

# MVA Assignment

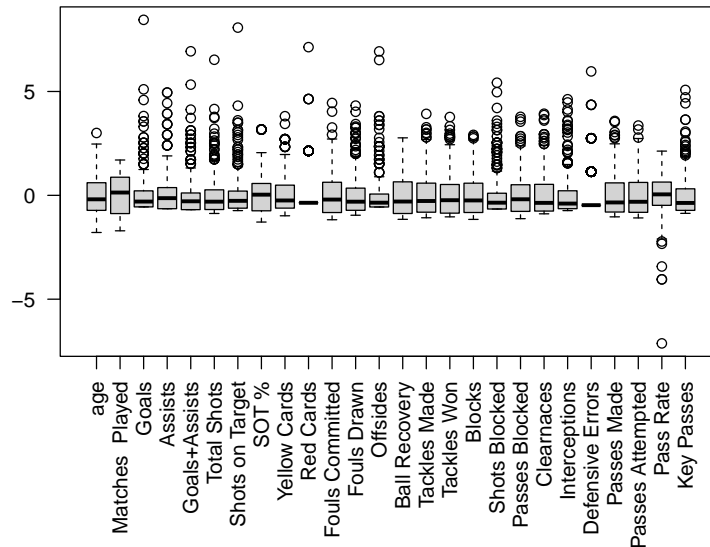
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## Introduction

```
# Load in data
load("FinData.RData")
# Change row names
rownames(FinData) <- FinData$Name
# Get X matrix that does not include potential response variables and categorical variables
X <- FinData
rownames(X) <- X$Name
X <- scale(X[,c(-1,-5, -6, -7, -8,-3,-4, -35, -34, -36, -37)])

# Look for outliers
par(mar = c(8, 4, 0.5, 2))
boxplot(X, las = 2)
```

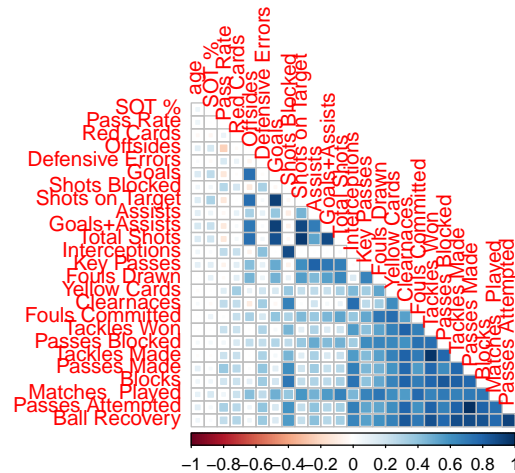


```
# Define colour scheme
colors <- c("#900000", "#E79300", "#59A6F7") # DF, FW, MF
colors <- colors[FinData$Position]
```

# Exploratory Data Analysis

## Methodology

```
# Quickly check correlations as this may inform our thinking on principle components
co <- cor(X)
corrplot((co),method = 'square', order = 'FPC', type = 'lower', diag = FALSE)
```



```
# Now we see how much of the data is correlated and how much of it is not
co[upper.tri(co)] <- NA
co <- co - diag(nrow(co))
# How many are correlated strongly
(pres <- sum(abs(co) > 0.5, na.rm = T))/(ncol(combn(26, 2)))
```

```
## [1] 108
```

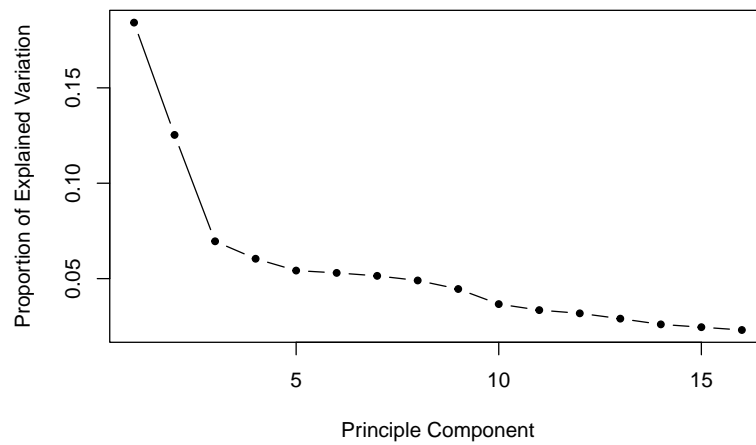
```
# How many correlations were checked
ncol(combn(26, 2))
```

```
## [1] 325
```

```
# The code above shows us that out of the 325 correlations not including correlation with itself that 108 are strongly correlated
```

```
# Run a Principle Component Analysis
PC <- prcomp(X, scale. = F)
```

```
# Check levels of information
plot(PC$sdev[1:16]/sum(PC$sdev), pch = 19, cex = 0.7, ylab = "Proportion of Explained Variation", xlab = "Principal Component")
```



```
# Check elbows
sum(PC$sdev[1:4])/sum(PC$sdev)

## [1] 0.4395029

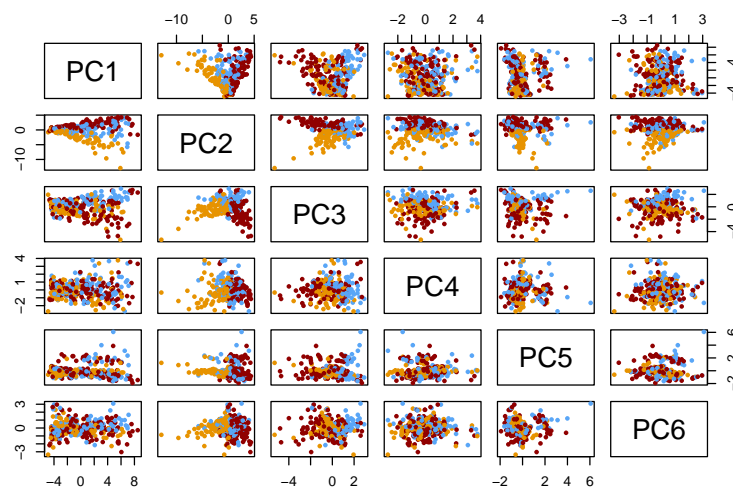
sum(PC$sdev[1:6])/sum(PC$sdev)

## [1] 0.5467268

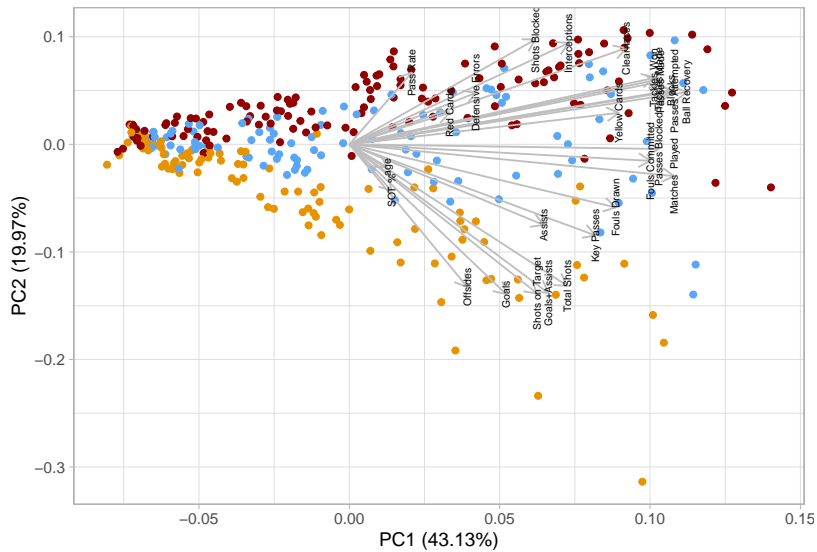
sum(PC$sdev[1:10])/sum(PC$sdev)

## [1] 0.7284074

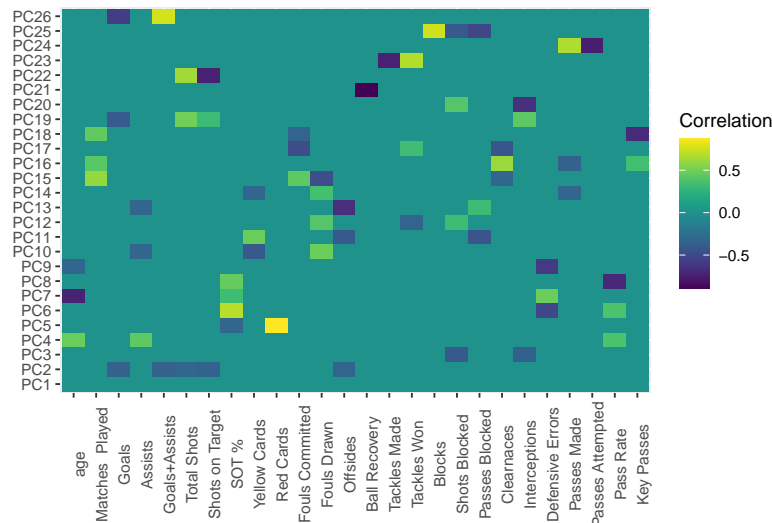
# Plot most important Principle components
pairs(PC$x[,1:6], pch = 16, cex = 0.75, col = colors)
```



```
# Biplot for PCA
autoplot(PC, data=FinData, colour=colors, loadings=TRUE, loadings.label = TRUE, loadings.label.size = 10,
  theme_light())
```



```
# Loadings
melted_cormat <- melt(PC$rotation)
colnames(melted_cormat) <- c("Var", "PC", "Correlation")
melted_cormat$Correlation <- ifelse(abs(melted_cormat$Correlation) < 0.3, 0, melted_cormat$Correlation)
ggplot(data = melted_cormat, aes(x=Var, y=PC, fill=Correlation)) +
  geom_tile() +
  scale_fill_viridis(discrete=FALSE)+
  theme(axis.text.x = element_text(angle = 90))+
  xlab("")+ ylab("")
```



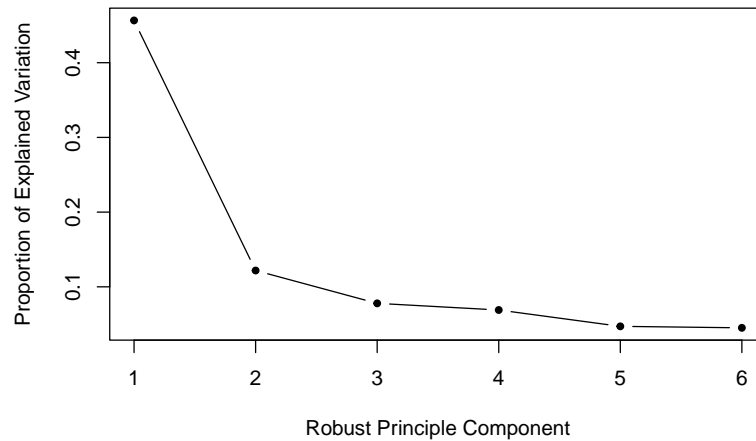
```
# Perform Robust PCA
robPCA <- PcaHubert(X)

# Rename Columns of Scores
colnames(robPCA$scores) <- paste0("RPC", 1:6)

# Get variable importance
varimp <- summary(robPCA)$importance[2,]
```

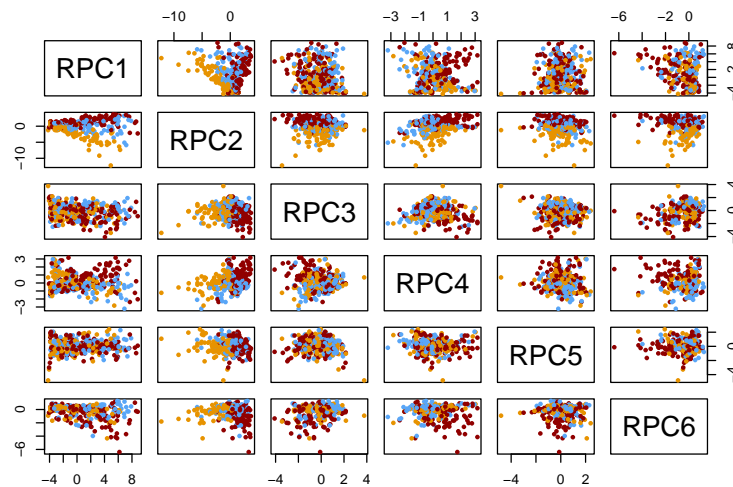
```
# Plot Scree Plot
```

```
plot(varimp, pch = 19, cex = 0.7, ylab = "Proportion of Explained Variation", xlab = "Robust Principle Component")
```



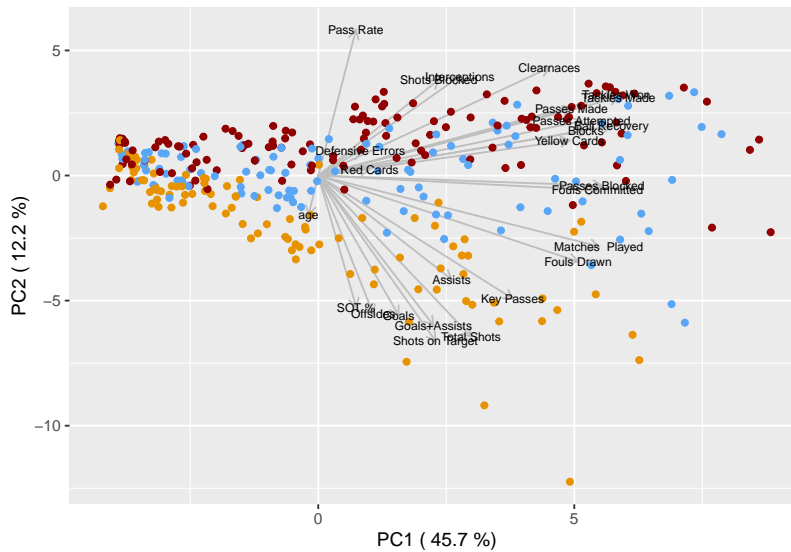
```
# Plot Scores
```

```
pairs(robPCA@scores, col = colors, pch = 16, cex = 0.75)
```

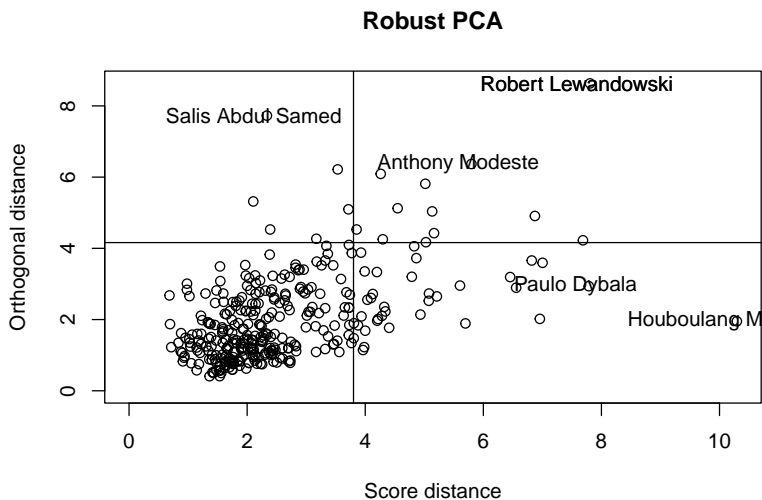


```
# Proper visible biplot
```

```
ggplot(data=20*robPCA$loadings, aes(PC1, PC2))+
  geom_vector( col = "grey") +
  geom_point(data=robPCA$scores, aes(x=RPC1, y=RPC2), col=colors) +
  geom_text(label = rownames(robPCA$loadings), size = 2.5)+
  xlab(paste("PC1 (", round(varimp[1]*100,1), "%)"))+
  ylab(paste("PC2 (", round(varimp[2]*100,1), "%)"))
```



```
# Outlier Map
plot(robPCA)
```



```
# Obtain outliers
FinData[which(robPCA$flag == F),]
```

##	Name	age	Market Value
## Amine Gouiri	Amine Gouiri	22	42.0
## Anthony Modeste	Anthony Modeste	34	3.0
## Antonio Candreva	Antonio Candreva	35	2.5
## Arkadiusz Reca	Arkadiusz Reca	27	3.0
## Arnaud Kalimuendo	Arnaud Kalimuendo	20	18.0
## Conor Coady	Conor Coady	29	25.0
## David Raum	David Raum	24	20.0
## Dedryck Boyata	Dedryck Boyata	31	3.5
## Dominik Kohr	Dominik Kohr	28	5.0
## Erling Haaland	Erling Haaland	21	150.0
## Ethan Ampadu	Ethan Ampadu	21	13.0

##	Francesco Acerbi	Francesco Acerbi	34	4.0	
##	Gianluca Caprari	Gianluca Caprari	28	10.0	
##	Gianluca Scamacca	Gianluca Scamacca	23	30.0	
##	Giovanni Simeone	Giovanni Simeone	27	17.0	
##	Hannibal Mejbri	Hannibal Mejbri	19	6.0	
##	Harry Winks	Harry Winks	26	15.0	
##	Houboulang Mendes	Houboulang Mendes	24	3.0	
##	Ilaix Moriba	Ilaix Moriba	19	9.0	
##	Jan Bednarek	Jan Bednarek	26	22.0	
##	Jeff Hendrick	Jeff Hendrick	30	5.0	
##	Jimmy Giraudon	Jimmy Giraudon	30	1.5	
##	Joel Pohjanpalo	Joel Pohjanpalo	27	2.5	
##	Johan Mojica	Johan Mojica	30	5.0	
##	Jonathan Clauss	Jonathan Clauss	29	15.0	
##	Jordan Beyer	Jordan Beyer	22	4.5	
##	Jordan Veretout	Jordan Veretout	29	17.0	
##	Jules Koundé	Jules Koundé	23	60.0	
##	Kalidou Koulibaly	Kalidou Koulibaly	31	35.0	
##	Konstantinos Mavropanos	Konstantinos Mavropanos	24	15.0	
##	Leandro Paredes	Leandro Paredes	28	17.0	
##	Lorenzo Insigne	Lorenzo Insigne	31	25.0	
##	Luca Kilian	Luca Kilian	22	4.5	
##	Mattia Viti	Mattia Viti	20	7.0	
##	Maya Yoshida	Maya Yoshida	33	1.5	
##	Mehdi Chahiri	Mehdi Chahiri	25	1.2	
##	Nahuel Molina	Nahuel Molina	24	20.0	
##	Nayef Aguerd	Nayef Aguerd	26	12.0	
##	Nemanja Matić	Nemanja Matić	33	5.0	
##	Nico Schlotterbeck	Nico Schlotterbeck	22	33.0	
##	Niklas Stark	Niklas Stark	27	6.5	
##	Nordi Mukiele	Nordi Mukiele	24	20.0	
##	Paul Pogba	Paul Pogba	29	48.0	
##	Paulo Dybala	Paulo Dybala	28	35.0	
##	Pervis Estupiñán	Pervis Estupiñán	24	20.0	
##	Robert Lewandowski	Robert Lewandowski	33	45.0	
##	Romain Saïss	Romain Saïss	32	8.0	
##	Romain Thomas	Romain Thomas	34	1.0	
##	Sadio Mané	Sadio Mané	30	70.0	
##	Salis Abdul Samed	Salis Abdul Samed	22	3.0	
##	Stefan Posch	Stefan Posch	25	10.0	
##	Tyler Adams	Tyler Adams	23	17.0	
##	Wout Faes	Wout Faes	24	10.0	
##		Transfer Fee (Millions)	Origin	Position	Club
##	Amine Gouiri	28.0	FRA	FW	Nice
##	Anthony Modeste	5.1	FRA	FW	Köln
##	Antonio Candreva	0.0	ITA	MF	Sampdoria
##	Arkadiusz Reca	2.0	POL	DF	Spezia
##	Arnaud Kalimuendo	20.0	FRA	FW	Lens
##	Conor Coady	0.0	ENG	DF	Wolves
##	David Raum	26.0	GER	DF	Hoffenheim
##	Dedryck Boyata	2.0	BEL	DF	Hertha BSC
##	Dominik Kohr	1.5	GER	MF	Mainz 05
##	Erling Haaland	60.0	NOR	FW	Dortmund
##	Ethan Ampadu	0.0	WAL	MF	Venezia

## Francesco Acerbi	0.0	ITA	DF	Lazio
## Gianluca Caprari	3.0	ITA	MF	Hellas Verona
## Gianluca Scamacca	36.0	ITA	FW	Sassuolo
## Giovanni Simeone	3.5	ARG	FW	Hellas Verona
## Hannibal Mejbri	0.0	TUN	FW	Manchester Utd
## Harry Winks	0.0	ENG	MF	Tottenham
## Houboulang Mendes	0.0	FRA	DF	Lorient
## Ilaix Moriba	0.0	GUI	MF	RB Leipzig
## Jan Bednarek	0.0	POL	DF	Southampton
## Jeff Hendrick	0.0	IRL	MF	Newcastle Utd
## Jimmy Giraudon	0.0	FRA	DF	Troyes
## Joel Pohjanpalo	2.5	FIN	FW	Leverkusen
## Johan Mojica	5.5	COL	DF	Elche
## Jonathan Clauss	7.5	FRA	DF	Lens
## Jordan Beyer	0.0	GER	DF	M'Gladbach
## Jordan Veretout	11.0	FRA	MF	Roma
## Jules Koundé	50.0	FRA	DF	Sevilla
## Kalidou Koulibaly	38.0	SEN	DF	Napoli
## Konstantinos Mavropanos	3.2	GRE	DF	Stuttgart
## Leandro Paredes	0.0	ARG	MF	Paris S-G
## Lorenzo Insigne	0.0	ITA	FW	Napoli
## Luca Kilian	2.0	GER	FW	Mainz 05
## Mattia Viti	13.0	ITA	DF	Empoli
## Maya Yoshida	0.0	JPN	DF	Sampdoria
## Mehdi Chahiri	0.0	MAR	DF	Strasbourg
## Nahuel Molina	20.0	ARG	DF	Udinese
## Nayef Aguerd	35.0	MAR	DF	Rennes
## Nemanja Matić	0.0	SRB	MF	Manchester Utd
## Nico Schlotterbeck	20.0	GER	DF	Freiburg
## Niklas Stark	0.0	GER	DF	Hertha BSC
## Nordi Mukiele	12.0	FRA	DF	RB Leipzig
## Paul Pogba	0.0	FRA	MF	Manchester Utd
## Paulo Dybala	0.0	ARG	FW	Juventus
## Pervis Estupiñán	17.8	ECU	DF	Villarreal
## Robert Lewandowski	45.0	POL	FW	Bayern Munich
## Romain Saïss	0.0	MAR	DF	Wolves
## Romain Thomas	0.0	FRA	DF	Angers
## Sadio Mané	32.0	SEN	FW	Liverpool
## Salis Abdul Samed	5.0	GHA	MF	Clermont Foot
## Stefan Posch	0.0	AUT	DF	Hoffenheim
## Tyler Adams	17.0	USA	MF	RB Leipzig
## Wout Faes	17.0	BEL	DF	Reims
##				
	League	Matches	Played	Goals
## Amine Gouiri	Ligue 1		38	10
## Anthony Modeste	Bundesliga		32	20
## Antonio Candreva	Serie A		36	7
## Arkadiusz Reca	Serie A		25	0
## Arnaud Kalimuendo	Ligue 1		32	12
## Conor Coady	Premier League		38	4
## David Raum	Bundesliga		32	3
## Dedryck Boyata	Bundesliga		23	0
## Dominik Kohr	Bundesliga		22	0
## Erling Haaland	Bundesliga		24	22
## Ethan Ampadu	Serie A		29	0
				Assists
				9
				4
				10
				2
				0
				0
				11
				0
				3
				8
				3



