688499  
## 262 OZFO. Sv. 0.093668029  
## 430 Sv. OZFO. 0.093668029  
## 212 CF SA 0.090843687  
## 296 SA CF 0.090843687  
## 284 OZFO. PDO -0.090665292  
## 431 PDO OZFO. -0.090665292  
## 43 DZFO. GP 0.088807754  
## 442 GP DZFO. 0.088807754  
## 94 GF60 GA -0.087205827  
## 115 GA GF60 -0.087205827  
## 211 PDO SA 0.085160841  
## 274 SA PDO 0.085160841  
## 143 Sh. GA60 0.079362396  
## 227 GA60 Sh. 0.079362396  
## 37 CA GP 0.075355486  
## 310 GP CA 0.075355486  
## 396 NZFO. CF. 0.074114790  
## 480 CF. NZFO. 0.074114790  
## 256 CF Sv. 0.073462954  
## 298 Sv. CF 0.073462954  
## 28 GF60 GP -0.073176744  
## 112 GP GF60 -0.073176744  
## 217 CPDO SA 0.072974914  
## 406 SA CPDO 0.072974914  
## 282 CF. PDO -0.071984385  
## 387 PDO CF. -0.071984385  
## 188 Sv. SF 0.071960290  
## 251 SF Sv. 0.071960290  
## 237 CA60 Sh. 0.070896458  
## 363 Sh. CA60 0.070896458  
## 57 PDO TOI -0.070046594  
## 267 TOI PDO -0.070046594  
## 73 GA60 GF -0.069448259  
## 136 GF GA60 -0.069448259  
## 278 CF PDO -0.067300623  
## 299 PDO CF -0.067300623  
## 195 CPDO SF -0.066521240  
## 405 SF CPDO -0.066521240  
## 51 GA60 TOI -0.065859565  
## 135 TOI GA60 -0.065859565  
## 110 NZFO. GA -0.062248022  
## 467 GA NZFO. -0.062248022  
## 232 Sv. Sh. -0.061316270  
## 253 Sh. Sv. -0.061316270  
## 189 PDO SF -0.055819311  
## 273 SF PDO -0.055819311  
## 32 SA GP 0.055250521  
## 200 GP SA 0.055250521  
## 241 DZFO. Sh. -0.053713163  
## 451 Sh. DZFO. -0.053713163  
## 176 NZFO. GF. 0.053529788  
## 470 GF. NZFO. 0.053529788  
## 281 CA60 PDO 0.052950173  
## 365 PDO CA60 0.052950173  
## 83 CA60 GF -0.052905416  
## 356 GF CA60 -0.052905416  
## 36 CF GP 0.051530964  
## 288 GP CF 0.051530964  
## 280 CF60 PDO -0.051404643  
## 343 PDO CF60 -0.051404643  
## 22 NZFO. Rank -0.050852279  
## 463 Rank NZFO. -0.050852279  
## 97 SF GA -0.049431770  
## 181 GA SF -0.049431770  
## 52 GF. TOI -0.048184824  
## 157 TOI GF. -0.048184824  
## 29 GA60 GP -0.046528208  
## 134 GP GA60 -0.046528208  
## 63 CPDO TOI -0.045907892  
## 399 TOI CPDO -0.045907892  
## 33 Sh. GP -0.045709229  
## 222 GP Sh. -0.045709229  
## 117 GA60 GF60 -0.043083715  
## 138 GF60 GA60 -0.043083715  
## 324 CF60 CA -0.041813518  
## 345 CA CF60 -0.041813518  
## 257 CA Sv. 0.041271128  
## 320 Sv. CA 0.041271128  
## 209 Sh. SA -0.040890745  
## 230 SA Sh. -0.040890745  
## 122 Sv. GF60 -0.039078323  
## 248 GF60 Sv. -0.039078323  
## 3 TOI Rank 0.038839440  
## 45 Rank TOI 0.038839440  
## 258 CF60 Sv. 0.036722291  
## 342 Sv. CF60 0.036722291  
## 31 SF GP 0.035063033  
## 178 GP SF 0.035063033  
## 191 CA SF 0.034853854  
## 317 SF CA 0.034853854  
## 303 CA60 CF -0.033496259  
## 366 CF CA60 -0.033496259  
## 34 Sv. GP 0.028005042  
## 244 GP Sv. 0.028005042  
## 286 NZFO. PDO -0.026238187  
## 475 PDO NZFO. -0.026238187  
## 40 CF. GP -0.026128294  
## 376 GP CF. -0.026128294  
## 186 SA SF 0.025177636  
## 207 SF SA 0.025177636  
## 38 CF60 GP -0.024798338  
## 332 GP CF60 -0.024798338  
## 2 GP Rank 0.024090558  
## 23 Rank GP 0.024090558  
## 30 GF. GP -0.022767569  
## 156 GP GF. -0.022767569  
## 71 GA GF -0.022474041  
## 92 GF GA -0.022474041  
## 260 CF. Sv. 0.020717243  
## 386 Sv. CF. 0.020717243  
## 42 OZFO. GP 0.020342271  
## 420 GP OZFO. 0.020342271  
## 279 CA PDO 0.019765478  
## 321 PDO CA 0.019765478  
## 62 CF. TOI -0.018474673  
## 377 TOI CF. -0.018474673  
## 235 CA Sh. -0.015083669  
## 319 Sh. CA -0.015083669  
## 81 CA GF 0.015023013  
## 312 GF CA 0.015023013  
## 26 GF GP -0.014364553  
## 68 GP GF -0.014364553  
## 76 SA GF -0.013769666  
## 202 GF SA -0.013769666  
## 35 PDO GP -0.012071661  
## 266 GP PDO -0.012071661  
## 99 Sh. GA 0.011418392  
## 225 GA Sh. 0.011418392  
## 39 CA60 GP 0.010976178  
## 354 GP CA60 0.010976178  
## 88 NZFO. GF 0.009392345  
## 466 GF NZFO. 0.009392345  
## 27 GA GP 0.009151140  
## 90 GP GA 0.009151140  
## 259 CA60 Sv. 0.002708007  
## 364 Sv. CA60 0.002708007  
## 418 NZFO. CPDO -0.002636720  
## 481 CPDO NZFO. -0.002636720  
## 41 CPDO GP 0.002473178  
## 398 GP CPDO 0.002473178  
## 102 CF GA -0.002163300  
## 291 GA CF -0.002163300  
## 78 Sv. GF -0.002039866  
## 246 GF Sv. -0.002039866

#View correlations, in descending order, with only the numeric variables  
#Top are: CF-SF, TOI-GP, CA-SA, CPDO-DO, GF.-Rank (all above 90%)  
#Next: SF-TOI, SA-TOI, CF-TOI, CA-TOI, SF-GP, SA-GP, SF-GF, CF-GP, SA-GA, CA-GA, CA-GP, Sh.-GF60 (all above 80%)  
#this is a lot of high corelations! It makes sense, looking at the variables that we have (shots against will be very highyl correlated with shots against percentage, after all)  
library(corrplot)

## Warning: package 'corrplot' was built under R version 3.3.2

names(allyears[-lockout])[24]

## [1] "Cup"

corrplot(cor(allyears[,-c(2,24)]))