## Francesco Acerbi	Serie A	30	4	0	
## Gianluca Caprari	Serie A	35	12	7	
## Gianluca Scamacca	Serie A	36	16	0	
## Giovanni Simeone	Serie A	35	17	5	
## Hannibal Mejbri	Premier League	2	0	0	
## Harry Winks	Premier League	19	0	1	
## Houboulang Mendes	Ligue 1	36	0	1	
## Ilaix Moriba	Bundesliga	2	0	0	
## Jan Bednarek	Premier League	31	4	0	
## Jeff Hendrick	Premier League	3	1	0	
## Jimmy Giraudon	Ligue 1	19	0	0	
## Joel Pohjanpalo	Bundesliga	2	0	0	
## Johan Mojica	La Liga	33	2	5	
## Jonathan Clauss	Ligue 1	37	5	11	
## Jordan Beyer	Bundesliga	17	0	0	
## Jordan Veretout	Serie A	36	4	8	
## Jules Koundé	La Liga	32	2	1	
## Kalidou Koulibaly	Serie A	27	3	1	
## Konstantinos Mavropanos	Bundesliga	31	4	0	
## Leandro Paredes	Ligue 1	15	1	2	
## Lorenzo Insigne	Serie A	32	11	8	
## Luca Kilian	Bundesliga	1	0	0	
## Mattia Viti	Serie A	20	0	0	
## Maya Yoshida	Serie A	26	2	3	
## Mehdi Chahiri	Ligue 1	1	0	0	
## Nahuel Molina	Serie A	35	7	2	
## Nayef Aguerd	Ligue 1	31	2	2	
## Nemanja Matić	Premier League	23	0	4	
## Nico Schlotterbeck	Bundesliga	32	4	1	
## Niklas Stark	Bundesliga	26	1	0	
## Nordi Mukiele	Bundesliga	28	1	3	
## Paul Pogba	Premier League	20	1	9	
## Paulo Dybala	Serie A	29	10	5	
## Pervis Estupiñán	La Liga	28	0	1	
## Robert Lewandowski	Bundesliga	34	35	3	
## Romain Saïss	Premier League	31	2	0	
## Romain Thomas	Ligue 1	30	2	0	
## Sadio Mané	Premier League	34	16	2	
## Salis Abdul Samed	Ligue 1	31	1	0	
## Stefan Posch	Bundesliga	28	2	0	
## Tyler Adams	Bundesliga	24	0	1	
## Wout Faes	Ligue 1	37	4	0	
##	Goals+Assists	Total	Shots	Shots on Target	SOT %
## Amine Gouiri	19	71	33	46.5	
## Anthony Modeste	24	106	43	40.6	
## Antonio Candreva	17	72	19	26.4	
## Arkadiusz Reca	2	8	4	50.0	
## Arnaud Kalimuendo	12	60	29	48.3	
## Conor Coady	4	12	4	33.3	
## David Raum	14	25	8	32.0	
## Dedryck Boyata	0	10	2	20.0	
## Dominik Kohr	3	18	2	11.1	
## Erling Haaland	30	74	31	41.9	
## Ethan Ampadu	3	7	1	14.3	

## Francesco Acerbi	4	15	7	46.7
## Gianluca Caprari	19	65	26	40.0
## Gianluca Scamacca	16	78	36	46.2
## Giovanni Simeone	22	69	32	46.4
## Hannibal Mejbri	0	1	1	100.0
## Harry Winks	1	3	1	33.3
## Houboulang Mendes	1	21	5	23.8
## Ilaix Moriba	0	1	1	100.0
## Jan Bednarek	4	19	7	36.8
## Jeff Hendrick	1	1	1	100.0
## Jimmy Giraudon	0	0	0	0.0
## Joel Pohjanpalo	0	0	0	0.0
## Johan Mojica	7	16	3	18.8
## Jonathan Clauss	16	40	16	40.0
## Jordan Beyer	0	7	0	0.0
## Jordan Veretout	12	27	8	29.6
## Jules Koundé	3	13	3	23.1
## Kalidou Koulibaly	4	10	7	70.0
## Konstantinos Mavropanos	4	33	11	33.3
## Leandro Paredes	3	8	2	25.0
## Lorenzo Insigne	19	81	24	29.6
## Luca Kilian	0	0	0	0.0
## Mattia Viti	0	4	0	0.0
## Maya Yoshida	5	9	4	44.4
## Mehdi Chahiri	0	0	0	0.0
## Nahuel Molina	9	44	16	36.4
## Nayef Aguerd	4	25	7	28.0
## Nemanja Matić	4	6	1	16.7
## Nico Schlotterbeck	5	36	16	44.4
## Niklas Stark	1	11	4	36.4
## Nordi Mukiele	4	22	7	31.8
## Paul Pogba	10	32	8	25.0
## Paulo Dybala	15	97	36	37.1
## Pervis Estupiñán	1	14	4	28.6
## Robert Lewandowski	38	156	75	48.1
## Romain Saïss	2	18	6	33.3
## Romain Thomas	2	14	4	28.6
## Sadio Mané	18	98	37	37.8
## Salis Abdul Samed	1	18	5	27.8
## Stefan Posch	2	14	7	50.0
## Tyler Adams	1	2	0	0.0
## Wout Faes	4	22	9	40.9
##				
	Yellow Cards	Red Cards	Fouls Committed	Fouls Drawn
## Amine Gouiri	3	0	30	32
## Anthony Modeste	4	0	38	33
## Antonio Candreva	6	1	19	48
## Arkadiusz Reca	3	0	23	13
## Arnaud Kalimuendo	1	1	13	32
## Conor Coady	4	0	20	1
## David Raum	5	0	27	32
## Dedryck Boyata	1	1	11	6
## Dominik Kohr	10	2	46	20
## Erling Haaland	3	0	17	14
## Ethan Ampadu	13	2	46	27

## Francesco Acerbi	2	1	18	16	
## Gianluca Caprari	4	0	42	74	
## Gianluca Scamacca	7	0	49	20	
## Giovanni Simeone	8	0	56	58	
## Hannibal Mejbri	2	0	3	0	
## Harry Winks	2	0	11	13	
## Houboulang Mendes	5	1	40	18	
## Ilaix Moriba	0	0	1	3	
## Jan Bednarek	10	0	30	15	
## Jeff Hendrick	0	0	1	0	
## Jimmy Giraudon	5	1	14	5	
## Joel Pohjanpalo	0	0	1	0	
## Johan Mojica	4	1	32	50	
## Jonathan Clauss	3	0	38	14	
## Jordan Beyer	5	0	16	21	
## Jordan Veretout	6	0	18	22	
## Jules Koundé	2	2	15	28	
## Kalidou Koulibaly	5	1	28	12	
## Konstantinos Mavropanos	3	0	22	20	
## Leandro Paredes	3	0	10	8	
## Lorenzo Insigne	2	0	20	22	
## Luca Kilian	0	0	1	0	
## Mattia Viti	3	1	15	13	
## Maya Yoshida	2	0	20	9	
## Mehdi Chahiri	0	0	0	0	
## Nahuel Molina	7	1	31	16	
## Nayef Aguerd	3	1	20	16	
## Nemanja Matić	3	0	26	3	
## Nico Schlotterbeck	5	0	32	35	
## Niklas Stark	3	0	19	20	
## Nordi Mukiele	3	0	19	25	
## Paul Pogba	7	1	39	29	
## Paulo Dybala	3	0	16	48	
## Pervis Estupiñán	3	0	24	11	
## Robert Lewandowski	2	0	22	37	
## Romain Saïss	6	0	30	15	
## Romain Thomas	9	0	38	19	
## Sadio Mané	5	0	50	50	
## Salis Abdul Samed	12	3	43	37	
## Stefan Posch	5	0	36	13	
## Tyler Adams	5	0	19	15	
## Wout Faes	2	0	21	24	
##					
	Offsides	Ball Recovery	Tackles Made	Tackles Won	Blocks
## Amine Gouiri	6	89	22	13	22
## Anthony Modeste	36	48	10	6	11
## Antonio Candreva	14	193	27	16	23
## Arkadiusz Reca	0	98	31	19	20
## Arnaud Kalimuendo	14	51	9	8	6
## Conor Coady	2	162	31	14	46
## David Raum	7	201	52	29	38
## Dedryck Boyata	3	93	15	13	17
## Dominik Kohr	0	149	40	20	21
## Erling Haaland	14	40	2	1	8
## Ethan Ampadu	0	157	67	43	49

## Francesco Acerbi	4	162	25	12	37
## Gianluca Caprari	14	164	43	25	32
## Gianluca Scamacca	10	46	19	14	16
## Giovanni Simeone	34	81	27	15	37
## Hannibal Mejbri	1	1	2	1	0
## Harry Winks	0	47	15	10	14
## Houboulang Mendes	4	178	58	28	41
## Ilaix Moriba	0	4	0	0	2
## Jan Bednarek	1	177	32	15	48
## Jeff Hendrick	0	2	1	1	0
## Jimmy Giraudon	0	105	14	6	24
## Joel Pohjanpalo	1	0	0	0	0
## Johan Mojica	4	234	46	25	22
## Jonathan Clauss	4	203	63	34	43
## Jordan Beyer	0	92	46	27	18
## Jordan Veretout	1	147	34	25	12
## Jules Koundé	2	199	40	17	33
## Kalidou Koulibaly	0	167	39	23	41
## Konstantinos Mavropanos	2	214	57	39	46
## Leandro Paredes	0	86	23	13	10
## Lorenzo Insigne	5	142	23	14	30
## Luca Kilian	0	0	0	0	0
## Mattia Viti	1	83	28	16	28
## Maya Yoshida	0	119	17	10	27
## Mehdi Chahiri	0	2	1	1	0
## Nahuel Molina	1	158	41	24	24
## Nayef Aguerd	1	154	27	18	24
## Nemanja Matić	0	124	31	18	21
## Nico Schlotterbeck	1	238	72	43	41
## Niklas Stark	1	115	28	16	27
## Nordi Mukiele	8	125	35	22	31
## Paul Pogba	0	98	13	9	11
## Paulo Dybala	6	103	30	13	19
## Pervis Estupiñán	11	126	36	22	13
## Robert Lewandowski	21	72	10	3	17
## Romain Saïss	3	157	40	27	41
## Romain Thomas	0	153	49	37	35
## Sadio Mané	19	109	33	20	30
## Salis Abdul Samed	0	186	43	23	18
## Stefan Posch	1	110	48	30	43
## Tyler Adams	0	85	23	7	24
## Wout Faes	0	199	40	24	47
##					
	Shots Blocked	Passes Blocked	Cleannaces	Interceptions	
## Amine Gouiri	5	17	11	17	
## Anthony Modeste	2	9	4	29	
## Antonio Candreva	2	21	33	19	
## Arkadiusz Reca	7	13	32	47	
## Arnaud Kalimuendo	1	5	8	0	
## Conor Coady	40	6	28	140	
## David Raum	5	33	27	39	
## Dedryck Boyata	13	4	17	134	
## Dominik Kohr	2	19	35	22	
## Erling Haaland	1	7	1	31	
## Ethan Ampadu	19	30	51	76	

## Francesco Acerbi	28	9	34	92
## Gianluca Caprari	0	32	4	7
## Gianluca Scamacca	1	15	5	22
## Giovanni Simeone	3	34	6	23
## Hannibal Mejbri	0	0	0	0
## Harry Winks	3	11	16	10
## Houboulang Mendes	21	20	41	128
## Ilaix Moriba	0	2	1	0
## Jan Bednarek	27	21	72	141
## Jeff Hendrick	0	0	0	1
## Jimmy Giraudon	14	10	37	68
## Joel Pohjanpalo	0	0	0	0
## Johan Mojica	3	19	25	61
## Jonathan Clauss	1	42	73	51
## Jordan Beyer	5	13	15	52
## Jordan Veretout	1	11	27	22
## Jules Koundé	18	15	21	101
## Kalidou Koulibaly	25	16	29	90
## Konstantinos Mavropanos	23	23	69	174
## Leandro Paredes	6	4	10	5
## Lorenzo Insigne	1	29	20	3
## Luca Kilian	0	0	0	0
## Mattia Viti	25	3	29	69
## Maya Yoshida	20	7	28	72
## Mehdi Chahiri	0	0	0	0
## Nahuel Molina	3	21	22	44
## Nayef Aguerd	14	10	24	127
## Nemanja Matić	6	15	31	21
## Nico Schlotterbeck	32	9	56	154
## Niklas Stark	17	10	36	122
## Nordi Mukiele	5	26	31	44
## Paul Pogba	0	11	13	16
## Paulo Dybala	0	19	9	4
## Pervis Estupiñán	5	8	25	29
## Robert Lewandowski	2	15	6	8
## Romain Saïss	21	20	58	158
## Romain Thomas	19	16	44	126
## Sadio Mané	1	29	8	15
## Salis Abdul Samed	1	17	42	15
## Stefan Posch	18	25	28	71
## Tyler Adams	1	23	16	19
## Wout Faes	37	10	53	169
##				
	Defensive Errors	Passes Made	Passes Attempted	Pass Rate
## Amine Gouiri	1	786	1044	75.3
## Anthony Modeste	0	289	450	64.2
## Antonio Candreva	0	1296	1948	66.5
## Arkadiusz Reca	2	622	879	70.8
## Arnaud Kalimuendo	0	404	483	83.6
## Conor Coady	0	1514	1692	89.5
## David Raum	1	1463	2003	73.0
## Dedryck Boyata	1	675	805	83.9
## Dominik Kohr	0	621	840	73.9
## Erling Haaland	0	331	476	69.5
## Ethan Ampadu	0	867	1165	74.4

## Francesco Acerbi	0	1837	2043	89.9	
## Gianluca Caprari	0	960	1283	74.8	
## Gianluca Scamacca	1	399	550	72.5	
## Giovanni Simeone	0	465	679	68.5	
## Hannibal Mejbri	0	17	21	81.0	
## Harry Winks	2	585	683	85.7	
## Houboulang Mendes	4	1174	1446	81.2	
## Ilaix Moriba	0	17	21	81.0	
## Jan Bednarek	0	1201	1490	80.6	
## Jeff Hendrick	0	27	29	93.1	
## Jimmy Giraudon	1	755	882	85.6	
## Joel Pohjanpalo	0	1	3	33.3	
## Johan Mojica	3	1400	1863	75.1	
## Jonathan Clauss	0	1243	1883	66.0	
## Jordan Beyer	2	823	937	87.8	
## Jordan Veretout	1	1215	1440	84.4	
## Jules Koundé	2	1894	2153	88.0	
## Kalidou Koulibaly	1	1429	1652	86.5	
## Konstantinos Mavropanos	2	1493	1859	80.3	
## Leandro Paredes	2	896	937	95.6	
## Lorenzo Insigne	1	1208	1509	80.1	
## Luca Kilian	0	0	1	0.0	
## Mattia Viti	1	568	679	83.7	
## Maya Yoshida	1	814	966	84.3	
## Mehdi Chahiri	0	2	6	33.3	
## Nahuel Molina	2	860	1228	70.0	
## Nayef Aguerd	1	1959	2204	88.9	
## Nemanja Matić	3	911	1053	86.5	
## Nico Schlotterbeck	1	1403	1750	80.2	
## Niklas Stark	2	829	1009	82.2	
## Nordi Mukiele	2	851	1147	74.2	
## Paul Pogba	0	736	893	82.4	
## Paulo Dybala	3	912	1137	80.2	
## Pervis Estupiñán	2	820	1061	77.3	
## Robert Lewandowski	0	575	767	75.0	
## Romain Saïss	2	1437	1808	79.5	
## Romain Thomas	0	1471	1706	86.2	
## Sadio Mané	0	818	1100	74.4	
## Salis Abdul Samed	0	1535	1701	90.2	
## Stefan Posch	2	1134	1416	80.1	
## Tyler Adams	2	794	918	86.5	
## Wout Faes	2	1254	1472	85.2	
##					
	Key Passes	Position2.y	OVR	Overall Percentile	
## Amine Gouiri	49	FWMF	78	79	2
## Anthony Modeste	20	FW	72	79	3
## Antonio Candreva	78	MFFW	79	80	1
## Arkadiusz Reca	13	DF	70	72	4
## Arnaud Kalimuendo	21	FW	73	76	3
## Conor Coady	3	DF	79	79	1
## David Raum	83	DFFW	73	81	3
## Dedryck Boyata	5	DF	78	76	2
## Dominik Kohr	10	MF	75	76	2
## Erling Haaland	23	FW	88	88	1
## Ethan Ampadu	15	MFDF	68	73	4

## Francesco Acerbi	5	DF	83	82	1
## Gianluca Caprari	63	MFFW	75	78	2
## Gianluca Scamacca	25	FW	74	80	3
## Giovanni Simeone	24	FW	75	78	2
## Hannibal Mejbri	0	FW	62	64	4
## Harry Winks	11	MF	77	76	2
## Houboulang Mendes	13	DF	67	71	4
## Ilaix Moriba	0	MF	73	73	3
## Jan Bednarek	6	DF	76	76	2
## Jeff Hendrick	1	MF	74	71	3
## Jimmy Giraudon	3	DF	70	70	4
## Joel Pohjanpalo	0	FW	73	73	3
## Johan Mojica	29	DF	74	77	3
## Jonathan Clauss	74	DF	77	80	2
## Jordan Beyer	5	DF	70	74	4
## Jordan Veretout	55	MF	81	79	1
## Jules Koundé	17	DF	83	84	1
## Kalidou Koulibaly	11	DF	86	87	1
## Konstantinos Mavropanos	10	DF	73	78	3
## Leandro Paredes	7	MF	81	80	1
## Lorenzo Insigne	63	FW	86	84	1
## Luca Kilian	0	FW	69	74	4
## Mattia Viti	2	DF	64	71	4
## Maya Yoshida	7	DF	73	73	3
## Mehdi Chahiri	0	DF	69	69	4
## Nahuel Molina	39	DF	73	78	3
## Nayef Aguerd	4	DF	76	80	2
## Nemanja Matić	13	MF	79	79	1
## Nico Schlotterbeck	12	DF	72	82	3
## Niklas Stark	4	DF	76	75	2
## Nordi Mukiele	14	DFFW	81	79	1
## Paul Pogba	24	MFFW	87	85	1
## Paulo Dybala	38	FWMF	87	86	1
## Pervis Estupiñán	13	DF	79	79	1
## Robert Lewandowski	37	FW	92	91	1
## Romain Saïss	7	DF	78	77	2
## Romain Thomas	2	DF	76	75	2
## Sadio Mané	41	FW	89	89	1
## Salis Abdul Samed	17	MF	60	71	4
## Stefan Posch	5	DF	75	75	2
## Tyler Adams	7	MF	77	76	2
## Wout Faes	3	DF	73	77	3

```
# Score distance > 4
```

```
#robPCA$sd
```

```
# Orthogonal distance > 4
```

```
#robPCA$od
```

```
# Get tables of good and bad outliers to compare with original data
```

```
FinData[which(robPCA$sd > robPCA$cutoff.sd & robPCA$od > robPCA$cutoff.od), c("Name", "age", "Position")]
```

##	Name	age	Position	Market Value	OVR
## Anthony Modeste	Anthony Modeste	34	FW	3.0	72
## Antonio Candreva	Antonio Candreva	35	MF	2.5	79
## Conor Coady	Conor Coady	29	DF	25.0	79

##	David Raum	David Raum	24	DF	20.0	73
##	Erling Haaland	Erling Haaland	21	FW	150.0	88
##	Gianluca Scamacca	Gianluca Scamacca	23	FW	30.0	74
##	Giovanni Simeone	Giovanni Simeone	27	FW	17.0	75
##	Jan Bednarek	Jan Bednarek	26	DF	22.0	76
##	Jules Koundé	Jules Koundé	23	DF	60.0	83
##	Nico Schlotterbeck	Nico Schlotterbeck	22	DF	33.0	72
##	Robert Lewandowski	Robert Lewandowski	33	FW	45.0	92
##	Wout Faes	Wout Faes	24	DF	10.0	73

```
FinData[which((robPCA$sd < robPCA$cutoff.sd & robPCA$od > robPCA$cutoff.od) | (robPCA$sd > robPCA$cutoff
```

##		Name	age	Position	Market Value	OVR
##	Amine Gouiri	Amine Gouiri	22	FW	42.0	78
##	Arkadiusz Reca	Arkadiusz Reca	27	DF	3.0	70
##	Arnaud Kalimuendo	Arnaud Kalimuendo	20	FW	18.0	73
##	Dedryck Boyata	Dedryck Boyata	31	DF	3.5	78
##	Dominik Kohr	Dominik Kohr	28	MF	5.0	75
##	Ethan Ampadu	Ethan Ampadu	21	MF	13.0	68
##	Francesco Acerbi	Francesco Acerbi	34	DF	4.0	83
##	Gianluca Caprari	Gianluca Caprari	28	MF	10.0	75
##	Hannibal Mejbri	Hannibal Mejbri	19	FW	6.0	62
##	Harry Winks	Harry Winks	26	MF	15.0	77
##	Houboulang Mendes	Houboulang Mendes	24	DF	3.0	67
##	Ilaix Moriba	Ilaix Moriba	19	MF	9.0	73
##	Jeff Hendrick	Jeff Hendrick	30	MF	5.0	74
##	Jimmy Giraudon	Jimmy Giraudon	30	DF	1.5	70
##	Joel Pohjanpalo	Joel Pohjanpalo	27	FW	2.5	73
##	Johan Mojica	Johan Mojica	30	DF	5.0	74
##	Jonathan Clauss	Jonathan Clauss	29	DF	15.0	77
##	Jordan Beyer	Jordan Beyer	22	DF	4.5	70
##	Jordan Veretout	Jordan Veretout	29	MF	17.0	81
##	Kalidou Koulibaly	Kalidou Koulibaly	31	DF	35.0	86
##	Konstantinos Mavropanos	Konstantinos Mavropanos	24	DF	15.0	73
##	Leandro Paredes	Leandro Paredes	28	MF	17.0	81
##	Lorenzo Insigne	Lorenzo Insigne	31	FW	25.0	86
##	Luca Kilian	Luca Kilian	22	FW	4.5	69
##	Mattia Viti	Mattia Viti	20	DF	7.0	64
##	Maya Yoshida	Maya Yoshida	33	DF	1.5	73
##	Mehdi Chahiri	Mehdi Chahiri	25	DF	1.2	69
##	Nahuel Molina	Nahuel Molina	24	DF	20.0	73
##	Nayef Aguerd	Nayef Aguerd	26	DF	12.0	76
##	Nemanja Matić	Nemanja Matić	33	MF	5.0	79
##	Niklas Stark	Niklas Stark	27	DF	6.5	76
##	Nordi Mukiele	Nordi Mukiele	24	DF	20.0	81
##	Paul Pogba	Paul Pogba	29	MF	48.0	87
##	Paulo Dybala	Paulo Dybala	28	FW	35.0	87
##	Pervis Estupiñán	Pervis Estupiñán	24	DF	20.0	79
##	Romain Saïss	Romain Saïss	32	DF	8.0	78
##	Romain Thomas	Romain Thomas	34	DF	1.0	76
##	Sadio Mané	Sadio Mané	30	FW	70.0	89
##	Salis Abdul Samed	Salis Abdul Samed	22	MF	3.0	60
##	Stefan Posch	Stefan Posch	25	DF	10.0	75
##	Tyler Adams	Tyler Adams	23	MF	17.0	77



```
FinData[which(robPCA$sd > robPCA$cutoff.sd & robPCA$sod < robPCA$cutoff.od),c("Name", "age", "Position",
```

##		Name	age	Position	Market	Value	OVR
##	Amine Gouiri	Amine Gouiri	22	FW		42.0	78
##	Arkadiusz Reca	Arkadiusz Reca	27	DF		3.0	70
##	Dedryck Boyata	Dedryck Boyata	31	DF		3.5	78
##	Francesco Acerbi	Francesco Acerbi	34	DF		4.0	83
##	Gianluca Caprari	Gianluca Caprari	28	MF		10.0	75
##	Hannibal Mejbri	Hannibal Mejbri	19	FW		6.0	62
##	Harry Winks	Harry Winks	26	MF		15.0	77
##	Houboulang Mendes	Houboulang Mendes	24	DF		3.0	67
##	Ilaix Moriba	Ilaix Moriba	19	MF		9.0	73
##	Jeff Hendrick	Jeff Hendrick	30	MF		5.0	74
##	Jimmy Giraudon	Jimmy Giraudon	30	DF		1.5	70
##	Joel Pohjanpalo	Joel Pohjanpalo	27	FW		2.5	73
##	Johan Mojica	Johan Mojica	30	DF		5.0	74
##	Jordan Beyer	Jordan Beyer	22	DF		4.5	70
##	Jordan Veretout	Jordan Veretout	29	MF		17.0	81
##	Kalidou Koulibaly	Kalidou Koulibaly	31	DF		35.0	86
##	Konstantinos Mavropanos	Konstantinos Mavropanos	24	DF		15.0	73
##	Leandro Paredes	Leandro Paredes	28	MF		17.0	81
##	Lorenzo Insigne	Lorenzo Insigne	31	FW		25.0	86
##	Luca Kilian	Luca Kilian	22	FW		4.5	69
##	Mattia Viti	Mattia Viti	20	DF		7.0	64
##	Maya Yoshida	Maya Yoshida	33	DF		1.5	73
##	Mehdi Chahiri	Mehdi Chahiri	25	DF		1.2	69
##	Nahuel Molina	Nahuel Molina	24	DF		20.0	73
##	Nayef Aguerd	Nayef Aguerd	26	DF		12.0	76
##	Nemanja Matić	Nemanja Matić	33	MF		5.0	79
##	Niklas Stark	Niklas Stark	27	DF		6.5	76
##	Nordi Mukiele	Nordi Mukiele	24	DF		20.0	81
##	Paulo Dybala	Paulo Dybala	28	FW		35.0	87
##	Pervis Estupiñán	Pervis Estupiñán	24	DF		20.0	79
##	Romain Saïss	Romain Saïss	32	DF		8.0	78
##	Romain Thomas	Romain Thomas	34	DF		1.0	76
##	Sadio Mané	Sadio Mané	30	FW		70.0	89
##	Stefan Posch	Stefan Posch	25	DF		10.0	75
##	Tyler Adams	Tyler Adams	23	MF		17.0	77

```
FinData[which(robPCA$sd < robPCA$cutoff.sd & robPCA$sod < robPCA$cutoff.od),]
```

##		Name	age	Market	Value
##	Aaron Connolly	Aaron Connolly	22		6.0
##	Aaron Hickey	Aaron Hickey	20		18.0
##	Aaron Ramsey	Aaron Ramsey	31		3.0
##	Abdou Diallo	Abdou Diallo	26		18.0
##	Adam Ounas	Adam Ounas	25		7.0
##	Ademola Lookman	Ademola Lookman	24		10.0
##	Adnan Januzaj	Adnan Januzaj	27		12.0
##	Ainsley Maitland-Niles	Ainsley Maitland-Niles	25		10.0
##	Akim Zedadka	Akim Zedadka	27		4.0
##	Alessandro Florenzi	Alessandro Florenzi	31		5.5
##	Alessio Romagnoli	Alessio Romagnoli	27		17.0
##	Alexander Isak	Alexander Isak	22		30.0

## Alexandre Lacazette	Alexandre Lacazette	31	15.0
## Alexis Claude-Maurice	Alexis Claude-Maurice	24	6.0
## Alexis Sánchez	Alexis Sánchez	33	3.5
## Amadou Diawara	Amadou Diawara	25	6.0
## Amadou Onana	Amadou Onana	20	10.0
## Amine Harit	Amine Harit	25	10.0
## Anderson Lucoqui	Anderson Lucoqui	25	1.8
## Andi Zeqiri	Andi Zeqiri	23	2.3
## Andrea Belotti	Andrea Belotti	28	20.0
## Andrea La Mantia	Andrea La Mantia	31	1.3
## Andrea Petagna	Andrea Petagna	27	12.0
## Andrea Pinamonti	Andrea Pinamonti	23	20.0
## Andreas Christensen	Andreas Christensen	26	35.0
## Andreas Voglsammer	Andreas Voglsammer	30	1.2
## Andriy Yarmolenko	Andriy Yarmolenko	32	2.5
## Ángel Di María	Ángel Di María	34	12.0
## Angelo Fulgini	Angelo Fulgini	25	12.0
## Anthony Caci	Anthony Caci	25	7.0
## Antonio Rüdiger	Antonio Rüdiger	29	40.0
## Anwar El Ghazi	Anwar El Ghazi	27	9.0
## Arkadiusz Milik	Arkadiusz Milik	28	16.0
## Armando Izzo	Armando Izzo	30	2.8
## Arne Maier	Arne Maier	23	5.5
## Arthur Theate	Arthur Theate	22	15.0
## Aster Vranckx	Aster Vranckx	19	10.0
## Axel Witsel	Axel Witsel	33	4.0
## Aymen Barkok	Aymen Barkok	24	1.8
## Ben Davies	Ben Davies	26	2.5
## Bertrand Traoré	Bertrand Traoré	26	16.0
## Billy Gilmour	Billy Gilmour	21	12.0
## Boubacar Kamara	Boubacar Kamara	22	25.0
## Boulaye Dia	Boulaye Dia	25	12.0
## Brandon Soppy	Brandon Soppy	20	5.0
## Breel Embolo	Breel Embolo	25	15.0
## Brian Brobbey	Brian Brobbey	20	9.0
## Bryan Reynolds	Bryan Reynolds	21	3.5
## Callum Hudson-Odoi	Callum Hudson-Odoi	21	25.0
## Calvin Stengs	Calvin Stengs	23	13.0
## Cédric Hountondji	Cédric Hountondji	28	3.0
## Cengiz Ünder	Cengiz Ünder	24	22.0
## Cenk Tosun	Cenk Tosun	31	2.0
## Cheick Doucouré	Cheick Doucouré	22	15.0
## Cheikhou Kouyaté	Cheikhou Kouyaté	32	4.0
## Chris Richards	Chris Richards	22	7.5
## Christian Benteke	Christian Benteke	31	6.0
## Christian Eriksen	Christian Eriksen	30	20.0
## Ciaran Clark	Ciaran Clark	32	1.8
## Clément Lenglet	Clément Lenglet	27	12.0
## Colin Dagba	Colin Dagba	23	7.0
## Corentin Jean	Corentin Jean	26	1.2
## Corentin Tolisso	Corentin Tolisso	27	15.0
## Cristian Romero	Cristian Romero	24	48.0
## Dan Ndoye	Dan Ndoye	21	4.0
## Daniel James	Daniel James	24	18.0

## Daniel Maldini	Daniel Maldini	20	2.0
## Daniel Wass	Daniel Wass	33	6.0
## Danny da Costa	Danny da Costa	28	2.3
## David Nemeth	David Nemeth	21	2.3
## Dele Alli	Dele Alli	26	16.0
## Denis Cheryshev	Denis Cheryshev	31	2.5
## Denis Vavro	Denis Vavro	26	3.0
## Denis Zakaria	Denis Zakaria	25	27.0
## Diego Lainez	Diego Lainez	22	2.5
## Divock Origi	Divock Origi	27	12.0
## Dominique Heintz	Dominique Heintz	28	2.5
## Dries Mertens	Dries Mertens	35	4.0
## Dwight Gayle	Dwight Gayle	32	1.5
## Dylan Chambost	Dylan Chambost	24	1.2
## Ebrima Colley	Ebrima Colley	22	3.2
## Eddie Salcedo	Eddie Salcedo	20	3.5
## Edinson Cavani	Edinson Cavani	35	4.0
## El Bilal Touré	El Bilal Touré	20	6.5
## Enzo Ebose	Enzo Ebose	23	2.0
## Eric Bailly	Eric Bailly	28	6.0
## Erick Cabaco	Erick Cabaco	27	1.8
## Erik Durm	Erik Durm	30	1.2
## Erik Thommy	Erik Thommy	27	1.8
## Evann Guessand	Evann Guessand	21	3.0
## Fabio Depaoli	Fabio Depaoli	25	2.8
## Federico Bernardeschi	Federico Bernardeschi	28	10.0
## Federico Bonazzoli	Federico Bonazzoli	25	5.0
## Federico Chiesa	Federico Chiesa	24	65.0
## Federico Fernández	Federico Fernández	33	1.5
## Filippo Melegoni	Filippo Melegoni	23	2.0
## Flavius Daniliuc	Flavius Daniliuc	21	8.0
## Florent Mollet	Florent Mollet	30	6.0
## Francesco Caputo	Francesco Caputo	34	2.5
## Francesco Di Mariano	Francesco Di Mariano	26	2.0
## Gaëtan Laborde	Gaëtan Laborde	28	18.0
## Gareth Bale	Gareth Bale	32	3.0
## Georginio Wijnaldum	Georginio Wijnaldum	31	18.0
## Ghislain Konan	Ghislain Konan	26	7.0
## Giacomo Raspadori	Giacomo Raspadori	22	28.0
## Gianluca Frabotta	Gianluca Frabotta	23	2.0
## Gideon Mensah	Gideon Mensah	24	2.5
## Giorgio Chiellini	Giorgio Chiellini	37	1.5
## Giovanni Lo Celso	Giovanni Lo Celso	26	22.0
## Giulian Biancone	Giulian Biancone	22	4.0
## Giulio Maggiore	Giulio Maggiore	24	8.5
## Gonzalo Escalante	Gonzalo Escalante	29	2.5
## Grischä Prömel	Grischa Prömel	27	7.5
## Hamza Choudhury	Hamza Choudhury	24	4.0
## Héctor Herrera	Héctor Herrera	32	5.0
## Henrikh Mkhitaryan	Henrikh Mkhitaryan	33	8.0
## Ignatius Ganago	Ignatius Ganago	23	5.0
## Ilan Kebbal	Ilan Kebbal	24	4.5
## Issa Diop	Issa Diop	25	10.0
## Jack Stephens	Jack Stephens	28	7.0

## Jakub Jankto	Jakub Jankto	26	4.0
## Jamie Shackleton	Jamie Shackleton	22	2.5
## Janik Haberer	Janik Haberer	28	3.5
## Janis Antiste	Janis Antiste	20	4.0
## Jannes Horn	Jannes Horn	25	1.8
## Jarrad Branthwaite	Jarrad Branthwaite	20	3.0
## Jason Berthomier	Jason Berthomier	32	1.2
## Javairô Dilrosun	Javairô Dilrosun	24	6.0
## Jean-Eudes Aholou	Jean-Eudes Aholou	28	3.0
## Jean-Kévin Augustin	Jean-Kévin Augustin	25	1.5
## Jean-Philippe Gbamin	Jean-Philippe Gbamin	26	9.0
## Jens Petter Hauge	Jens Petter Hauge	22	8.0
## Jens Stryger Larsen	Jens Stryger Larsen	31	2.0
## Jesse Lingard	Jesse Lingard	29	18.0
## Jessic Ngankam	Jessic Ngankam	21	2.0
## Jimmy Cabot	Jimmy Cabot	28	5.0
## Joaquín Correa	Joaquín Correa	27	23.0
## Jonas Martin	Jonas Martin	32	2.5
## Jonathan Silva	Jonathan Silva	28	1.8
## Jonjoe Kenny	Jonjoe Kenny	25	4.0
## Jordan Amavi	Jordan Amavi	28	6.0
## Jordan Torunarigha	Jordan Torunarigha	24	5.0
## Julian Draxler	Julian Draxler	28	18.0
## Junior Dina Ebimbe	Junior Dina Ebimbe	21	5.0
## Junior Sambia	Junior Sambia	25	4.5
## Jurgen Ekkelenkamp	Jurgen Ekkelenkamp	22	3.5
## Justin Kluivert	Justin Kluivert	23	15.0
## Calvin Phillips	Calvin Phillips	26	50.0
## Kasper Dolberg	Kasper Dolberg	24	17.0
## Keinan Davis	Keinan Davis	24	2.5
## Kevin Mbabu	Kevin Mbabu	27	9.0
## Kevin Stöger	Kevin Stöger	28	1.6
## Kevin Strootman	Kevin Strootman	32	1.5
## Ki-Jana Hoever	Ki-Jana Hoever	20	6.0
## Kingsley Ehizibue	Kingsley Ehizibue	27	1.3
## Kortney Hause	Kortney Hause	27	4.0
## Kristoffer Askilldsen	Kristoffer Askilldsen	21	1.8
## Landry Dimata	Landry Dimata	24	2.2
## László Bénes	László Bénes	24	3.0
## Leander Dendoncker	Leander Dendoncker	27	28.0
## Leonardo Mancuso	Leonardo Mancuso	30	2.7
## Louis Schaub	Louis Schaub	27	1.8
## Luca Pellegrini	Luca Pellegrini	23	9.0
## Lucas Alario	Lucas Alario	29	8.0
## Lucas Ocampos	Lucas Ocampos	28	25.0
## Lucas Perrin	Lucas Perrin	23	5.0
## Lucas Torreira	Lucas Torreira	26	20.0
## Ludwig Augustinsson	Ludwig Augustinsson	28	5.0
## Luis Binks	Luis Binks	20	1.5
## Lukas Klünter	Lukas Klünter	26	1.2
## Luuk de Jong	Luuk de Jong	31	4.0
## Malang Sarr	Malang Sarr	23	8.0
## Mamadou Coulibaly	Mamadou Coulibaly	23	2.5
## Manuel Akanji	Manuel Akanji	27	30.0

## Marco John	Marco John	20	2.5
## Marcus Forss	Marcus Forss	23	4.0
## Marcus Ingvarsten	Marcus Ingvarsten	26	2.5
## Marko Pjaca	Marko Pjaca	27	3.5
## Martin Braithwaite	Martin Braithwaite	31	6.0
## Mateo Klimowicz	Mateo Klimowicz	22	2.0
## Mathías Olivera	Mathías Olivera	24	15.0
## Mathias Pereira Lage	Mathias Pereira Lage	25	2.5
## Matija Nastasić	Matija Nastasić	29	1.5
## Matt Miazga	Matt Miazga	27	2.0
## Matt Targett	Matt Targett	26	17.0
## Mattéo Guendouzi	Mattéo Guendouzi	23	25.0
## Matteo Lovato	Matteo Lovato	22	7.0
## Matteo Pessina	Matteo Pessina	25	16.0
## Matthew Hoppe	Matthew Hoppe	21	1.0
## Matthias Ginter	Matthias Ginter	28	18.0
## Matthijs de Ligt	Matthijs de Ligt	22	70.0
## Mattia Zaccagni	Mattia Zaccagni	27	18.0
## Mattias Svanberg	Mattias Svanberg	23	15.0
## Maxim Leitsch	Maxim Leitsch	24	5.0
## Mehdi Bourabia	Mehdi Bourabia	30	0.9
## Merih Demiral	Merih Demiral	24	25.0
## Mihailo Ristić	Mihailo Ristić	26	3.5
## Mikkel Damsgaard	Mikkel Damsgaard	22	15.0
## Morgan Gibbs-White	Morgan Gibbs-White	22	11.0
## Moritz Jenz	Moritz Jenz	23	2.5
## Morten Thorsby	Morten Thorsby	26	7.0
## Moussa Doumbia	Moussa Doumbia	27	1.2
## Munir El Haddadi	Munir El Haddadi	26	8.0
## Nathan Tella	Nathan Tella	23	1.8
## Neal Maupay	Neal Maupay	26	18.0
## Neco Williams	Neco Williams	21	8.0
## Nehuén Pérez	Nehuén Pérez	22	6.0
## Nemanja Radonjić	Nemanja Radonjić	26	4.0
## Nicolas Pépé	Nicolas Pépé	27	25.0
## Nicolò Casale	Nicolò Casale	24	7.5
## Nicolò Rovella	Nicolò Rovella	20	10.0
## Niklas Süle	Niklas Süle	26	35.0
## Oleksandr Zinchenko	Oleksandr Zinchenko	25	25.0
## Omar Richards	Omar Richards	24	7.0
## Orbelín Pineda	Orbelín Pineda	26	4.0
## Orel Mangala	Orel Mangala	24	15.0
## Oussama Idrissi	Oussama Idrissi	26	4.0
## Ozan Kabak	Ozan Kabak	22	10.0
## Patrick Berg	Patrick Berg	24	4.5
## Patrick Cutrone	Patrick Cutrone	24	3.5
## Paul Nebel	Paul Nebel	19	1.3
## Philipp Förster	Philipp Förster	27	2.5
## Pierre-Yves Hamel	Pierre-Yves Hamel	28	1.2
## Pietro Pellegri	Pietro Pellegri	21	4.5
## Ragnar Ache	Ragnar Ache	23	1.5
## Raheem Sterling	Raheem Sterling	27	70.0
## Randal Kolo Muani	Randal Kolo Muani	23	16.0
## Remo Freuler	Remo Freuler	30	20.0

## Renato Steffen	Renato Steffen	30	2.0	
## Rey Manaj	Rey Manaj	25	1.5	
## Ricardo Pepi	Ricardo Pepi	19	9.0	
## Riccardo Calafiori	Riccardo Calafiori	20	3.5	
## Roberto Piccoli	Roberto Piccoli	21	4.0	
## Rolando Mandragora	Rolando Mandragora	25	10.0	
## Romelu Lukaku	Romelu Lukaku	29	70.0	
## Ronaël Pierre-Gabriel	Ronaël Pierre-Gabriel	24	5.0	
## Salih Özcan	Salih Özcan	24	13.0	
## Sam Lammers	Sam Lammers	25	3.0	
## Samuel Umtiti	Samuel Umtiti	28	2.0	
## Samuele Ricci	Samuele Ricci	20	12.0	
## Santiago Ascacibar	Santiago Ascacibar	25	6.5	
## Sargis Adamyan	Sargis Adamyan	29	3.5	
## Sebastian Polter	Sebastian Polter	31	2.2	
## Sebastiano Luperto	Sebastiano Luperto	25	3.0	
## Sergiño Dest	Sergiño Dest	21	18.0	
## Shane Duffy	Shane Duffy	30	5.0	
## Simon Banza	Simon Banza	25	5.0	
## Sofian Kiyine	Sofian Kiyine	24	2.1	
## Sofiane Diop	Sofiane Diop	22	20.0	
## Stefano Sensi	Stefano Sensi	26	7.0	
## Steffen Tigges	Steffen Tigges	23	1.5	
## Stéphane Bahoken	Stéphane Bahoken	30	4.0	
## Steven Bergwijn	Steven Bergwijn	24	18.0	
## Sven Botman	Sven Botman	22	30.0	
## Taiwo Awoniyi	Taiwo Awoniyi	24	20.0	
## Takefusa Kubo	Takefusa Kubo	21	7.5	
## Takumi Minamino	Takumi Minamino	27	12.0	
## Tanguy Nianzou	Tanguy Nianzou	20	9.0	
## Tariqe Fosu	Tariqe Fosu	26	2.0	
## Thilo Kehrer	Thilo Kehrer	25	22.0	
## Thomas Monconduit	Thomas Monconduit	31	1.5	
## Timo Werner	Timo Werner	26	35.0	
## Tino Kadewere	Tino Kadewere	26	6.0	
## Uroš Račić	Uroš Račić	24	7.0	
## Vedat Muriqi	Vedat Muriqi	28	7.0	
## Wesley Fofana	Wesley Fofana	21	40.0	
## Willy Boly	Willy Boly	31	6.0	
## Xaver Schlager	Xaver Schlager	24	27.0	
## Xavi Simons	Xavi Simons	19	4.0	
## Yan Valery	Yan Valery	23	2.5	
## Yangel Herrera	Yangel Herrera	24	14.0	
## Youssouf Koné	Youssouf Koné	27	2.0	
## Yves Bissouma	Yves Bissouma	25	35.0	
## Zinho Vanheusden	Zinho Vanheusden	22	8.0	
##	Transfer Fee (Millions)	Origin	Position	Club
## Aaron Connolly	0.00	IRL	FW	Brighton
## Aaron Hickey	16.50	SCO	DF	Bologna
## Aaron Ramsey	0.00	WAL	MF	Juventus
## Abdou Diallo	1.50	SEN	DF	Paris S-G
## Adam Ounas	3.00	ALG	MF	Napoli
## Ademola Lookman	9.00	NGA	FW	Leicester City
## Adnan Januzaj	0.00	BEL	FW	Real Sociedad

## Ainsley Maitland-Niles	0.00	ENG	MF	Arsenal
## Akim Zedadka	0.00	ALG	DF	Clermont Foot
## Alessandro Florenzi	2.70	ITA	DF	Milan
## Alessio Romagnoli	0.00	ITA	DF	Milan
## Alexander Isak	70.00	SWE	FW	Real Sociedad
## Alexandre Lacazette	0.00	FRA	FW	Arsenal
## Alexis Claude-Maurice	0.00	FRA	MF	Nice
## Alexis Sánchez	0.00	CHI	FW	Inter
## Amadou Diawara	1.50	GUI	MF	Roma
## Amadou Onana	35.00	BEL	MF	Lille
## Amine Harit	0.00	MAR	FW	Marseille
## Anderson Lucoqui	0.00	ANG	DF	Mainz 05
## Andi Zeqiri	0.00	SUI	FW	Augsburg
## Andrea Belotti	0.00	ITA	FW	Torino
## Andrea La Mantia	0.00	ITA	FW	Empoli
## Andrea Petagna	2.50	ITA	FW	Napoli
## Andrea Pinamonti	0.00	ITA	FW	Empoli
## Andreas Christensen	0.00	DEN	DF	Chelsea
## Andreas Voglsammer	0.00	GER	FW	Union Berlin
## Andriy Yarmolenko	0.00	UKR	FW	West Ham
## Ángel Di María	0.00	ARG	FW	Paris S-G
## Angelo Fulgini	6.00	FRA	MF	Angers
## Anthony Caci	0.00	FRA	DF	Strasbourg
## Antonio Rüdiger	0.00	GER	DF	Chelsea
## Anwar El Ghazi	2.50	NED	FW	Everton
## Arkadiusz Milik	0.90	POL	FW	Marseille
## Armando Izzo	0.00	ITA	DF	Torino
## Arne Maier	5.00	GER	MF	Augsburg
## Arthur Theate	19.00	BEL	DF	Bologna
## Aster Vranckx	2.00	BEL	MF	Wolfsburg
## Axel Witsel	0.00	BEL	MF	Dortmund
## Aymen Barkok	0.00	MAR	MF	Eint Frankfurt
## Ben Davies	4.70	WAL	DF	Tottenham
## Bertrand Traoré	0.00	BFA	MF	Aston Villa
## Billy Gilmour	10.40	SCO	MF	Norwich City
## Boubacar Kamara	0.00	FRA	MF	Marseille
## Boulaye Dia	1.00	SEN	FW	Villarreal
## Brandon Soppy	9.00	FRA	DF	Udinese
## Breel Embolo	12.50	SUI	FW	M'Gladbach
## Brian Brobbey	16.35	NED	FW	RB Leipzig
## Bryan Reynolds	0.00	USA	DF	Roma
## Callum Hudson-Odoi	0.00	ENG	MF	Chelsea
## Calvin Stengs	0.00	NED	MF	Nice
## Cédric Hountondji	2.00	BEN	DF	Clermont Foot
## Cengiz Ünder	8.40	TUR	FW	Marseille
## Cenk Tosun	0.00	TUR	MF	Everton
## Cheick Doucouré	22.60	MLI	MF	Lens
## Cheikhou Kouyaté	0.00	SEN	MF	Crystal Palace
## Chris Richards	12.00	USA	DF	Bayern Munich
## Christian Benteke	5.46	BEL	FW	Crystal Palace
## Christian Eriksen	0.00	DEN	MF	Brentford
## Ciaran Clark	0.00	IRL	DF	Newcastle Utd
## Clément Lenglet	0.00	FRA	DF	Barcelona
## Colin Dagba	0.00	FRA	DF	Paris S-G

## Corentin Jean	1.09	FRA	FW	Lens
## Corentin Tolisso	0.00	FRA	MF	Bayern Munich
## Cristian Romero	50.00	ARG	DF	Tottenham
## Dan Ndoye	0.00	SUI	FW	Nice
## Daniel James	0.00	WAL	FW	Leeds United
## Daniel Maldini	0.00	ITA	MF	Milan
## Daniel Wass	1.75	DEN	DF	Atlético Madrid
## Danny da Costa	0.00	GER	DF	Eint Frankfurt
## David Nemeth	1.30	AUT	DF	Mainz 05
## Dele Alli	0.00	ENG	MF	Tottenham
## Denis Cheryshev	0.00	RUS	MF	Valencia
## Denis Vavro	4.50	SVK	DF	Lazio
## Denis Zakaria	3.00	SUI	MF	Juventus
## Diego Lainez	0.00	MEX	FW	Betis
## Divock Origi	0.00	BEL	FW	Liverpool
## Dominique Heintz	0.00	GER	DF	Freiburg
## Dries Mertens	0.00	BEL	FW	Napoli
## Dwight Gayle	0.00	ENG	FW	Newcastle Utd
## Dylan Chambost	0.00	FRA	MF	Troyes
## Ebrima Colley	0.00	GAM	FW	Spezia
## Eddie Salcedo	0.00	ITA	MF	Spezia
## Edinson Cavani	0.00	URU	FW	Manchester Utd
## El Bilal Touré	10.00	MLI	FW	Reims
## Enzo Ebose	4.00	CMR	DF	Angers
## Eric Bailly	2.00	CIV	DF	Manchester Utd
## Erick Cabaco	0.00	URU	DF	Getafe
## Erik Durm	0.00	GER	DF	Eint Frankfurt
## Erik Thommy	0.00	GER	FW	Stuttgart
## Evann Guessand	0.00	FRA	FW	Nice
## Fabio Depaoli	0.00	ITA	MF	Sampdoria
## Federico Bernardeschi	0.00	ITA	MF	Juventus
## Federico Bonazzoli	5.00	ITA	FW	Salernitana
## Federico Chiesa	40.00	ITA	MF	Juventus
## Federico Fernández	0.00	ARG	DF	Newcastle Utd
## Filippo Melegoni	4.00	ITA	MF	Genoa
## Flavius Daniliuc	5.00	AUT	DF	Nice
## Florent Mollet	0.50	FRA	FW	Montpellier
## Francesco Caputo	3.50	ITA	FW	Sassuolo
## Francesco Di Mariano	1.00	ITA	FW	Venezia
## Gaëtan Laborde	15.00	FRA	FW	Montpellier
## Gareth Bale	0.00	WAL	FW	Real Madrid
## Georginio Wijnaldum	0.00	NED	MF	Paris S-G
## Ghislain Konan	0.00	CIV	DF	Reims
## Giacomo Raspadori	5.00	ITA	MF	Sassuolo
## Gianluca Frabotta	0.00	ITA	DF	Hellas Verona
## Gideon Mensah	0.00	GHA	DF	Bordeaux
## Giorgio Chiellini	0.00	ITA	DF	Juventus
## Giovanni Lo Celso	0.00	ARG	MF	Tottenham
## Giulian Biancone	10.00	FRA	DF	Troyes
## Giulio Maggiore	4.50	ITA	MF	Spezia
## Gonzalo Escalante	0.00	ARG	MF	Lazio
## Grischa Prömel	0.00	GER	MF	Union Berlin
## Hamza Choudhury	0.00	ENG	DF	Leicester City
## Héctor Herrera	0.00	MEX	MF	Atlético Madrid



## Henrikh Mkhitaryan	0.00	ARM	MF	Roma
## Ignatius Ganago	4.40	CMR	FW	Lens
## Ilan Kebbal	0.00	ALG	MF	Reims
## Issa Diop	17.80	FRA	DF	West Ham
## Jack Stephens	0.00	ENG	DF	Southampton
## Jakub Jankto	0.00	CZE	DF	Getafe
## Jamie Shackleton	0.00	ENG	DF	Leeds United
## Janik Haberer	0.00	GER	MF	Freiburg
## Janis Antiste	0.00	FRA	FW	Spezia
## Jannes Horn	0.00	GER	DF	Köln
## Jarrad Branthwaite	0.00	ENG	DF	Everton
## Jason Berthomier	0.00	FRA	MF	Clermont Foot
## Javairô Dilrosun	4.00	NED	MF	Bordeaux
## Jean-Eudes Aholou	3.00	CIV	MF	Strasbourg
## Jean-Kévin Augustin	0.00	FRA	FW	Nantes
## Jean-Philippe Gbamin	0.00	CIV	MF	Everton
## Jens Petter Hauge	10.00	NOR	MF	Eint Frankfurt
## Jens Stryger Larsen	0.00	DEN	DF	Udinese
## Jesse Lingard	0.00	ENG	FW	Manchester Utd
## Jessic Ngankam	1.50	GER	FW	Greuther Fürth
## Jimmy Cabot	2.00	FRA	DF	Angers
## Joaquín Correa	23.60	ARG	FW	Inter
## Jonas Martin	0.00	FRA	MF	Rennes
## Jonathan Silva	0.00	ARG	DF	Getafe
## Jonjoe Kenny	0.00	ENG	DF	Everton
## Jordan Amavi	0.00	FRA	DF	Nice
## Jordan Torunarigha	3.50	GER	DF	Hertha BSC
## Julian Draxler	2.50	GER	FW	Paris S-G
## Junior Dina Ebimbe	0.00	FRA	MF	Paris S-G
## Junior Sambia	0.00	FRA	DF	Montpellier
## Jurgen Ekkelenkamp	5.00	NED	MF	Hertha BSC
## Justin Kluivert	0.00	NED	MF	Nice
## Calvin Phillips	49.00	ENG	MF	Leeds United
## Kasper Dolberg	0.00	DEN	FW	Nice
## Keinan Davis	0.00	ENG	FW	Aston Villa
## Kevin Mbabu	5.50	SUI	DF	Wolfsburg
## Kevin Stöger	0.00	AUT	MF	Mainz 05
## Kevin Strootman	0.00	NED	MF	Cagliari
## Ki-Jana Hoever	0.00	NED	DF	Wolves
## Kingsley Ehizibue	1.00	NED	DF	Köln
## Kortney Hause	0.00	ENG	DF	Aston Villa
## Kristoffer Asklidsen	0.00	NOR	MF	Sampdoria
## Landry Dimata	0.00	BEL	FW	Espanyol
## László Bénéš	2.00	SVK	MF	M'Gladbach
## Leander Dendoncker	15.00	BEL	MF	Wolves
## Leonardo Mancuso	0.00	ITA	FW	Empoli
## Louis Schaub	0.00	AUT	MF	Köln
## Luca Pellegrini	0.00	ITA	DF	Juventus
## Lucas Alario	6.00	ARG	FW	Leverkusen
## Lucas Ocampos	4.00	ARG	FW	Sevilla
## Lucas Perrin	1.50	FRA	DF	Strasbourg
## Lucas Torreira	6.00	URU	MF	Fiorentina
## Ludwig Augustinsson	0.50	SWE	DF	Sevilla
## Luis Binks	0.00	ENG	DF	Bologna

## Lukas Klünter	0.00	GER	DF	Hertha BSC
## Luuk de Jong	3.00	NED	FW	Barcelona
## Malang Sarr	1.00	FRA	DF	Chelsea
## Mamadou Coulibaly	0.10	SEN	MF	Salernitana
## Manuel Akanji	17.50	SUI	DF	Dortmund
## Marco John	0.00	GER	DF	Hoffenheim
## Marcus Forss	3.60	FIN	FW	Brentford
## Marcus Ingvartsen	2.30	DEN	FW	Mainz 05
## Marko Pjaca	0.00	CRO	MF	Torino
## Martin Braithwaite	0.00	DEN	FW	Barcelona
## Mateo Klimowicz	0.00	GER	MF	Stuttgart
## Mathías Olivera	11.00	URU	DF	Getafe
## Mathias Pereira Lage	0.00	POR	DF	Angers
## Matija Nastasić	0.00	SRB	DF	Fiorentina
## Matt Miazga	0.00	USA	DF	Alavés
## Matt Targett	17.50	ENG	DF	Aston Villa
## Mattéo Guendouzi	11.00	FRA	MF	Marseille
## Matteo Lovato	7.00	ITA	DF	Cagliari
## Matteo Pessina	0.00	ITA	MF	Atalanta
## Matthew Hoppe	3.00	USA	FW	Mallorca
## Matthias Ginter	0.00	GER	DF	M'Gladbach
## Matthijs de Ligt	67.00	NED	DF	Juventus
## Mattia Zaccagni	7.10	ITA	MF	Hellas Verona
## Mattias Svanberg	9.00	SWE	MF	Bologna
## Maxim Leitsch	3.50	GER	DF	Bochum
## Mehdi Bourabia	1.50	MAR	MF	Spezia
## Merih Demiral	20.00	TUR	DF	Atalanta
## Mihailo Ristić	0.00	SRB	DF	Montpellier
## Mikkel Damsgaard	15.00	DEN	MF	Sampdoria
## Morgan Gibbs-White	29.50	ENG	DF	Wolves
## Moritz Jenz	0.00	GER	DF	Lorient
## Morten Thorsby	3.00	NOR	MF	Sampdoria
## Moussa Doumbia	0.00	MLI	FW	Reims
## Munir El Haddadi	0.00	MAR	FW	Sevilla
## Nathan Tella	0.00	ENG	MF	Southampton
## Neal Maupay	11.80	FRA	FW	Brighton
## Neco Williams	20.00	WAL	DF	Liverpool
## Nehuén Pérez	0.00	ARG	DF	Udinese
## Nemanja Radonjić	0.00	SRB	FW	Marseille
## Nicolas Pépé	0.00	CIV	FW	Arsenal
## Nicolò Casale	7.00	ITA	DF	Hellas Verona
## Nicolò Rovella	0.00	ITA	MF	Genoa
## Niklas Süle	0.00	GER	DF	Bayern Munich
## Oleksandr Zinchenko	35.00	UKR	DF	Manchester City
## Omar Richards	8.50	ENG	DF	Bayern Munich
## Orbelín Pineda	0.00	MEX	MF	Celta Vigo
## Orel Mangala	13.00	BEL	MF	Stuttgart
## Oussama Idrissi	0.00	MAR	MF	Cádiz
## Ozan Kabak	5.00	TUR	DF	Norwich City
## Patrick Berg	4.50	NOR	MF	Lens
## Patrick Cutrone	0.00	ITA	FW	Empoli
## Paul Nebel	0.00	GER	MF	Mainz 05
## Philipp Förster	0.50	GER	MF	Stuttgart
## Pierre-Yves Hamel	1.00	FRA	FW	Clermont Foot

## Pietro Pellegrini	5.00	ITA	FW	Milan
## Ragnar Ache	0.00	GER	MF	Eint Frankfurt
## Raheem Sterling	56.20	ENG	FW	Manchester City
## Randal Kolo Muani	0.00	FRA	FW	Nantes
## Remo Freuler	9.00	SUI	MF	Atalanta
## Renato Steffen	0.75	SUI	FW	Wolfsburg
## Rey Manaj	0.00	ALB	FW	Spezia
## Ricardo Pepi	0.50	USA	FW	Augsburg
## Riccardo Calafiori	1.00	ITA	DF	Genoa
## Roberto Piccoli	0.00	ITA	FW	Genoa
## Rolando Mandragora	8.20	ITA	MF	Torino
## Romelu Lukaku	8.00	BEL	FW	Chelsea
## Ronaël Pierre-Gabriel	0.00	FRA	DF	Brest
## Salih Özcan	5.00	TUR	MF	Köln
## Sam Lammers	0.00	NED	FW	Atalanta
## Samuel Umtiti	0.00	FRA	DF	Barcelona
## Samuele Ricci	8.50	ITA	MF	Torino
## Santiago Ascacibar	0.00	ARG	MF	Hertha BSC
## Sargis Adamyan	1.50	ARM	FW	Hoffenheim
## Sebastian Polter	1.50	GER	FW	Bochum
## Sebastiano Luperto	0.50	ITA	DF	Empoli
## Sergiño Dest	0.00	USA	DF	Barcelona
## Shane Duffy	0.00	IRL	DF	Brighton
## Simon Banza	3.00	FRA	FW	Lens
## Sofian Kiyine	0.00	MAR	MF	Venezia
## Sofiane Diop	22.00	FRA	MF	Monaco
## Stefano Sensi	0.00	ITA	MF	Inter
## Steffen Tigges	1.50	GER	FW	Dortmund
## Stéphane Bahoken	0.00	CMR	FW	Angers
## Steven Bergwijn	31.25	NED	FW	Tottenham
## Sven Botman	37.00	NED	DF	Lille
## Taiwo Awoniyi	20.50	NGA	FW	Union Berlin
## Takefusa Kubo	6.50	JPN	FW	Mallorca
## Takumi Minamino	15.00	JPN	FW	Liverpool
## Tanguy Nianzou	16.00	FRA	DF	Bayern Munich
## Tariqe Fosu	0.00	GHA	DF	Brentford
## Thilo Kehrer	12.00	GER	DF	Paris S-G
## Thomas Monconduit	0.50	FRA	MF	Lorient
## Timo Werner	20.00	GER	FW	Chelsea
## Tino Kadewere	0.40	ZIM	FW	Lyon
## Uroš Račić	0.00	SRB	MF	Valencia
## Vedat Muriqi	7.70	KVX	FW	Lazio
## Wesley Fofana	80.40	FRA	DF	Leicester City
## Willy Boly	2.60	CIV	DF	Wolves
## Xaver Schlager	12.00	AUT	MF	Wolfsburg
## Xavi Simons	0.00	NED	MF	Paris S-G
## Yan Valery	0.00	TUN	DF	Southampton
## Yangel Herrera	0.00	VEN	MF	Espanyol
## Youssouf Koné	0.00	MLI	DF	Troyes
## Yves Bissouma	29.20	MLI	MF	Brighton
## Zinho Vanheusden	0.00	BEL	DF	Genoa
##				
		League	Matches	Played Goals Assists
## Aaron Connolly		Premier League	4	0 0
## Aaron Hickey		Serie A	36	5 1

## Aaron Ramsey	Serie A	3	0	0
## Abdou Diallo	Ligue 1	12	0	1
## Adam Ounas	Serie A	15	0	0
## Ademola Lookman	Premier League	26	6	0
## Adnan Januzaj	La Liga	33	3	0
## Ainsley Maitland-Niles	Premier League	8	0	0
## Akim Zedadka	Ligue 1	38	0	3
## Alessandro Florenzi	Serie A	24	2	0
## Alessio Romagnoli	Serie A	19	1	0
## Alexander Isak	La Liga	32	6	2
## Alexandre Lacazette	Premier League	30	4	7
## Alexis Claude-Maurice	Ligue 1	10	0	2
## Alexis Sánchez	Serie A	27	5	2
## Amadou Diawara	Serie A	4	0	0
## Amadou Onana	Ligue 1	32	1	0
## Amine Harit	Ligue 1	23	4	4
## Anderson Lucoqui	Bundesliga	13	1	0
## Andi Zeqiri	Bundesliga	22	2	1
## Andrea Belotti	Serie A	22	8	1
## Andrea La Mantia	Serie A	18	2	0
## Andrea Petagna	Serie A	24	3	1
## Andrea Pinamonti	Serie A	36	13	2
## Andreas Christensen	Premier League	19	0	0
## Andreas Voglsammer	Bundesliga	32	2	1
## Andriy Yarmolenko	Premier League	19	1	0
## Ángel Di María	Ligue 1	26	5	7
## Angelo Fulgini	Ligue 1	36	5	4
## Anthony Caci	Ligue 1	37	1	3
## Antonio Rüdiger	Premier League	34	3	0
## Anwar El Ghazi	Premier League	2	0	0
## Arkadiusz Milik	Ligue 1	23	7	2
## Armando Izzo	Serie A	11	0	0
## Arne Maier	Bundesliga	29	1	6
## Arthur Theate	Serie A	31	2	1
## Aster Vranckx	Bundesliga	24	2	0
## Axel Witsel	Bundesliga	29	2	0
## Aymen Barkok	Bundesliga	5	0	0
## Ben Davies	Premier League	29	1	1
## Bertrand Traoré	Premier League	9	0	0
## Billy Gilmour	Premier League	24	0	1
## Boubacar Kamara	Ligue 1	34	1	0
## Boulaye Dia	La Liga	25	5	5
## Brandon Soppy	Serie A	28	0	0
## Breel Embolo	Bundesliga	29	9	3
## Brian Brobbey	Bundesliga	9	0	2
## Bryan Reynolds	Serie A	1	0	0
## Callum Hudson-Odoi	Premier League	15	1	2
## Calvin Stengs	Ligue 1	24	1	1
## Cédric Hountondji	Ligue 1	23	1	0
## Cengiz Ünder	Ligue 1	32	10	2
## Cenk Tosun	Premier League	1	0	0
## Cheick Doucouré	Ligue 1	34	1	4
## Cheikhou Kouyaté	Premier League	27	0	1
## Chris Richards	Bundesliga	1	0	0

## Christian Benteke	Premier League	25	4	1
## Christian Eriksen	Premier League	11	1	4
## Ciaran Clark	Premier League	13	0	1
## Clément Lenglet	La Liga	21	0	1
## Colin Dagba	Ligue 1	3	0	0
## Corentin Jean	Ligue 1	17	1	0
## Corentin Tolisso	Bundesliga	15	2	1
## Cristian Romero	Premier League	22	1	0
## Dan Ndoye	Ligue 1	3	0	1
## Daniel James	Premier League	32	4	4
## Daniel Maldini	Serie A	8	1	0
## Daniel Wass	La Liga	1	0	0
## Danny da Costa	Bundesliga	11	0	0
## David Nemeth	Bundesliga	6	0	0
## Dele Alli	Premier League	10	1	0
## Denis Cheryshev	La Liga	17	0	1
## Denis Vavro	Serie A	1	0	0
## Denis Zakaria	Serie A	9	1	1
## Diego Lainez	La Liga	7	0	0
## Divock Origi	Premier League	7	3	0
## Dominique Heintz	Bundesliga	1	0	0
## Dries Mertens	Serie A	30	11	1
## Dwight Gayle	Premier League	8	0	0
## Dylan Chambost	Ligue 1	19	0	1
## Ebrima Colley	Serie A	11	0	0
## Eddie Salcedo	Serie A	12	0	0
## Edinson Cavani	Premier League	15	2	1
## El Bilal Touré	Ligue 1	21	2	4
## Enzo Ebosse	Ligue 1	27	0	0
## Eric Bailly	Premier League	4	0	0
## Erick Cabaco	La Liga	10	0	1
## Erik Durm	Bundesliga	7	0	1
## Erik Thommy	Bundesliga	11	0	0
## Evann Guessand	Ligue 1	20	1	2
## Fabio Depaoli	Serie A	6	0	0
## Federico Bernardeschi	Serie A	28	1	3
## Federico Bonazzoli	Serie A	32	10	0
## Federico Chiesa	Serie A	14	2	2
## Federico Fernández	Premier League	7	0	0
## Filippo Melegoni	Serie A	25	1	0
## Flavius Daniliuc	Ligue 1	24	0	0
## Florent Mollet	Ligue 1	35	6	2
## Francesco Caputo	Serie A	2	0	1
## Francesco Di Mariano	Serie A	1	0	0
## Gaëtan Laborde	Ligue 1	4	3	0
## Gareth Bale	La Liga	5	1	0
## Georginio Wijnaldum	Ligue 1	31	1	3
## Ghislain Konan	Ligue 1	28	1	3
## Giacomo Raspadori	Serie A	36	10	4
## Gianluca Frabotta	Serie A	2	0	0
## Gideon Mensah	Ligue 1	23	0	2
## Giorgio Chiellini	Serie A	21	0	0
## Giovanni Lo Celso	Premier League	9	0	0
## Giulian Biancone	Ligue 1	33	1	2

## Giulio Maggiore	Serie A	35	2	3
## Gonzalo Escalante	Serie A	1	0	0
## Grischa Prömel	Bundesliga	29	8	1
## Hamza Choudhury	Premier League	6	0	0
## Héctor Herrera	La Liga	21	0	0
## Henrikh Mkhitaryan	Serie A	31	5	6
## Ignatius Ganago	Ligue 1	28	5	1
## Ilan Kebbal	Ligue 1	31	1	4
## Issa Diop	Premier League	13	0	1
## Jack Stephens	Premier League	11	0	0
## Jakub Jankto	La Liga	14	0	2
## Jamie Shackleton	Premier League	14	0	0
## Janik Haberer	Bundesliga	26	3	0
## Janis Antiste	Serie A	18	1	0
## Jannes Horn	Bundesliga	11	0	0
## Jarrad Branthwaite	Premier League	6	1	0
## Jason Berthomier	Ligue 1	29	1	5
## Javairô Dilrosun	Ligue 1	32	2	6
## Jean-Eudes Aholou	Ligue 1	25	1	1
## Jean-Kévin Augustin	Ligue 1	7	0	0
## Jean-Philippe Gbamin	Premier League	3	0	0
## Jens Petter Hauge	Bundesliga	26	2	2
## Jens Stryger Larsen	Serie A	11	0	1
## Jesse Lingard	Premier League	16	2	0
## Jessic Ngankam	Bundesliga	6	2	1
## Jimmy Cabot	Ligue 1	24	0	5
## Joaquín Correa	Serie A	26	6	1
## Jonas Martin	Ligue 1	29	1	1
## Jonathan Silva	La Liga	9	0	0
## Jonjoe Kenny	Premier League	15	0	1
## Jordan Amavi	Ligue 1	8	0	0
## Jordan Torunarigha	Bundesliga	7	0	1
## Julian Draxler	Ligue 1	18	2	1
## Junior Dina Ebimbe	Ligue 1	10	0	0
## Junior Sambia	Ligue 1	30	1	0
## Jurgen Ekkelenkamp	Bundesliga	21	3	0
## Justin Kluivert	Ligue 1	27	4	5
## Calvin Phillips	Premier League	20	0	1
## Kasper Dolberg	Ligue 1	26	6	2
## Keinan Davis	Premier League	1	0	0
## Kevin Mbabu	Bundesliga	24	0	0
## Kevin Stöger	Bundesliga	23	1	1
## Kevin Strootman	Serie A	10	0	0
## Ki-Jana Hoever	Premier League	8	0	0
## Kingsley Ehizibue	Bundesliga	16	0	1
## Kortney Hause	Premier League	7	1	0
## Kristoffer Asksildsen	Serie A	19	0	0
## Landry Dimata	La Liga	17	0	0
## László Béné	Bundesliga	13	0	0
## Leander Dendoncker	Premier League	30	2	2
## Leonardo Mancuso	Serie A	8	1	0
## Louis Schaub	Bundesliga	28	1	2
## Luca Pellegrini	Serie A	18	0	1
## Lucas Alario	Bundesliga	27	6	0

## Lucas Ocampos	La Liga	30	6	4
## Lucas Perrin	Ligue 1	31	1	1
## Lucas Torreira	Serie A	31	5	1
## Ludwig Augustinsson	La Liga	19	0	1
## Luis Binks	Serie A	15	0	0
## Lukas Klünter	Bundesliga	5	0	0
## Luuk de Jong	La Liga	21	6	0
## Malang Sarr	Premier League	8	0	0
## Mamadou Coulibaly	Serie A	12	2	0
## Manuel Akanji	Bundesliga	26	1	0
## Marco John	Bundesliga	2	0	0
## Marcus Forss	Premier League	7	0	1
## Marcus Ingvartsen	Bundesliga	26	6	0
## Marko Pjaca	Serie A	24	3	0
## Martin Braithwaite	La Liga	4	2	1
## Mateo Klimowicz	Bundesliga	15	0	1
## Mathías Olivera	La Liga	32	1	3
## Mathias Pereira Lage	Ligue 1	24	4	2
## Matija Nastasić	Serie A	5	0	0
## Matt Miazga	La Liga	11	0	0
## Matt Targett	Premier League	17	1	1
## Mattéo Guendouzi	Ligue 1	38	4	6
## Matteo Lovato	Serie A	16	0	0
## Matteo Pessina	Serie A	27	1	1
## Matthew Hoppe	La Liga	5	0	1
## Matthias Ginter	Bundesliga	28	1	0
## Matthijs de Ligt	Serie A	31	3	1
## Mattia Zaccagni	Serie A	2	2	0
## Mattias Svanberg	Serie A	36	3	3
## Maxim Leitsch	Bundesliga	19	1	0
## Mehdi Bourabia	Serie A	8	1	0
## Merih Demiral	Serie A	28	1	2
## Mihailo Ristić	Ligue 1	29	1	3
## Mikkel Damsgaard	Serie A	11	0	0
## Morgan Gibbs-White	Premier League	2	0	0
## Moritz Jenz	Ligue 1	17	1	0
## Morten Thorsby	Serie A	35	3	1
## Moussa Doumbia	Ligue 1	4	0	0
## Munir El Haddadi	La Liga	16	2	0
## Nathan Tella	Premier League	14	0	1
## Neal Maupay	Premier League	32	8	2
## Neco Williams	Premier League	1	0	1
## Nehuén Pérez	Serie A	20	0	1
## Nemanja Radonjić	Ligue 1	1	0	0
## Nicolas Pépé	Premier League	20	1	2
## Nicolò Casale	Serie A	36	0	1
## Nicolò Rovella	Serie A	21	0	3
## Niklas Süle	Bundesliga	28	1	2
## Oleksandr Zinchenko	Premier League	15	0	4
## Omar Richards	Bundesliga	12	0	0
## Orbelín Pineda	La Liga	7	0	0
## Orel Mangala	Bundesliga	28	1	3
## Oussama Idrissi	La Liga	12	1	1
## Ozan Kabak	Premier League	11	0	0

## Patrick Berg	Ligue 1	14	0	0
## Patrick Cutrone	Serie A	28	3	0
## Paul Nebel	Bundesliga	10	0	1
## Philipp Förster	Bundesliga	20	2	1
## Pierre-Yves Hamel	Ligue 1	17	0	0
## Pietro Pellegri	Serie A	6	0	0
## Ragnar Ache	Bundesliga	13	0	1
## Raheem Sterling	Premier League	30	13	5
## Randal Kolo Muani	Ligue 1	36	12	4
## Remo Freuler	Serie A	29	1	3
## Renato Steffen	Bundesliga	20	0	1
## Rey Manaj	Serie A	30	5	0
## Ricardo Pepi	Bundesliga	11	0	0
## Riccardo Calafiori	Serie A	3	0	0
## Roberto Piccoli	Serie A	5	0	0
## Rolando Mandragora	Serie A	21	0	2
## Romelu Lukaku	Premier League	26	8	0
## Ronaël Pierre-Gabriel	Ligue 1	30	0	1
## Salih Özcan	Bundesliga	31	2	0
## Sam Lammers	Serie A	2	0	0
## Samuel Umtiti	La Liga	1	0	0
## Samuele Ricci	Serie A	12	0	0
## Santiago Ascacibar	Bundesliga	28	0	1
## Sargis Adamyan	Bundesliga	13	1	0
## Sebastian Polter	Bundesliga	33	10	1
## Sebastiano Luperto	Serie A	24	0	1
## Sergiño Dest	La Liga	21	0	3
## Shane Duffy	Premier League	18	1	0
## Simon Banza	Ligue 1	4	1	1
## Sofian Kiyine	Serie A	26	1	0
## Sofiane Diop	Ligue 1	30	6	4
## Stefano Sensi	Serie A	9	0	0
## Steffen Tigges	Bundesliga	9	3	0
## Stéphane Bahoken	Ligue 1	29	3	1
## Steven Bergwijn	Premier League	25	3	1
## Sven Botman	Ligue 1	25	3	1
## Taiwo Awoniyi	Bundesliga	31	15	1
## Takefusa Kubo	La Liga	28	1	0
## Takumi Minamino	Premier League	11	3	0
## Tanguy Nianzou	Bundesliga	17	1	1
## Tariqe Fosu	Premier League	1	0	0
## Thilo Kehrer	Ligue 1	27	2	0
## Thomas Monconduit	Ligue 1	34	3	2
## Timo Werner	Premier League	21	4	1
## Tino Kadewere	Ligue 1	15	1	0
## Uroš Račić	La Liga	28	0	0
## Vedat Muriqi	Serie A	11	0	0
## Wesley Fofana	Premier League	7	0	0
## Willy Boly	Premier League	10	0	0
## Xaver Schlager	Bundesliga	14	0	1
## Xavi Simons	Ligue 1	6	0	0
## Yan Valery	Premier League	5	0	0
## Yangel Herrera	La Liga	23	1	1
## Youssouf Koné	Ligue 1	21	0	1



## Yves Bissouma	Premier League	26	1	2	
## Zinho Vanheusden	Serie A	14	0	0	
##	Goals+Assists	Total	Shots	Shots on Target	SOT %
## Aaron Connolly	0		2		0 0.0
## Aaron Hickey	6		21		13 61.9
## Aaron Ramsey	0		0		0 0.0
## Abdou Diallo	1		2		1 50.0
## Adam Ounas	0		13		2 15.4
## Ademola Lookman	6		26		12 46.2
## Adnan Januzaj	3		40		13 32.5
## Ainsley Maitland-Niles	0		2		0 0.0
## Akim Zedadka	3		31		6 19.4
## Alessandro Florenzi	2		22		6 27.3
## Alessio Romagnoli	1		12		5 41.7
## Alexander Isak	8		71		33 46.5
## Alexandre Lacazette	11		43		12 27.9
## Alexis Claude-Maurice	2		6		1 16.7
## Alexis Sánchez	7		33		13 39.4
## Amadou Diawara	0		1		0 0.0
## Amadou Onana	1		15		6 40.0
## Amine Harit	8		15		7 46.7
## Anderson Lucoqui	1		8		4 50.0
## Andi Zeqiri	3		30		8 26.7
## Andrea Belotti	9		55		17 30.9
## Andrea La Mantia	2		17		3 17.6
## Andrea Petagna	4		13		6 46.2
## Andrea Pinamonti	15		86		23 26.7
## Andreas Christensen	0		5		0 0.0
## Andreas Voglsammer	3		33		15 45.5
## Andriy Yarmolenko	1		11		5 45.5
## Ángel Di María	12		51		22 43.1
## Angelo Fulgini	9		58		17 29.3
## Anthony Caci	4		15		4 26.7
## Antonio Rüdiger	3		48		13 27.1
## Anwar El Ghazi	0		0		0 0.0
## Arkadiusz Milik	9		53		19 35.8
## Armando Izzo	0		5		3 60.0
## Arne Maier	7		17		8 47.1
## Arthur Theate	3		21		6 28.6
## Aster Vranckx	2		25		8 32.0
## Axel Witsel	2		8		2 25.0
## Aymen Barkok	0		2		1 50.0
## Ben Davies	2		18		7 38.9
## Bertrand Traoré	0		8		1 12.5
## Billy Gilmour	1		18		3 16.7
## Boubacar Kamara	1		22		3 13.6
## Boulaye Dia	10		37		11 29.7
## Brandon Soppy	0		6		2 33.3
## Breel Embolo	12		48		23 47.9
## Brian Brobbey	2		4		0 0.0
## Bryan Reynolds	0		0		0 0.0
## Callum Hudson-Odoi	3		18		7 38.9
## Calvin Stengs	2		21		5 23.8
## Cédric Hountondji	1		8		3 37.5

## Cengiz Ünder	12	57	19	33.3
## Cenk Tosun	0	0	0	0.0
## Cheick Doucouré	5	31	11	35.5
## Cheikhou Kouyaté	1	7	0	0.0
## Chris Richards	0	0	0	0.0
## Christian Benteke	5	39	13	33.3
## Christian Eriksen	5	22	8	36.4
## Ciaran Clark	1	7	1	14.3
## Clément Lenglet	1	2	1	50.0
## Colin Dagba	0	0	0	0.0
## Corentin Jean	1	7	2	28.6
## Corentin Tolisso	3	17	3	17.6
## Cristian Romero	1	6	2	33.3
## Dan Ndoye	1	3	0	0.0
## Daniel James	8	50	15	30.0
## Daniel Maldini	1	3	1	33.3
## Daniel Wass	0	0	0	0.0
## Danny da Costa	0	2	0	0.0
## David Nemeth	0	0	0	0.0
## Dele Alli	1	3	2	66.7
## Denis Cheryshev	1	10	4	40.0
## Denis Vavro	0	0	0	0.0
## Denis Zakaria	2	9	4	44.4
## Diego Lainez	0	1	1	100.0
## Divock Origi	3	10	5	50.0
## Dominique Heintz	0	0	0	0.0
## Dries Mertens	12	44	19	43.2
## Dwight Gayle	0	2	0	0.0
## Dylan Chambost	1	10	1	10.0
## Ebrima Colley	0	12	5	41.7
## Eddie Salcedo	0	16	4	25.0
## Edinson Cavani	3	18	6	33.3
## El Bilal Touré	6	32	10	31.3
## Enzo Ebose	0	3	0	0.0
## Eric Bailly	0	0	0	0.0
## Erick Cabaco	1	1	0	0.0
## Erik Durm	1	1	0	0.0
## Erik Thommy	0	10	4	40.0
## Evann Guessand	3	12	5	41.7
## Fabio Depaoli	0	0	0	0.0
## Federico Bernardeschi	4	33	7	21.2
## Federico Bonazzoli	10	55	20	36.4
## Federico Chiesa	4	28	9	32.1
## Federico Fernández	0	6	1	16.7
## Filippo Melegoni	1	13	7	53.8
## Flavius Daniliuc	0	4	0	0.0
## Florent Mollet	8	55	17	30.9
## Francesco Caputo	1	4	0	0.0
## Francesco Di Mariano	0	0	0	0.0
## Gaëtan Laborde	3	14	4	28.6
## Gareth Bale	1	15	6	40.0
## Georginio Wijnaldum	4	22	2	9.1
## Ghislain Konan	4	19	5	26.3
## Giacomo Raspadori	14	71	25	35.2

## Gianluca Frabotta	0	0	0	0.0
## Gideon Mensah	2	2	0	0.0
## Giorgio Chiellini	0	4	0	0.0
## Giovanni Lo Celso	0	9	0	0.0
## Giulian Biancone	3	28	9	32.1
## Giulio Maggiore	5	42	8	19.0
## Gonzalo Escalante	0	0	0	0.0
## Grischa Prömel	9	37	12	32.4
## Hamza Choudhury	0	1	0	0.0
## Héctor Herrera	0	8	3	37.5
## Henrikh Mkhitaryan	11	55	16	29.1
## Ignatius Ganago	6	31	10	32.3
## Ilan Kebbal	5	27	6	22.2
## Issa Diop	1	2	2	100.0
## Jack Stephens	0	0	0	0.0
## Jakub Jankto	2	6	0	0.0
## Jamie Shackleton	0	4	1	25.0
## Janik Haberer	3	14	3	21.4
## Janis Antiste	1	11	2	18.2
## Jannes Horn	0	3	1	33.3
## Jarrad Branthwaite	1	3	2	66.7
## Jason Berthomier	6	23	4	17.4
## Javairô Dilrosun	8	40	10	25.0
## Jean-Eudes Aholou	2	17	2	11.8
## Jean-Kévin Augustin	0	2	0	0.0
## Jean-Philippe Gbamin	0	0	0	0.0
## Jens Petter Hauge	4	19	10	52.6
## Jens Stryger Larsen	1	9	4	44.4
## Jesse Lingard	2	8	6	75.0
## Jessic Ngankam	3	9	5	55.6
## Jimmy Cabot	5	11	3	27.3
## Joaquín Correa	7	35	16	45.7
## Jonas Martin	2	21	4	19.0
## Jonathan Silva	0	1	1	100.0
## Jonjoe Kenny	1	5	0	0.0
## Jordan Amavi	0	0	0	0.0
## Jordan Torunarigha	1	2	0	0.0
## Julian Draxler	3	9	3	33.3
## Junior Dina Ebimbe	0	4	1	25.0
## Junior Sambia	1	20	6	30.0
## Jurgen Ekkelenkamp	3	14	4	28.6
## Justin Kluivert	9	30	10	33.3
## Calvin Phillips	1	15	3	20.0
## Kasper Dolberg	8	38	13	34.2
## Keinan Davis	0	0	0	0.0
## Kevin Mbabu	0	5	0	0.0
## Kevin Stöger	2	16	6	37.5
## Kevin Strootman	0	1	0	0.0
## Ki-Jana Hoever	0	1	0	0.0
## Kingsley Ehizibue	1	6	0	0.0
## Kortney Hause	1	2	2	100.0
## Kristoffer Asklidsen	0	7	0	0.0
## Landry Dimata	0	8	0	0.0
## László Bénes	0	7	5	71.4

## Leander Dendoncker	4	23	10	43.5
## Leonardo Mancuso	1	12	5	41.7
## Louis Schaub	3	14	2	14.3
## Luca Pellegrini	1	6	1	16.7
## Lucas Alario	6	22	13	59.1
## Lucas Ocampos	10	51	16	31.4
## Lucas Perrin	2	9	3	33.3
## Lucas Torreira	6	29	13	44.8
## Ludwig Augustinsson	1	4	2	50.0
## Luis Binks	0	2	0	0.0
## Lukas Klünter	0	0	0	0.0
## Luuk de Jong	6	24	10	41.7
## Malang Sarr	0	1	0	0.0
## Mamadou Coulibaly	2	10	4	40.0
## Manuel Akanji	1	13	3	23.1
## Marco John	0	0	0	0.0
## Marcus Forss	1	5	0	0.0
## Marcus Ingvartsen	6	24	11	45.8
## Marko Pjaca	3	21	11	52.4
## Martin Braithwaite	3	7	3	42.9
## Mateo Klimowicz	1	11	3	27.3
## Mathías Olivera	4	24	7	29.2
## Mathias Pereira Lage	6	19	6	31.6
## Matija Nastasić	0	1	1	100.0
## Matt Miazga	0	7	3	42.9
## Matt Targett	2	7	2	28.6
## Mattéo Guendouzi	10	50	18	36.0
## Matteo Lovato	0	6	1	16.7
## Matteo Pessina	2	28	9	32.1
## Matthew Hoppe	1	2	0	0.0
## Matthias Ginter	1	31	14	45.2
## Matthijs de Ligt	4	20	10	50.0
## Mattia Zaccagni	2	3	2	66.7
## Mattias Svanberg	6	39	13	33.3
## Maxim Leitsch	1	5	1	20.0
## Mehdi Bourabia	1	1	1	100.0
## Merih Demiral	3	25	6	24.0
## Mihailo Ristić	4	18	5	27.8
## Mikkel Damsgaard	0	11	2	18.2
## Morgan Gibbs-White	0	2	0	0.0
## Moritz Jenz	1	9	1	11.1
## Morten Thorsby	4	26	7	26.9
## Moussa Doumbia	0	3	2	66.7
## Munir El Haddadi	2	12	7	58.3
## Nathan Tella	1	12	5	41.7
## Neal Maupay	10	59	14	23.7
## Neco Williams	1	0	0	0.0
## Nehuén Pérez	1	10	1	10.0
## Nemanja Radonjić	0	0	0	0.0
## Nicolas Pépé	3	23	7	30.4
## Nicolò Casale	1	10	0	0.0
## Nicolò Rovella	3	17	4	23.5
## Niklas Süle	3	16	6	37.5
## Oleksandr Zinchenko	4	12	4	33.3

## Omar Richards	0	4	0	0.0
## Orbelín Pineda	0	5	1	20.0
## Orel Mangala	4	17	8	47.1
## Oussama Idrissi	2	21	8	38.1
## Ozan Kabak	0	4	2	50.0
## Patrick Berg	0	1	0	0.0
## Patrick Cutrone	3	50	14	28.0
## Paul Nebel	1	3	1	33.3
## Philipp Förster	3	29	7	24.1
## Pierre-Yves Hamel	0	13	4	30.8
## Pietro Pellegri	0	3	1	33.3
## Ragnar Ache	1	10	2	20.0
## Raheem Sterling	18	54	25	46.3
## Randal Kolo Muani	16	54	26	48.1
## Remo Freuler	4	20	6	30.0
## Renato Steffen	1	13	2	15.4
## Rey Manaj	5	51	14	27.5
## Ricardo Pepi	0	8	4	50.0
## Riccardo Calafiori	0	1	0	0.0
## Roberto Piccoli	0	2	0	0.0
## Rolando Mandragora	2	23	5	21.7
## Romelu Lukaku	8	42	14	33.3
## Ronaël Pierre-Gabriel	1	5	2	40.0
## Salih Özcan	2	27	6	22.2
## Sam Lammers	0	0	0	0.0
## Samuel Umtiti	0	0	0	0.0
## Samuele Ricci	0	4	1	25.0
## Santiago Ascacíbar	1	13	1	7.7
## Sargis Adamyan	1	3	2	66.7
## Sebastian Polter	11	54	21	38.9
## Sebastiano Luperto	1	9	3	33.3
## Sergiño Dest	3	12	3	25.0
## Shane Duffy	1	22	5	22.7
## Simon Banza	2	6	4	66.7
## Sofian Kiyine	1	20	5	25.0
## Sofiane Diop	10	37	13	35.1
## Stefano Sensi	0	3	0	0.0
## Steffen Tigges	3	4	3	75.0
## Stéphane Bahoken	4	24	14	58.3
## Steven Bergwijn	4	19	10	52.6
## Sven Botman	4	15	5	33.3
## Taiwo Awoniyi	16	65	30	46.2
## Takefusa Kubo	1	48	8	16.7
## Takumi Minamino	3	7	4	57.1
## Tanguy Nianzou	2	6	1	16.7
## Tariqe Fosu	0	1	1	100.0
## Thilo Kehrer	2	9	4	44.4
## Thomas Monconduit	5	36	12	33.3
## Timo Werner	5	45	16	35.6
## Tino Kadewere	1	18	7	38.9
## Uroš Račić	0	16	1	6.3
## Vedat Muriqi	0	4	2	50.0
## Wesley Fofana	0	3	1	33.3
## Willy Boly	0	2	1	50.0

## Xaver Schlager	1	10	1	10.0
## Xavi Simons	0	2	0	0.0
## Yan Valery	0	2	0	0.0
## Yangel Herrera	2	15	2	13.3
## Youssouf Koné	1	9	3	33.3
## Yves Bissouma	3	21	5	23.8
## Zinho Vanheusden	0	6	2	33.3
##	Yellow Cards	Red Cards	Fouls Committed	Fouls Drawn
## Aaron Connolly	0	0	0	6
## Aaron Hickey	7	0	39	71
## Aaron Ramsey	0	0	2	1
## Abdou Diallo	1	0	12	3
## Adam Ounas	1	0	9	10
## Ademola Lookman	2	0	27	33
## Adnan Januzaj	5	0	28	51
## Ainsley Maitland-Niles	0	0	4	3
## Akim Zedadka	5	0	28	89
## Alessandro Florenzi	2	0	10	8
## Alessio Romagnoli	4	1	17	13
## Alexander Isak	6	0	32	30
## Alexandre Lacazette	0	0	32	29
## Alexis Claude-Maurice	1	0	4	5
## Alexis Sánchez	0	0	10	21
## Amadou Diawara	0	0	5	0
## Amadou Onana	2	1	31	25
## Amine Harit	1	0	17	39
## Anderson Lucoqui	2	0	17	16
## Andi Zeqiri	2	0	20	15
## Andrea Belotti	1	0	26	51
## Andrea La Mantia	0	0	6	6
## Andrea Petagna	1	0	15	14
## Andrea Pinamonti	4	0	32	56
## Andreas Christensen	2	0	11	7
## Andreas Voglsammer	1	0	16	16
## Andriy Yarmolenko	1	0	1	4
## Ángel Di María	2	0	9	14
## Angelo Fulgini	6	0	36	84
## Anthony Caci	4	0	35	23
## Antonio Rüdiger	9	0	35	12
## Anwar El Ghazi	0	0	0	0
## Arkadiusz Milik	1	0	19	8
## Armando Izzo	4	0	17	12
## Arne Maier	0	0	11	14
## Arthur Theate	6	0	26	10
## Aster Vranckx	2	0	40	16
## Axel Witsel	4	0	26	30
## Aymen Barkok	0	0	4	1
## Ben Davies	6	0	31	18
## Bertrand Traoré	0	0	0	4
## Billy Gilmour	2	0	28	21
## Boubacar Kamara	5	0	40	42
## Boulaye Dia	3	0	23	13
## Brandon Soppy	4	0	23	33
## Breel Embolo	3	0	41	71

## Brian Brobbey	0	0	3	2
## Bryan Reynolds	0	0	0	0
## Callum Hudson-Odoi	1	0	10	17
## Calvin Stengs	1	0	15	7
## Cédric Hountondji	2	0	12	7
## Cengiz Ünder	2	1	11	33
## Cenk Tosun	0	0	0	0
## Cheick Doucouré	7	1	42	24
## Cheikhou Kouyaté	3	0	30	21
## Chris Richards	0	0	0	0
## Christian Benteke	3	0	16	16
## Christian Eriksen	1	0	5	3
## Ciaran Clark	2	1	6	5
## Clément Lenglet	4	0	19	4
## Colin Dagba	1	0	6	2
## Corentin Jean	2	0	7	5
## Corentin Tolisso	0	0	13	6
## Cristian Romero	8	0	28	15
## Dan Ndoye	0	0	3	2
## Daniel James	7	1	30	38
## Daniel Maldini	1	0	4	1
## Daniel Wass	1	0	1	1
## Danny da Costa	2	0	8	2
## David Nemeth	0	0	1	1
## Dele Alli	1	0	12	11
## Denis Cheryshev	1	0	15	7
## Denis Vavro	0	0	0	0
## Denis Zakaria	1	0	11	4
## Diego Lainez	0	0	4	1
## Divock Origi	0	0	2	1
## Dominique Heintz	0	0	0	0
## Dries Mertens	2	0	26	22
## Dwight Gayle	1	0	2	2
## Dylan Chambost	0	0	7	5
## Ebrima Colley	1	0	10	12
## Eddie Salcedo	1	0	8	6
## Edinson Cavani	0	0	7	5
## El Bilal Touré	2	0	20	14
## Enzo Ebose	1	0	14	21
## Eric Bailly	1	0	2	0
## Erick Cabaco	4	1	7	4
## Erik Durm	1	0	2	7
## Erik Thommy	0	0	2	6
## Evann Guessand	3	0	14	9
## Fabio Depaoli	1	0	8	1
## Federico Bernardeschi	5	0	16	27
## Federico Bonazzoli	6	0	31	66
## Federico Chiesa	0	0	9	16
## Federico Fernández	0	0	1	2
## Filippo Melegoni	1	0	15	20
## Flavius Daniliuc	4	0	17	4
## Florent Mollet	6	0	34	50
## Francesco Caputo	1	0	0	3
## Francesco Di Mariano	0	0	1	1

## Gaëtan Laborde	1	0	3	3
## Gareth Bale	2	0	3	0
## Georginio Wijnaldum	2	0	6	15
## Ghislain Konan	1	0	17	33
## Giacomo Raspadori	9	1	29	33
## Gianluca Frabotta	0	0	2	0
## Gideon Mensah	1	1	16	4
## Giorgio Chiellini	2	0	15	22
## Giovanni Lo Celso	0	0	2	6
## Giulian Biancone	10	0	34	32
## Giulio Maggiore	9	0	64	67
## Gonzalo Escalante	0	0	0	0
## Grischa Prömel	4	0	37	57
## Hamza Choudhury	1	0	4	5
## Héctor Herrera	4	0	19	8
## Henrikh Mkhitaryan	4	1	41	51
## Ignatius Ganago	2	0	9	10
## Ilan Kebbal	1	0	12	50
## Issa Diop	0	0	5	5
## Jack Stephens	3	0	8	2
## Jakub Jankto	1	1	3	7
## Jamie Shackleton	4	0	13	6
## Janik Haberer	1	0	20	10
## Janis Antiste	0	0	15	6
## Jannes Horn	2	0	4	8
## Jarrad Branthwaite	0	1	3	4
## Jason Berthomier	0	0	14	15
## Javairô Dilrosun	3	0	13	30
## Jean-Eudes Aholou	2	0	21	20
## Jean-Kévin Augustin	1	0	1	1
## Jean-Philippe Gbamin	0	0	0	1
## Jens Petter Hauge	4	0	16	10
## Jens Stryger Larsen	0	0	3	3
## Jesse Lingard	1	0	5	4
## Jessic Ngankam	0	0	12	5
## Jimmy Cabot	4	0	32	32
## Joaquín Correa	2	0	15	16
## Jonas Martin	8	0	32	14
## Jonathan Silva	4	0	10	5
## Jonjoe Kenny	3	1	9	6
## Jordan Amavi	1	0	2	4
## Jordan Torunarigha	1	0	4	4
## Julian Draxler	0	0	4	1
## Junior Dina Ebimbe	2	0	11	4
## Junior Sambia	5	1	18	26
## Jurgen Ekkelenkamp	1	0	11	5
## Justin Kluivert	6	1	39	29
## Calvin Phillips	4	0	33	19
## Kasper Dolberg	0	0	30	29
## Keinan Davis	0	0	0	1
## Kevin Mbabu	4	0	24	21
## Kevin Stöger	3	0	9	10
## Kevin Strootman	4	0	10	10
## Ki-Jana Hoever	1	0	5	4



## Kingsley Ehizibue	2	0	15	16
## Kortney Hause	0	0	6	2
## Kristoffer Askildsen	5	0	17	14
## Landry Dimata	0	0	14	20
## László Bénes	0	0	1	9
## Leander Dendoncker	4	0	13	6
## Leonardo Mancuso	0	0	1	2
## Louis Schaub	0	0	8	8
## Luca Pellegrini	6	0	23	21
## Lucas Alario	2	0	8	8
## Lucas Ocampos	7	0	45	41
## Lucas Perrin	5	0	46	31
## Lucas Torreira	10	1	38	44
## Ludwig Augustinsson	3	0	13	10
## Luis Binks	3	0	7	6
## Lukas Klünter	1	0	5	2
## Luuk de Jong	1	0	8	12
## Malang Sarr	2	0	8	1
## Mamadou Coulibaly	1	0	16	9
## Manuel Akanji	3	0	19	24
## Marco John	0	0	0	0
## Marcus Forss	0	0	3	1
## Marcus Ingvartsen	2	0	16	14
## Marko Pjaca	0	0	11	14
## Martin Braithwaite	0	0	5	2
## Mateo Klimowicz	2	0	9	9
## Mathías Olivera	10	0	55	46
## Mathias Pereira Lage	0	0	24	14
## Matija Nastasić	1	0	2	0
## Matt Miazga	2	0	6	2
## Matt Targett	2	0	15	11
## Mattéo Guendouzi	6	0	28	67
## Matteo Lovato	4	0	16	14
## Matteo Pessina	0	0	16	35
## Matthew Hoppe	0	0	4	1
## Matthias Ginter	2	0	9	29
## Matthijs de Ligt	4	1	32	15
## Mattia Zaccagni	0	0	1	7
## Mattias Svanberg	7	0	37	63
## Maxim Leitsch	2	0	9	0
## Mehdi Bourabia	0	0	6	6
## Merih Demiral	8	0	29	16
## Mihailo Ristić	3	1	26	27
## Mikkel Damsgaard	1	0	10	8
## Morgan Gibbs-White	1	0	2	0
## Moritz Jenz	5	1	24	3
## Morten Thorsby	10	0	81	37
## Moussa Doumbia	0	0	0	2
## Munir El Haddadi	3	0	7	13
## Nathan Tella	2	0	17	22
## Neal Maupay	7	0	33	31
## Neco Williams	0	0	0	0
## Nehuén Pérez	6	0	30	9
## Nemanja Radonjić	0	0	0	0

## Nicolas Pépé	0	0	8	3
## Nicolò Casale	10	0	44	24
## Nicolò Rovella	5	0	26	24
## Niklas Süle	2	0	10	1
## Oleksandr Zinchenko	0	0	11	2
## Omar Richards	1	0	15	22
## Orbelín Pineda	0	0	2	4
## Orel Mangala	4	0	26	27
## Oussama Idrissi	2	0	10	3
## Ozan Kabak	2	0	10	10
## Patrick Berg	0	0	5	1
## Patrick Cutrone	1	0	13	16
## Paul Nebel	3	0	8	3
## Philipp Förster	4	0	15	9
## Pierre-Yves Hamel	2	0	13	9
## Pietro Pellegri	0	0	7	2
## Ragnar Ache	0	0	5	8
## Raheem Sterling	1	0	19	37
## Randal Kolo Muani	2	0	59	72
## Remo Freuler	10	0	43	28
## Renato Steffen	6	0	19	15
## Rey Manaj	9	0	54	62
## Ricardo Pepi	0	0	1	4
## Riccardo Calafiori	1	0	3	0
## Roberto Piccoli	0	0	3	0
## Rolando Mandragora	7	1	25	22
## Romelu Lukaku	1	0	8	12
## Ronaël Pierre-Gabriel	6	0	27	29
## Salih Özcan	5	0	38	53
## Sam Lammers	0	0	2	3
## Samuel Umtiti	1	0	0	1
## Samuele Ricci	1	0	14	13
## Santiago Ascacíbar	5	0	35	31
## Sargis Adamyan	0	0	5	8
## Sebastian Polter	2	0	75	36
## Sebastiano Luperto	8	1	30	5
## Sergiño Dest	2	0	17	19
## Shane Duffy	7	0	15	5
## Simon Banza	0	0	3	7
## Sofian Kiyine	8	1	49	11
## Sofiane Diop	6	0	28	41
## Stefano Sensi	0	0	4	5
## Steffen Tigges	0	0	1	1
## Stéphane Bahoken	0	0	23	14
## Steven Bergwijn	1	0	9	9
## Sven Botman	4	0	16	13
## Taiwo Awoniyi	1	0	25	23
## Takefusa Kubo	4	0	17	47
## Takumi Minamino	1	0	4	4
## Tanguy Nianzou	4	0	13	8
## Tariqe Fosu	0	0	0	1
## Thilo Kehrer	0	0	15	6
## Thomas Monconduit	5	0	46	33
## Timo Werner	1	0	11	12

## Tino Kadewere	0	1	6	5
## Uroš Račić	3	1	29	25
## Vedat Muriqi	1	0	5	9
## Wesley Fofana	2	0	7	7
## Willy Boly	1	0	7	2
## Xaver Schlager	2	0	23	10
## Xavi Simons	1	0	2	4
## Yan Valery	0	0	3	3
## Yangel Herrera	7	1	44	34
## Youssouf Koné	2	1	7	20
## Yves Bissouma	10	0	30	19
## Zinho Vanheusden	3	0	10	10
##	Offsides	Ball Recovery	Tackles Made	Tackles Won Blocks
## Aaron Connolly	0	7	0	0 2
## Aaron Hickey	4	134	46	29 36
## Aaron Ramsey	0	4	0	0 0
## Abdou Diallo	0	45	22	14 6
## Adam Ounas	0	23	6	1 3
## Ademola Lookman	6	102	32	14 19
## Adnan Januzaj	4	93	17	11 15
## Ainsley Maitland-Niles	0	23	8	4 2
## Akim Zedadka	5	232	72	44 32
## Alessandro Florenzi	3	79	28	14 9
## Alessio Romagnoli	3	79	24	14 21
## Alexander Isak	15	56	7	4 14
## Alexandre Lacazette	6	52	27	10 12
## Alexis Claude-Maurice	0	11	2	0 7
## Alexis Sánchez	8	36	9	8 4
## Amadou Diawara	0	12	7	2 2
## Amadou Onana	2	100	48	31 10
## Amine Harit	3	51	18	11 10
## Anderson Lucoqui	0	41	22	10 15
## Andi Zeqiri	12	38	14	7 10
## Andrea Belotti	16	41	7	3 12
## Andrea La Mantia	3	11	2	0 3
## Andrea Petagna	2	15	3	3 1
## Andrea Pinamonti	19	62	11	6 24
## Andreas Christensen	0	110	14	8 14
## Andreas Voglsammer	14	27	14	9 9
## Andriy Yarmolenko	3	5	4	2 4
## Ángel Di María	7	71	29	18 17
## Angelo Fulgini	5	137	35	25 21
## Anthony Caci	2	161	65	34 22
## Antonio Rüdiger	0	183	48	28 20
## Anwar El Ghazi	0	2	1	1 3
## Arkadiusz Milik	8	22	9	2 9
## Armando Izzo	0	32	16	9 5
## Arne Maier	1	127	20	13 18
## Arthur Theate	1	181	33	19 29
## Aster Vranckx	1	74	34	13 19
## Axel Witsel	1	152	42	27 24
## Aymen Barkok	0	11	6	2 4
## Ben Davies	5	106	36	21 32
## Bertrand Traoré	2	11	3	3 0

## Billy Gilmour	1	124	41	21	21
## Boubacar Kamara	0	183	68	38	29
## Boulaye Dia	7	36	8	6	6
## Brandon Soppy	0	47	20	9	10
## Breel Embolo	20	57	16	11	14
## Brian Brobbey	0	7	1	0	1
## Bryan Reynolds	0	0	0	0	0
## Callum Hudson-Odoi	4	39	14	10	8
## Calvin Stengs	2	57	16	7	10
## Cédric Hountondji	0	101	33	17	23
## Cengiz Ünder	12	72	18	13	13
## Cenk Tosun	0	1	0	0	0
## Cheick Doucouré	0	218	75	43	30
## Cheikhou Kouyaté	0	136	52	38	40
## Chris Richards	0	1	0	0	1
## Christian Benteke	10	25	3	2	7
## Christian Eriksen	0	69	13	6	9
## Ciaran Clark	1	49	13	10	14
## Clément Lenglet	0	60	20	11	7
## Colin Dagba	0	7	4	2	4
## Corentin Jean	2	13	9	6	5
## Corentin Tolisso	3	59	11	5	5
## Cristian Romero	2	148	62	39	46
## Dan Ndoye	1	9	0	0	4
## Daniel James	13	82	24	14	18
## Daniel Maldini	1	5	8	3	4
## Daniel Wass	1	4	0	0	0
## Danny da Costa	0	48	15	4	14
## David Nemeth	0	16	3	2	5
## Dele Alli	2	40	14	8	22
## Denis Cheryshev	4	35	14	5	9
## Denis Vavro	0	0	0	0	0
## Denis Zakaria	0	27	11	7	16
## Diego Lainez	0	10	1	1	3
## Divock Origi	0	7	0	0	1
## Dominique Heintz	0	1	0	0	0
## Dries Mertens	5	51	16	7	8
## Dwight Gayle	0	2	1	0	0
## Dylan Chambost	1	47	16	11	9
## Ebrima Colley	2	15	6	1	8
## Eddie Salcedo	2	14	1	1	2
## Edinson Cavani	6	22	4	1	6
## El Bilal Touré	6	37	13	6	10
## Enzo Ebosee	0	112	25	14	19
## Eric Bailly	0	10	5	4	4
## Erick Cabaco	0	14	2	1	5
## Erik Durm	0	25	13	7	8
## Erik Thommy	2	12	2	0	3
## Evann Guessand	0	19	9	8	4
## Fabio Depaoli	0	4	3	1	2
## Federico Bernardeschi	4	82	16	10	12
## Federico Bonazzoli	6	76	24	12	17
## Federico Chiesa	1	47	26	19	7
## Federico Fernández	0	24	3	0	10

## Filippo Melegoni	2	72	20	12	10
## Flavius Daniliuc	1	98	46	31	13
## Florent Mollet	10	132	31	22	27
## Francesco Caputo	0	2	0	0	0
## Francesco Di Mariano	0	2	1	1	2
## Gaëtan Laborde	0	15	2	2	3
## Gareth Bale	1	4	2	1	2
## Georginio Wijnaldum	0	74	15	9	13
## Ghislain Konan	2	176	35	19	35
## Giacomo Raspadori	4	126	29	18	29
## Gianluca Frabotta	0	2	0	0	1
## Gideon Mensah	2	105	37	24	11
## Giorgio Chiellini	2	78	22	13	24
## Giovanni Lo Celso	1	11	8	4	6
## Giulian Biancone	4	147	70	42	23
## Giulio Maggiore	1	206	58	32	30
## Gonzalo Escalante	0	1	1	0	2
## Grischa Prömel	2	187	36	22	18
## Hamza Choudhury	0	15	9	3	0
## Héctor Herrera	1	73	16	8	13
## Henrikh Mkhitaryan	5	195	45	29	33
## Ignatius Ganago	10	27	3	2	4
## Ilan Kebbal	7	122	31	15	16
## Issa Diop	1	55	10	8	14
## Jack Stephens	0	68	19	12	12
## Jakub Jankto	0	38	11	7	4
## Jamie Shackleton	0	50	27	16	11
## Janik Haberer	1	51	14	8	11
## Janis Antiste	5	36	18	11	7
## Jannes Horn	0	33	6	4	1
## Jarrad Branthwaite	0	24	4	1	3
## Jason Berthomier	2	98	29	14	14
## Javairô Dilrosun	1	68	13	4	14
## Jean-Eudes Aholou	0	77	16	9	8
## Jean-Kévin Augustin	0	3	1	0	1
## Jean-Philippe Gbamin	0	4	1	1	0
## Jens Petter Hauge	1	56	14	5	7
## Jens Stryger Larsen	1	22	5	2	2
## Jesse Lingard	1	19	9	7	4
## Jessic Ngankam	1	10	3	1	3
## Jimmy Cabot	1	180	81	44	29
## Joaquín Correa	1	32	11	5	8
## Jonas Martin	0	147	35	20	17
## Jonathan Silva	0	17	10	8	4
## Jonjoe Kenny	1	58	17	7	8
## Jordan Amavi	0	29	16	10	3
## Jordan Torunarigha	1	27	4	1	4
## Julian Draxler	1	26	3	2	3
## Junior Dina Ebimbe	0	12	9	4	5
## Junior Sambia	0	86	22	13	22
## Jurgen Ekkelenkamp	0	48	8	3	9
## Justin Kluivert	5	95	19	9	13
## Calvin Phillips	0	180	54	25	37
## Kasper Dolberg	3	38	9	4	15

## Keinan Davis	0	0	0	0	0
## Kevin Mbabu	2	109	31	20	25
## Kevin Stöger	0	55	10	5	6
## Kevin Strootman	0	42	8	4	11
## Ki-Jana Hoever	1	13	10	6	6
## Kingsley Ehizibue	0	45	32	18	13
## Kortney Hause	1	41	3	3	8
## Kristoffer Askildsen	0	43	18	6	14
## Landry Dimata	3	14	2	2	0
## László Bényes	0	17	5	3	5
## Leander Dendoncker	0	107	42	17	37
## Leonardo Mancuso	5	11	1	1	2
## Louis Schaub	3	56	16	10	17
## Luca Pellegrini	0	73	23	10	9
## Lucas Alario	7	13	6	5	5
## Lucas Ocampos	2	114	45	24	35
## Lucas Perrin	2	169	43	32	28
## Lucas Torreira	2	153	37	29	18
## Ludwig Augustinsson	0	41	18	14	10
## Luis Binks	0	35	8	4	6
## Lukas Klünter	0	12	1	1	1
## Luuk de Jong	6	23	9	7	4
## Malang Sarr	0	36	14	7	6
## Mamadou Coulibaly	0	74	15	12	9
## Manuel Akanji	1	164	33	23	26
## Marco John	0	2	0	0	1
## Marcus Forss	0	4	3	3	5
## Marcus Ingvartsen	4	27	3	2	6
## Marko Pjaca	2	60	7	4	10
## Martin Braithwaite	2	7	1	1	2
## Mateo Klimowicz	1	21	13	6	2
## Mathías Olivera	3	195	79	47	45
## Mathias Pereira Lage	1	63	21	7	18
## Matija Nastasić	0	13	1	1	1
## Matt Miazga	0	35	7	7	14
## Matt Targett	0	73	34	18	16
## Mattéo Guendouzi	0	178	45	30	15
## Matteo Lovato	0	106	23	15	21
## Matteo Pessina	4	134	27	14	22
## Matthew Hoppe	2	6	1	0	0
## Matthias Ginter	2	136	36	22	21
## Matthijs de Ligt	2	129	34	19	31
## Mattia Zaccagni	0	8	3	1	1
## Mattias Svanberg	0	132	39	15	31
## Maxim Leitsch	1	148	18	10	31
## Mehdi Bourabia	0	20	5	1	7
## Merih Demiral	3	122	31	17	26
## Mihailo Ristić	0	115	44	32	16
## Mikkel Damsgaard	0	41	27	13	16
## Morgan Gibbs-White	0	2	0	0	1
## Moritz Jenz	0	66	26	12	19
## Morten Thorsby	0	151	46	26	37
## Moussa Doumbia	1	2	0	0	0
## Munir El Haddadi	3	23	8	4	7

## Nathan Tella	3	54	13	9	13
## Neal Maupay	6	76	17	10	21
## Neco Williams	0	0	0	0	0
## Nehuén Pérez	0	104	44	21	27
## Nemanja Radonjić	1	1	0	0	0
## Nicolas Pépé	4	43	8	5	9
## Nicolò Casale	0	197	46	30	31
## Nicolò Rovella	3	118	37	26	21
## Niklas Süle	1	158	29	23	16
## Oleksandr Zinchenko	1	65	20	14	11
## Omar Richards	0	28	19	12	7
## Orbelín Pineda	0	12	4	1	0
## Orel Mangala	0	110	17	10	11
## Oussama Idrissi	2	48	8	4	8
## Ozan Kabak	1	50	10	5	19
## Patrick Berg	0	28	14	6	2
## Patrick Cutrone	20	40	5	2	11
## Paul Nebel	1	18	5	3	0
## Philipp Förster	2	58	20	13	12
## Pierre-Yves Hamel	2	9	11	6	2
## Pietro Pellegrini	2	4	2	2	0
## Ragnar Ache	6	7	2	0	3
## Raheem Sterling	10	86	23	10	12
## Randal Kolo Muani	18	107	28	14	14
## Remo Freuler	0	186	69	39	48
## Renato Steffen	0	57	20	16	7
## Rey Manaj	11	57	19	12	16
## Ricardo Pepi	3	11	4	2	7
## Riccardo Calafiori	0	2	1	0	2
## Roberto Piccoli	1	8	1	1	0
## Rolando Mandragora	1	87	21	10	18
## Romelu Lukaku	14	33	2	1	11
## Ronaël Pierre-Gabriel	3	129	79	45	22
## Salih Özcan	1	225	42	30	37
## Sam Lammers	0	0	1	0	0
## Samuel Umtiti	1	6	2	2	1
## Samuele Ricci	2	40	8	4	7
## Santiago Ascacíbar	2	192	93	54	31
## Sargis Adamyan	4	24	8	6	4
## Sebastian Polter	7	60	9	3	15
## Sebastiano Luperto	1	92	29	17	32
## Sergiño Dest	1	93	32	15	22
## Shane Duffy	1	68	15	12	24
## Simon Banza	0	5	2	1	1
## Sofian Kiyine	0	94	24	14	15
## Sofiane Diop	4	134	38	20	10
## Stefano Sensi	1	14	4	3	2
## Steffen Tigges	1	2	4	3	3
## Stéphane Bahoken	4	22	13	8	15
## Steven Bergwijn	1	22	3	2	3
## Sven Botman	1	113	24	11	32
## Taiwo Awoniyi	21	82	11	7	11
## Takefusa Kubo	5	101	31	19	24
## Takumi Minamino	0	13	3	2	2

## Tanguy Nianzou	0	32	11	7	7
## Tariqe Fosu	0	1	0	0	1
## Thilo Kehrer	0	70	21	14	19
## Thomas Monconduit	0	160	41	25	21
## Timo Werner	11	37	8	4	9
## Tino Kadewere	4	29	7	5	7
## Uroš Račić	1	97	32	18	16
## Vedat Muriqi	1	6	1	0	0
## Wesley Fofana	0	43	12	8	5
## Willy Boly	1	62	25	19	14
## Xaver Schlager	1	102	43	20	25
## Xavi Simons	0	8	1	1	3
## Yan Valery	0	27	8	6	6
## Yangel Herrera	1	128	41	31	27
## Youssouf Koné	2	62	30	18	8
## Yves Bissouma	0	161	76	49	33
## Zinho Vanheusden	0	47	18	6	19
##					
	Shots Blocked	Passes Blocked	Cleannaces	Interceptions	
## Aaron Connolly	0	2	0	0	
## Aaron Hickey	13	23	29	44	
## Aaron Ramsey	0	0	1	0	
## Abdou Diallo	2	4	10	19	
## Adam Ounas	0	3	2	3	
## Ademola Lookman	1	18	10	4	
## Adnan Januzaj	3	12	12	15	
## Ainsley Maitland-Niles	0	2	4	4	
## Akim Zedadka	8	24	58	48	
## Alessandro Florenzi	2	7	27	10	
## Alessio Romagnoli	12	9	19	45	
## Alexander Isak	2	12	3	10	
## Alexandre Lacazette	1	11	5	6	
## Alexis Claude-Maurice	0	7	3	1	
## Alexis Sánchez	0	4	2	3	
## Amadou Diawara	0	2	0	1	
## Amadou Onana	3	7	30	19	
## Amine Harit	0	10	4	2	
## Anderson Lucoqui	3	12	11	10	
## Andi Zeqiri	1	9	2	12	
## Andrea Belotti	4	8	2	9	
## Andrea La Mantia	1	2	1	6	
## Andrea Petagna	0	1	0	5	
## Andrea Pinamonti	3	21	7	23	
## Andreas Christensen	6	8	29	57	
## Andreas Voglsammer	2	7	2	7	
## Andriy Yarmolenko	2	2	0	2	
## Ángel Di María	0	17	6	3	
## Angelo Fulgini	5	16	22	5	
## Anthony Caci	3	19	33	49	
## Antonio Rüdiger	11	9	28	91	
## Anwar El Ghazi	0	3	0	0	
## Arkadiusz Milik	1	8	3	10	
## Armando Izzo	4	1	17	21	
## Arne Maier	1	17	15	13	
## Arthur Theate	16	13	42	69	



## Aster Vranckx	7	12	13	16
## Axel Witsel	9	15	27	38
## Aymen Barkok	1	3	5	6
## Ben Davies	19	13	30	75
## Bertrand Traoré	0	0	0	1
## Billy Gilmour	4	17	17	29
## Boubacar Kamara	10	19	46	44
## Boulaye Dia	1	5	5	4
## Brandon Soppy	2	8	5	9
## Breel Embolo	2	12	6	7
## Brian Brobbey	0	1	0	0
## Bryan Reynolds	0	0	0	1
## Callum Hudson-Odoi	0	8	2	6
## Calvin Stengs	0	10	8	6
## Cédric Hountondji	12	11	34	76
## Cengiz Ünder	2	11	14	9
## Cenk Tosun	0	0	0	0
## Cheick Doucouré	7	23	68	24
## Cheikhou Kouyaté	14	26	38	39
## Chris Richards	0	1	0	0
## Christian Benteke	3	4	2	33
## Christian Eriksen	1	8	9	14
## Ciaran Clark	11	3	13	43
## Clément Lenglet	3	4	13	21
## Colin Dagba	2	2	2	1
## Corentin Jean	0	5	1	0
## Corentin Tolisso	1	4	9	10
## Cristian Romero	21	25	33	74
## Dan Ndoye	0	4	0	0
## Daniel James	1	17	8	12
## Daniel Maldini	0	4	1	0
## Daniel Wass	0	0	0	3
## Danny da Costa	1	13	11	18
## David Nemeth	1	4	6	11
## Dele Alli	5	17	6	16
## Denis Cheryshev	1	8	9	9
## Denis Vavro	0	0	0	0
## Denis Zakaria	3	13	11	7
## Diego Lainez	0	3	1	0
## Divock Origi	0	1	1	2
## Dominique Heintz	0	0	1	0
## Dries Mertens	2	6	9	2
## Dwight Gayle	0	0	1	0
## Dylan Chambost	2	7	8	4
## Ebrima Colley	0	8	3	2
## Eddie Salcedo	1	1	0	7
## Edinson Cavani	0	6	2	8
## El Bilal Touré	3	7	6	19
## Enzo Ebosee	9	10	15	42
## Eric Bailly	2	2	3	11
## Erick Cabaco	2	3	4	10
## Erik Durm	1	7	10	7
## Erik Thommy	0	3	4	0
## Evann Guessand	0	4	0	1

## Fabio Depaoli	1	1	1	2
## Federico Bernardeschi	4	8	5	15
## Federico Bonazzoli	1	16	6	7
## Federico Chiesa	0	7	4	3
## Federico Fernández	10	0	4	28
## Filippo Melegoni	1	9	11	8
## Flavius Daniliuc	7	6	14	34
## Florent Mollet	4	23	24	13
## Francesco Caputo	0	0	0	0
## Francesco Di Mariano	1	1	0	0
## Gaëtan Laborde	0	3	5	5
## Gareth Bale	0	2	2	1
## Georginio Wijnaldum	3	10	9	7
## Ghislain Konan	8	27	28	45
## Giacomo Raspadori	3	26	9	11
## Gianluca Frabotta	0	1	1	0
## Gideon Mensah	2	9	16	21
## Giorgio Chiellini	18	6	22	59
## Giovanni Lo Celso	1	5	1	0
## Giulian Biancone	8	15	53	71
## Giulio Maggiore	5	25	29	33
## Gonzalo Escalante	1	1	1	0
## Grischa Prömel	3	15	23	22
## Hamza Choudhury	0	0	12	10
## Héctor Herrera	2	11	12	16
## Henrikh Mkhitaryan	2	31	22	33
## Ignatius Ganago	0	4	2	3
## Ilan Kebbal	0	16	13	3
## Issa Diop	13	1	7	44
## Jack Stephens	7	5	19	42
## Jakub Jankto	0	4	4	7
## Jamie Shackleton	7	4	8	12
## Janik Haberer	4	7	16	11
## Janis Antiste	1	6	4	6
## Jannes Horn	1	0	3	9
## Jarrad Branthwaite	2	1	1	20
## Jason Berthomier	2	12	8	4
## Javairô Dilrosun	1	13	11	5
## Jean-Eudes Aholou	1	7	19	7
## Jean-Kévin Augustin	0	1	0	0
## Jean-Philippe Gbamin	0	0	1	1
## Jens Petter Hauge	0	7	3	5
## Jens Stryger Larsen	0	2	4	17
## Jesse Lingard	0	4	0	1
## Jessic Ngankam	0	3	0	1
## Jimmy Cabot	0	29	32	30
## Joaquín Correa	1	7	3	2
## Jonas Martin	3	14	22	28
## Jonathan Silva	0	4	3	7
## Jonjoe Kenny	1	7	20	31
## Jordan Amavi	1	2	15	7
## Jordan Torunarigha	2	2	17	30
## Julian Draxler	0	3	5	3
## Junior Dina Ebimbe	3	2	2	1

## Junior Sambia	3	19	21	31
## Jurgen Ekkelenkamp	2	7	4	5
## Justin Kluivert	1	12	14	6
## Calvin Phillips	9	28	24	18
## Kasper Dolberg	1	14	6	17
## Keinan Davis	0	0	0	0
## Kevin Mbabu	8	17	35	35
## Kevin Stöger	0	6	5	1
## Kevin Strootman	2	9	10	15
## Ki-Jana Hoever	0	6	6	8
## Kingsley Ehizibue	4	9	9	26
## Kortney Hause	5	3	6	13
## Kristoffer Asklidsen	7	7	15	15
## Landry Dimata	0	0	1	7
## László Bénes	2	3	2	5
## Leander Dendoncker	10	27	9	38
## Leonardo Mancuso	0	2	1	2
## Louis Schaub	3	14	3	3
## Luca Pellegrini	1	8	5	23
## Lucas Alario	0	5	1	6
## Lucas Ocampos	1	34	9	24
## Lucas Perrin	11	17	42	67
## Lucas Torreira	1	17	26	18
## Ludwig Augustinsson	3	7	5	21
## Luis Binks	5	1	17	33
## Lukas Klünter	0	1	2	2
## Luuk de Jong	0	4	0	12
## Malang Sarr	3	3	11	20
## Mamadou Coulibaly	0	9	11	9
## Manuel Akanji	15	11	35	58
## Marco John	0	1	1	1
## Marcus Forss	0	5	1	0
## Marcus Ingvartsen	0	6	6	7
## Marko Pjaca	2	8	4	2
## Martin Braithwaite	0	2	1	1
## Mateo Klimowicz	0	2	4	3
## Mathías Olivera	4	41	55	67
## Mathias Pereira Lage	7	11	21	22
## Matija Nastasić	1	0	5	11
## Matt Miazga	12	2	11	55
## Matt Targett	9	7	23	35
## Mattéo Guendouzi	1	14	16	18
## Matteo Lovato	10	11	28	43
## Matteo Pessina	3	19	13	7
## Matthew Hoppe	0	0	0	0
## Matthias Ginter	10	11	33	76
## Matthijs de Ligt	21	10	26	103
## Mattia Zaccagni	0	1	4	0
## Mattias Svanberg	9	22	28	34
## Maxim Leitsch	19	12	31	74
## Mehdi Bourabia	6	1	3	10
## Merih Demiral	14	12	58	68
## Mihailo Ristić	6	10	17	48
## Mikkel Damsgaard	1	15	7	7

## Morgan Gibbs-White	0	1	0	0
## Moritz Jenz	11	8	28	55
## Morten Thorsby	12	25	25	39
## Moussa Doumbia	0	0	0	0
## Munir El Haddadi	1	6	5	2
## Nathan Tella	0	13	6	9
## Neal Maupay	2	19	2	2
## Neco Williams	0	0	0	0
## Nehuén Pérez	9	18	21	47
## Nemanja Radonjić	0	0	0	0
## Nicolas Pépé	1	8	8	2
## Nicolò Casale	12	19	49	95
## Nicolò Rovella	1	20	20	20
## Niklas Süle	12	4	28	49
## Oleksandr Zinchenko	3	8	14	15
## Omar Richards	1	6	4	7
## Orbelín Pineda	0	0	0	1
## Orel Mangala	4	7	12	19
## Oussama Idrissi	0	8	3	5
## Ozan Kabak	11	8	16	26
## Patrick Berg	1	1	4	3
## Patrick Cutrone	1	10	5	1
## Paul Nebel	0	0	0	1
## Philipp Förster	1	11	3	2
## Pierre-Yves Hamel	1	1	0	0
## Pietro Pellegri	0	0	0	1
## Ragnar Ache	0	3	0	1
## Raheem Sterling	0	12	12	3
## Randal Kolo Muani	3	11	6	31
## Remo Freuler	8	40	35	26
## Renato Steffen	0	7	13	14
## Rey Manaj	0	16	4	13
## Ricardo Pepi	0	7	3	8
## Riccardo Calafiori	1	1	2	4
## Roberto Piccoli	0	0	1	1
## Rolando Mandragora	4	14	10	13
## Romelu Lukaku	1	10	0	20
## Ronaël Pierre-Gabriel	7	15	48	74
## Salih Özcan	5	32	51	35
## Sam Lammers	0	0	0	0
## Samuel Umtiti	1	0	0	4
## Samuele Ricci	1	6	14	9
## Santiago Ascacíbar	6	25	41	42
## Sargis Adamyan	0	4	1	2
## Sebastian Polter	5	10	2	24
## Sebastiano Luperto	26	6	45	132
## Sergiño Dest	4	18	2	18
## Shane Duffy	18	6	16	76
## Simon Banza	0	1	1	2
## Sofian Kiyine	1	14	10	9
## Sofiane Diop	0	10	23	4
## Stefano Sensi	0	2	0	2
## Steffen Tigges	1	2	0	3
## Stéphane Bahoken	0	15	3	3

## Steven Bergwijn	0	3	1	8
## Sven Botman	21	11	26	116
## Taiwo Awoniyi	2	9	2	29
## Takefusa Kubo	3	21	8	4
## Takumi Minamino	0	2	1	2
## Tanguy Nianzou	2	5	7	17
## Tariqe Fosu	0	1	0	0
## Thilo Kehrer	11	8	24	29
## Thomas Monconduit	10	11	22	51
## Timo Werner	0	9	2	4
## Tino Kadewere	0	7	4	1
## Uroš Račić	6	10	16	21
## Vedat Muriqi	0	0	0	2
## Wesley Fofana	2	3	12	26
## Willy Boly	6	8	14	35
## Xaver Schlager	2	23	9	14
## Xavi Simons	0	3	0	0
## Yan Valery	3	3	6	19
## Yangel Herrera	5	22	19	33
## Youssouf Koné	3	5	10	25
## Yves Bissouma	3	30	50	49
## Zinho Vanheusden	14	5	23	42
##	Defensive Errors	Passes Made	Passes Attempted	Pass Rate
## Aaron Connolly	0	14	19	73.7
## Aaron Hickey	0	1032	1289	80.1
## Aaron Ramsey	0	59	66	89.4
## Abdou Diallo	1	623	704	88.5
## Adam Ounas	0	158	204	77.5
## Ademola Lookman	0	405	536	75.6
## Adnan Januzaj	0	486	749	64.9
## Ainsley Maitland-Niles	0	106	138	76.8
## Akim Zedadka	0	1688	2101	80.3
## Alessandro Florenzi	1	646	812	79.6
## Alessio Romagnoli	0	893	999	89.4
## Alexander Isak	0	316	440	71.8
## Alexandre Lacazette	0	343	455	75.4
## Alexis Claude-Maurice	0	88	103	85.4
## Alexis Sánchez	0	348	456	76.3
## Amadou Diawara	0	56	71	78.9
## Amadou Onana	0	516	623	82.8
## Amine Harit	0	611	703	86.9
## Anderson Lucoqui	0	147	246	59.8
## Andi Zeqiri	0	114	173	65.9
## Andrea Belotti	0	252	369	68.3
## Andrea La Mantia	0	63	105	60.0
## Andrea Petagna	0	114	162	70.4
## Andrea Pinamonti	0	381	636	59.9
## Andreas Christensen	1	1201	1336	89.9
## Andreas Voglsammer	0	145	246	58.9
## Andriy Yarmolenko	0	80	109	73.4
## Ángel Di María	0	881	1182	74.5
## Angelo Fulgini	1	1108	1376	80.5
## Anthony Caci	1	1260	1627	77.4
## Antonio Rüdiger	1	2217	2534	87.5

## Anwar El Ghazi	0	7	9	77.8
## Arkadiusz Milik	1	299	377	79.3
## Armando Izzo	0	240	307	78.2
## Arne Maier	0	609	849	71.7
## Arthur Theate	0	1231	1488	82.7
## Aster Vranckx	0	335	441	76.0
## Axel Witsel	0	1217	1305	93.3
## Aymen Barkok	0	52	70	74.3
## Ben Davies	1	1391	1648	84.4
## Bertrand Traoré	0	61	84	72.6
## Billy Gilmour	0	991	1243	79.7
## Boubacar Kamara	1	2193	2425	90.4
## Boulaye Dia	0	189	253	74.7
## Brandon Soppy	1	167	236	70.8
## Breel Embolo	0	398	541	73.6
## Brian Brobbey	0	28	32	87.5
## Bryan Reynolds	0	2	2	100.0
## Callum Hudson-Odoi	1	317	399	79.4
## Calvin Stengs	0	295	411	71.8
## Cédric Hountondji	0	836	988	84.6
## Cengiz Ünder	0	690	946	72.9
## Cenk Tosun	0	1	1	100.0
## Cheick Doucouré	0	1656	1904	87.0
## Cheikhou Kouyaté	0	656	804	81.6
## Chris Richards	0	3	3	100.0
## Christian Benteke	0	196	305	64.3
## Christian Eriksen	0	478	639	74.8
## Ciaran Clark	1	290	370	78.4
## Clément Lenglet	0	743	820	90.6
## Colin Dagba	0	125	139	89.9
## Corentin Jean	0	85	116	73.3
## Corentin Tolisso	0	477	550	86.7
## Cristian Romero	1	1149	1325	86.7
## Dan Ndoye	0	37	52	71.2
## Daniel James	0	326	508	64.2
## Daniel Maldini	0	33	48	68.8
## Daniel Wass	0	20	28	71.4
## Danny da Costa	1	213	319	66.8
## David Nemeth	1	146	174	83.9
## Dele Alli	0	177	228	77.6
## Denis Cheryshev	0	104	171	60.8
## Denis Vavro	0	6	6	100.0
## Denis Zakaria	0	129	168	76.8
## Diego Lainez	0	43	56	76.8
## Divock Origi	0	28	37	75.7
## Dominique Heintz	0	20	21	95.2
## Dries Mertens	0	400	548	73.0
## Dwight Gayle	0	13	16	81.3
## Dylan Chambost	0	379	492	77.0
## Ebrima Colley	0	80	127	63.0
## Eddie Salcedo	1	100	148	67.6
## Edinson Cavani	0	176	233	75.5
## El Bilal Touré	0	242	330	73.3
## Enzo Ebosee	0	911	1086	83.9

## Eric Bailly	0	68	85	80.0
## Erick Cabaco	0	115	173	66.5
## Erik Durm	0	183	278	65.8
## Erik Thommy	0	87	117	74.4
## Evann Guessand	0	51	76	67.1
## Fabio Depaoli	0	22	36	61.1
## Federico Bernardeschi	0	452	592	76.4
## Federico Bonazzoli	0	407	547	74.4
## Federico Chiesa	0	218	288	75.7
## Federico Fernández	0	182	211	86.3
## Filippo Melegoni	1	234	347	67.4
## Flavius Daniliuc	1	771	877	87.9
## Florent Mollet	0	951	1179	80.7
## Francesco Caputo	0	28	36	77.8
## Francesco Di Mariano	0	11	14	78.6
## Gaëtan Laborde	0	57	97	58.8
## Gareth Bale	0	45	65	69.2
## Georginio Wijnaldum	0	669	746	89.7
## Ghislain Konan	0	978	1296	75.5
## Giacomo Raspadori	0	814	1045	77.9
## Gianluca Frabotta	0	4	10	40.0
## Gideon Mensah	0	638	790	80.8
## Giorgio Chiellini	0	783	949	82.5
## Giovanni Lo Celso	1	128	161	79.5
## Giulian Biancone	1	939	1279	73.4
## Giulio Maggiore	0	834	1123	74.3
## Gonzalo Escalante	0	4	5	80.0
## Grischa Prömel	0	713	949	75.1
## Hamza Choudhury	0	128	156	82.1
## Héctor Herrera	0	560	668	83.8
## Henrikh Mkhitaryan	0	959	1168	82.1
## Ignatius Ganago	0	142	196	72.4
## Ilan Kebbal	0	617	829	74.4
## Issa Diop	0	407	478	85.1
## Jack Stephens	0	361	474	76.2
## Jakub Jankto	0	163	250	65.2
## Jamie Shackleton	1	353	409	86.3
## Janik Haberer	0	244	323	75.5
## Janis Antiste	0	136	215	63.3
## Jannes Horn	0	217	305	71.1
## Jarrad Branthwaite	0	89	117	76.1
## Jason Berthomier	1	1158	1427	81.1
## Javairô Dilrosun	0	445	602	73.9
## Jean-Eudes Aholou	0	339	412	82.3
## Jean-Kévin Augustin	0	11	14	78.6
## Jean-Philippe Gbamin	0	16	22	72.7
## Jens Petter Hauge	0	305	426	71.6
## Jens Stryger Larsen	0	206	277	74.4
## Jesse Lingard	0	128	153	83.7
## Jessic Ngankam	0	25	46	54.3
## Jimmy Cabot	0	1081	1381	78.3
## Joaquín Correa	0	280	344	81.4
## Jonas Martin	1	1533	1695	90.4
## Jonathan Silva	0	62	94	66.0

## Jonjoe Kenny	0	351	478	73.4
## Jordan Amavi	0	269	319	84.3
## Jordan Torunarigha	0	194	239	81.2
## Julian Draxler	0	275	306	89.9
## Junior Dina Ebimbe	0	192	215	89.3
## Junior Sambia	0	551	725	76.0
## Jurgen Ekkelenkamp	0	165	241	68.5
## Justin Kluivert	0	423	665	63.6
## Calvin Phillips	0	786	971	80.9
## Kasper Dolberg	0	172	243	70.8
## Keinan Davis	0	3	3	100.0
## Kevin Mbabu	0	599	883	67.8
## Kevin Stöger	1	244	329	74.2
## Kevin Strootman	0	297	368	80.7
## Ki-Jana Hoever	0	110	160	68.8
## Kingsley Ehizibue	0	248	364	68.1
## Kortney Hause	0	175	222	78.8
## Kristoffer Askildsen	0	147	226	65.0
## Landry Dimata	0	67	92	72.8
## László Bénes	0	138	187	73.8
## Leander Dendoncker	1	709	822	86.3
## Leonardo Mancuso	0	51	77	66.2
## Louis Schaub	0	205	320	64.1
## Luca Pellegrini	0	521	682	76.4
## Lucas Alario	0	115	171	67.3
## Lucas Ocampos	1	656	864	75.9
## Lucas Perrin	0	1221	1454	84.0
## Lucas Torreira	0	1193	1368	87.2
## Ludwig Augustinsson	0	437	551	79.3
## Luis Binks	1	271	338	80.2
## Lukas Klünter	0	67	96	69.8
## Luuk de Jong	0	132	185	71.4
## Malang Sarr	0	432	493	87.6
## Mamadou Coulibaly	0	250	331	75.5
## Manuel Akanji	0	1819	2013	90.4
## Marco John	0	15	16	93.8
## Marcus Forss	0	22	38	57.9
## Marcus Ingvartsen	1	148	217	68.2
## Marko Pjaca	0	322	420	76.7
## Martin Braithwaite	0	44	56	78.6
## Mateo Klimowicz	0	140	193	72.5
## Mathías Olivera	1	1017	1430	71.1
## Mathias Pereira Lage	0	363	525	69.1
## Matija Nastasić	0	143	154	92.9
## Matt Miazga	1	244	321	76.0
## Matt Targett	0	592	823	71.9
## Mattéo Guendouzi	0	1882	2178	86.4
## Matteo Lovato	0	488	592	82.4
## Matteo Pessina	0	718	880	81.6
## Matthew Hoppe	0	24	34	70.6
## Matthias Ginter	0	1451	1759	82.5
## Matthijs de Ligt	0	1510	1704	88.6
## Mattia Zaccagni	0	56	70	80.0
## Mattias Svanberg	0	766	1037	73.9



## Maxim Leitsch	1	685	835	82.0
## Mehdi Bourabia	0	91	110	82.7
## Merih Demiral	1	683	801	85.3
## Mihailo Ristić	0	784	1055	74.3
## Mikkel Damsgaard	0	196	264	74.2
## Morgan Gibbs-White	0	7	10	70.0
## Moritz Jenz	0	584	691	84.5
## Morten Thorsby	0	705	992	71.1
## Moussa Doumbia	0	28	35	80.0
## Munir El Haddadi	0	102	133	76.7
## Nathan Tella	0	103	177	58.2
## Neal Maupay	0	479	622	77.0
## Neco Williams	0	9	9	100.0
## Nehuén Pérez	0	593	774	76.6
## Nemanja Radonjić	0	9	10	90.0
## Nicolas Pépé	0	283	365	77.5
## Nicolò Casale	0	957	1195	80.1
## Nicolò Rovella	0	762	977	78.0
## Niklas Süle	0	1586	1767	89.8
## Oleksandr Zinchenko	1	953	1073	88.8
## Omar Richards	0	312	361	86.4
## Orbelín Pineda	0	57	66	86.4
## Orel Mangala	1	655	793	82.6
## Oussama Idrissi	0	293	389	75.3
## Ozan Kabak	0	350	431	81.2
## Patrick Berg	0	179	218	82.1
## Patrick Cutrone	0	161	248	64.9
## Paul Nebel	0	60	97	61.9
## Philipp Förster	0	377	444	84.9
## Pierre-Yves Hamel	0	71	99	71.7
## Pietro Pellegri	0	12	19	63.2
## Ragnar Ache	0	37	64	57.8
## Raheem Sterling	0	714	880	81.1
## Randal Kolo Muani	0	368	547	67.3
## Remo Freuler	1	1486	1728	86.0
## Renato Steffen	0	317	429	73.9
## Rey Manaj	0	329	448	73.4
## Ricardo Pepi	0	67	101	66.3
## Riccardo Calafiori	0	12	21	57.1
## Roberto Piccoli	1	29	56	51.8
## Rolando Mandragora	0	647	769	84.1
## Romelu Lukaku	0	231	327	70.6
## Ronaël Pierre-Gabriel	0	1198	1428	83.9
## Salih Özcan	1	1128	1360	82.9
## Sam Lammers	0	12	20	60.0
## Samuel Umtiti	0	42	50	84.0
## Samuele Ricci	0	367	395	92.9
## Santiago Ascacíbar	0	959	1168	82.1
## Sargis Adamyan	0	73	101	72.3
## Sebastian Polter	0	259	489	53.0
## Sebastiano Luperto	0	821	982	83.6
## Sergiño Dest	0	876	999	87.7
## Shane Duffy	1	906	1039	87.2
## Simon Banza	0	18	31	58.1

## Sofian Kiyine	0	392	532	73.7
## Sofiane Diop	0	708	977	72.5
## Stefano Sensi	0	113	129	87.6
## Steffen Tigges	0	22	40	55.0
## Stéphane Bahoken	0	157	218	72.0
## Steven Bergwijn	0	144	177	81.4
## Sven Botman	0	1340	1525	87.9
## Taiwo Awoniyi	0	313	474	66.0
## Takefusa Kubo	0	349	504	69.2
## Takumi Minamino	0	58	69	84.1
## Tanguy Nianzou	0	492	539	91.3
## Tariqe Fosu	0	6	7	85.7
## Thilo Kehrer	0	1142	1209	94.5
## Thomas Monconduit	1	997	1280	77.9
## Timo Werner	0	297	402	73.9
## Tino Kadewere	1	133	164	81.1
## Uroš Račić	0	370	506	73.1
## Vedat Muriqi	0	42	64	65.6
## Wesley Fofana	1	470	528	89.0
## Willy Boly	0	468	558	83.9
## Xaver Schlager	0	319	422	75.6
## Xavi Simons	0	48	60	80.0
## Yan Valery	1	108	155	69.7
## Yangel Herrera	1	702	870	80.7
## Youssouf Koné	0	322	439	73.3
## Yves Bissouma	0	1061	1193	88.9
## Zinho Vanheusden	0	333	421	79.1
##	Key Passes	Position2.y	OVR	Overall Percentile
## Aaron Connolly	1	FWMF	70	69 4
## Aaron Hickey	19	DF	69	75 4
## Aaron Ramsey	2	MF	80	64 1
## Abdou Diallo	4	DF	78	77 2
## Adam Ounas	12	MFFW	74	73 3
## Ademola Lookman	23	FWMF	77	77 2
## Adnan Januzaj	34	FWMF	81	79 1
## Ainsley Maitland-Niles	3	MF	75	75 2
## Akim Zedadka	45	DF	73	74 3
## Alessandro Florenzi	11	DFFW	81	79 1
## Alessio Romagnoli	3	DF	82	80 1
## Alexander Isak	20	FW	82	80 1
## Alexandre Lacazette	29	FW	82	81 1
## Alexis Claude-Maurice	8	MF	77	74 2
## Alexis Sánchez	20	FW	80	79 1
## Amadou Diawara	1	MF	76	74 2
## Amadou Onana	15	MF	68	74 4
## Amine Harit	26	FWMF	75	75 2
## Anderson Lucoqui	6	DF	71	71 4
## Andi Zeqiri	10	FWMF	67	68 4
## Andrea Belotti	10	FW	81	80 1
## Andrea La Mantia	8	FWMF	69	70 4
## Andrea Petagna	10	FW	76	76 2
## Andrea Pinamonti	29	FW	68	75 4
## Andreas Christensen	6	DF	80	82 1
## Andreas Voglsammer	10	FWMF	72	73 3

## Andriy Yarmolenko	4	FWMF	76	75	2
## Ángel Di María	54	FW	87	84	1
## Angelo Fulgini	48	MFFW	78	77	2
## Anthony Caci	28	DF	74	75	3
## Antonio Rüdiger	12	DF	83	87	1
## Anwar El Ghazi	0	FWMF	76	75	2
## Arkadiusz Milik	15	FW	81	79	1
## Armando Izzo	0	DF	79	74	1
## Arne Maier	33	MF	74	76	3
## Arthur Theate	6	DF	69	75	4
## Aster Vranckx	11	MF	67	73	4
## Axel Witsel	6	MDFD	83	79	1
## Aymen Barkok	1	MDFD	73	72	3
## Ben Davies	11	DF	73	73	3
## Bertrand Traoré	0	MFFW	77	76	2
## Billy Gilmour	25	MF	72	72	3
## Boubacar Kamara	24	MDFD	80	80	1
## Boulaye Dia	17	FW	77	79	2
## Brandon Soppy	6	DFMF	68	70	4
## Breel Embolo	34	FW	77	77	2
## Brian Brobbey	3	FWMF	73	76	3
## Bryan Reynolds	0	DF	66	66	4
## Callum Hudson-Odoi	25	MFFW	77	78	2
## Calvin Stengs	23	MF	77	71	2
## Cédric Hountondji	1	DF	72	73	3
## Cengiz Ünder	34	FWMF	77	79	2
## Cenk Tosun	0	MF	74	73	3
## Cheick Doucouré	41	MF	75	76	2
## Cheikhou Kouyaté	5	MF	78	77	2
## Chris Richards	0	DF	71	74	4
## Christian Benteke	13	FW	75	74	2
## Christian Eriksen	30	MF	82	82	1
## Ciaran Clark	4	DF	75	72	2
## Clément Lenglet	2	DF	82	78	1
## Colin Dagba	2	DF	76	74	2
## Corentin Jean	2	FWMF	70	71	4
## Corentin Tolisso	16	MF	80	81	1
## Cristian Romero	6	DF	82	83	1
## Dan Ndoye	2	FWMF	69	69	4
## Daniel James	24	FWMF	77	77	2
## Daniel Maldini	1	MF	59	65	4
## Daniel Wass	0	DFFW	80	79	1
## Danny da Costa	2	DFMF	76	74	2
## David Nemeth	0	DF	69	68	4
## Dele Alli	2	MF	80	77	1
## Denis Cheryshev	3	MFFW	76	75	2
## Denis Vavro	0	DF	71	73	4
## Denis Zakaria	3	MF	80	81	1
## Diego Lainez	3	FW	74	74	3
## Divock Origi	0	FW	76	76	2
## Dominique Heintz	0	DF	74	73	3
## Dries Mertens	33	FWMF	84	84	1
## Dwight Gayle	2	FWDF	73	72	3
## Dylan Chambost	9	MFFW	66	68	4

## Ebrima Colley	5	FWMF	67	67	4
## Eddie Salcedo	5	MFFW	70	68	4
## Edinson Cavani	7	FW	85	81	1
## El Bilal Touré	11	FW	69	70	4
## Enzo Ebosse	9	DF	65	70	4
## Eric Bailly	0	DF	79	76	1
## Erick Cabaco	2	DF	73	72	3
## Erik Durm	3	DF	74	72	3
## Erik Thommy	9	FWMF	72	72	3
## Evann Guessand	5	FW	67	70	4
## Fabio Depaoli	0	MFDF	72	73	3
## Federico Bernardeschi	17	MFFW	79	79	1
## Federico Bonazzoli	10	FWMF	69	73	4
## Federico Chiesa	17	MFFW	83	84	1
## Federico Fernández	1	DF	75	73	2
## Filippo Melegoni	15	MFFW	62	67	4
## Flavius Daniliuc	3	DF	73	73	3
## Florent Mollet	32	FWMF	78	76	2
## Francesco Caputo	3	FW	82	78	1
## Francesco Di Mariano	1	FW	66	71	4
## Gaëtan Laborde	4	FW	80	81	1
## Gareth Bale	2	FW	82	81	1
## Georginio Wijnaldum	12	MF	84	80	1
## Ghislain Konan	31	DF	75	76	2
## Giacomo Raspadori	43	MFFW	74	79	3
## Gianluca Frabotta	0	DFMF	71	69	4
## Gideon Mensah	16	DF	71	70	4
## Giorgio Chiellini	7	DF	86	84	1
## Giovanni Lo Celso	5	MFFW	81	81	1
## Giulian Biancone	14	DFMF	68	70	4
## Giulio Maggiore	31	MF	71	77	4
## Gonzalo Escalante	0	MF	77	76	2
## Grischa Prömel	14	MF	72	76	3
## Hamza Choudhury	0	DFMF	73	73	3
## Héctor Herrera	10	MF	81	80	1
## Henrikh Mkhitaryan	41	MFFW	83	81	1
## Ignatius Ganago	11	FW	74	73	3
## Ilan Kebbal	33	MFFW	67	73	4
## Issa Diop	1	DF	77	77	2
## Jack Stephens	4	DF	74	74	3
## Jakub Jankto	5	DFMF	74	74	3
## Jamie Shackleton	1	DFMF	68	69	4
## Janik Haberer	1	MF	73	73	3
## Janis Antiste	6	FW	68	68	4
## Jannes Horn	6	DF	72	72	3
## Jarrad Branthwaite	0	DF	66	68	4
## Jason Berthomier	46	MF	72	74	3
## Javairô Dilrosun	31	MFFW	73	72	3
## Jean-Eudes Aholou	6	MF	75	75	2
## Jean-Kévin Augustin	0	FWMF	67	65	4
## Jean-Philippe Gbamin	0	MF	77	75	2
## Jens Petter Hauge	12	MFFW	76	74	2
## Jens Stryger Larsen	10	DF	75	75	2
## Jesse Lingard	8	FWMF	79	78	1

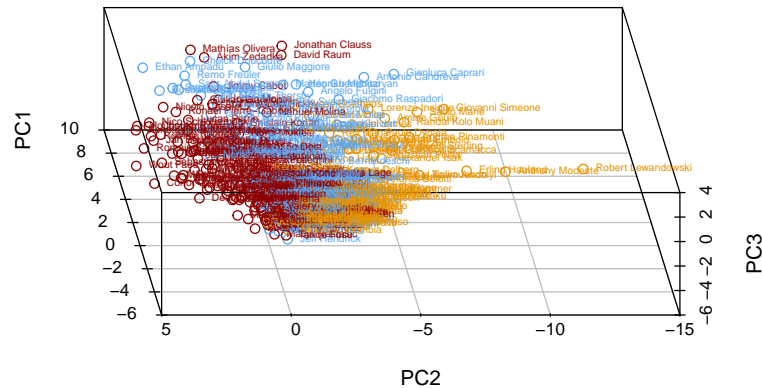
## Jessic Ngankam	1	FW	68	69	4
## Jimmy Cabot	18	DF	71	75	4
## Joaquín Correa	19	FW	81	80	1
## Jonas Martin	9	MF	72	75	3
## Jonathan Silva	2	DFFW	74	74	3
## Jonjoe Kenny	11	DF	74	74	3
## Jordan Amavi	1	DF	77	74	2
## Jordan Torunarigha	2	DF	73	73	3
## Julian Draxler	9	FWMF	80	79	1
## Junior Dina Ebimbe	1	MF	71	71	4
## Junior Sambia	11	DFFW	75	73	2
## Jurgen Ekkelenkamp	8	MFFW	70	71	4
## Justin Kluivert	35	MF	76	76	2
## Calvin Phillips	9	MF	81	81	1
## Kasper Dolberg	15	FW	79	77	1
## Keinan Davis	0	FW	69	72	4
## Kevin Mbabu	21	DF	79	77	1
## Kevin Stöger	14	MF	73	72	3
## Kevin Strootman	3	MF	76	73	2
## Ki-Jana Hoever	1	DFMF	65	67	4
## Kingsley Ehizibue	9	DF	72	72	3
## Kortney Hause	0	DF	75	75	2
## Kristoffer Askildsen	2	MF	59	68	4
## Landry Dimata	5	FWMF	74	72	3
## László Bénes	5	MF	73	73	3
## Leander Dendoncker	11	MF	77	76	2
## Leonardo Mancuso	3	FW	72	70	3
## Louis Schaub	10	MFFW	73	73	3
## Luca Pellegrini	13	DF	74	76	3
## Lucas Alario	7	FW	78	78	2
## Lucas Ocampos	18	FW	83	81	1
## Lucas Perrin	9	DF	69	74	4
## Lucas Torreira	23	MF	80	81	1
## Ludwig Augustinsson	9	DFFW	76	77	2
## Luis Binks	1	DF	69	69	4
## Lukas Klünter	2	DF	70	70	4
## Luuk de Jong	4	FW	79	79	1
## Malang Sarr	3	DF	74	75	3
## Mamadou Coulibaly	5	MF	66	67	4
## Manuel Akanji	2	DF	80	81	1
## Marco John	0	DF	67	66	4
## Marcus Forss	1	FWMF	68	68	4
## Marcus Ingvartsen	5	FWMF	71	73	4
## Marko Pjaca	15	MF	75	75	2
## Martin Braithwaite	2	FW	77	76	2
## Mateo Klimowicz	4	MFFW	69	67	4
## Mathías Olivera	31	DF	76	77	2
## Mathias Pereira Lage	9	DF	74	72	3
## Matija Nastasić	1	DF	74	74	3
## Matt Miazga	2	DF	72	72	3
## Matt Targett	21	DF	77	77	2
## Mattéo Guendouzi	35	MF	77	80	2
## Matteo Lovato	4	DF	72	73	3
## Matteo Pessina	24	MFFW	78	77	2

## Matthew Hoppe	3	FWMF	68	69	4
## Matthias Ginter	16	DF	84	82	1
## Matthijs de Ligt	9	DF	85	85	1
## Mattia Zaccagni	5	MF	77	79	2
## Mattias Svanberg	35	MF	73	76	3
## Maxim Leitsch	3	DF	72	74	3
## Mehdi Bourabia	2	MF	68	67	4
## Merih Demiral	4	DF	77	77	2
## Mihailo Ristić	16	DF	74	74	3
## Mikkel Damsgaard	11	MFFW	77	76	2
## Morgan Gibbs-White	0	DFFW	71	75	4
## Moritz Jenz	2	DF	66	68	4
## Morten Thorsby	15	MF	73	74	3
## Moussa Doumbia	0	FW	72	68	3
## Munir El Haddadi	7	FWMF	79	79	1
## Nathan Tella	7	MFFW	66	68	4
## Neal Maupay	23	FW	77	76	2
## Neco Williams	1	DF	68	71	4
## Nehuén Pérez	6	DF	75	75	2
## Nemanja Radonjić	1	FW	75	74	2
## Nicolas Pépé	12	FWMF	81	79	1
## Nicolò Casale	11	DF	64	76	4
## Nicolò Rovella	30	MF	70	75	4
## Niklas Süle	10	DF	82	85	1
## Oleksandr Zinchenko	16	DF	80	79	1
## Omar Richards	3	DF	74	73	3
## Orbelín Pineda	1	MFFW	77	76	2
## Orel Mangala	29	MF	76	75	2
## Oussama Idrissi	21	MF	76	76	2
## Ozan Kabak	2	DF	76	73	2
## Patrick Berg	1	MF	73	74	3
## Patrick Cutrone	9	FW	73	72	3
## Paul Nebel	4	MFFW	64	65	4
## Philipp Förster	9	MFFW	72	72	3
## Pierre-Yves Hamel	3	FW	71	68	4
## Pietro Pellegri	3	FW	68	69	4
## Ragnar Ache	3	MFFW	68	68	4
## Raheem Sterling	42	FW	88	86	1
## Randal Kolo Muani	40	FWMF	74	78	3
## Remo Freuler	23	MF	80	80	1
## Renato Steffen	13	FWMF	78	76	2
## Rey Manaj	13	FW	69	72	4
## Ricardo Pepi	5	FWMF	64	69	4
## Riccardo Calafiori	0	DF	67	68	4
## Roberto Piccoli	4	FW	63	69	4
## Rolando Mandragora	31	MF	75	75	2
## Romelu Lukaku	24	FW	88	86	1
## Ronaël Pierre-Gabriel	15	DF	73	73	3
## Salih Özcan	19	MF	73	79	3
## Sam Lammers	0	FWMF	74	71	3
## Samuel Umtiti	0	DF	80	79	1
## Samuele Ricci	4	MF	67	74	4
## Santiago Ascacíbar	11	MF	74	74	3
## Sargis Adamyan	4	FWMF	74	73	3

## Sebastian Polter	28	FW	69	73	4
## Sebastiano Luperto	9	DF	71	73	4
## Sergiño Dest	18	DFFW	81	77	1
## Shane Duffy	4	DF	72	74	3
## Simon Banza	2	FW	72	75	3
## Sofian Kiyine	19	MFFW	68	70	4
## Sofiane Diop	38	MFFW	77	78	2
## Stefano Sensi	4	MFFW	80	78	1
## Steffen Tigges	1	FWMF	66	68	4
## Stéphane Bahoken	8	FW	75	73	2
## Steven Bergwijn	8	FWMF	80	80	1
## Sven Botman	7	DF	79	80	1
## Taiwo Awoniyi	27	FW	74	77	3
## Takefusa Kubo	32	FWMF	75	74	2
## Takumi Minamino	2	FWMF	75	75	2
## Tanguy Nianzou	5	DF	71	73	4
## Tariqe Fosu	0	DF	71	69	4
## Thilo Kehrer	2	DF	76	76	2
## Thomas Monconduit	32	MF	71	72	4
## Timo Werner	8	FWMF	84	82	1
## Tino Kadewere	8	FW	77	73	2
## Uroš Račić	5	MF	78	75	2
## Vedat Muriqi	0	FW	75	75	2
## Wesley Fofana	2	DF	78	79	2
## Willy Boly	1	DF	79	78	1
## Xaver Schlager	5	MF	80	80	1
## Xavi Simons	1	MFFW	66	73	4
## Yan Valery	1	DF	71	71	4
## Yangel Herrera	12	MF	78	76	2
## Youssouf Koné	8	DF	70	69	4
## Yves Bissouma	8	MF	79	81	1
## Zinho Vanheusden	1	DF	74	72	3

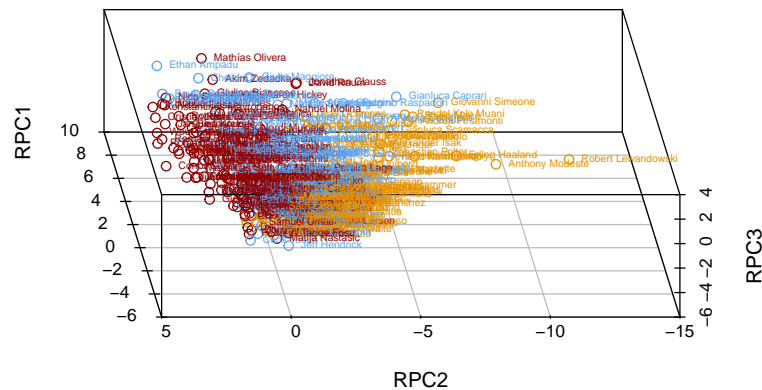
*# Plot the PCA in 3 dimensions*

```
pl <- scatterplot3d(PC$x[,1], PC$x[,2], PC$x[,3], color = colors, angle = 275, xlab = "PC1", ylab = "PC2", zlab = "PC3")
zz.coords <- pl$xyz.convert(PC$x[,1], PC$x[,2], PC$x[,3])
text(zz.coords$x,
     zz.coords$y,
     labels = FinData$Name,
     cex = .5, col = colors,
     pos = 4)
```



```
# Plot the RPCA in 3 dimensions
```

```
pl <- scatterplot3d(robPCA$scores[,1], robPCA$scores[,2], robPCA$scores[,3], color = colors, angle = 270)
zz.coords <- pl$xyz.convert(robPCA$scores[,1], robPCA$scores[,2], robPCA$scores[,3])
text(zz.coords$x,
     zz.coords$y,
     labels = FinData$Name,
     cex = .5, col = colors,
     pos = 4)
```



We've tested polydot, vanilladot, splinedot, these all do not give a very nice display of the data for KPCA, but both rbfdot and laplacedot give the same type. And it differentiates quite well.

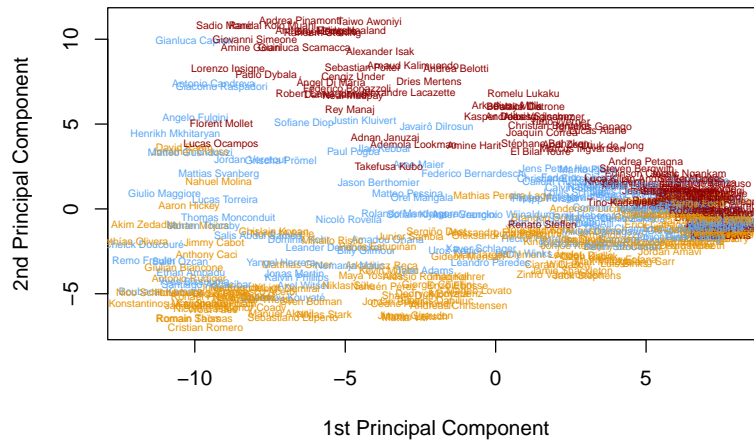
```
# KPCA with radial basis
```

```
KPC2 <- kpca(~., data = data.frame(X), kernal = "rbfdot", kpar=list(sigma=0.01))
```

```
# Which components explain the most variation
```



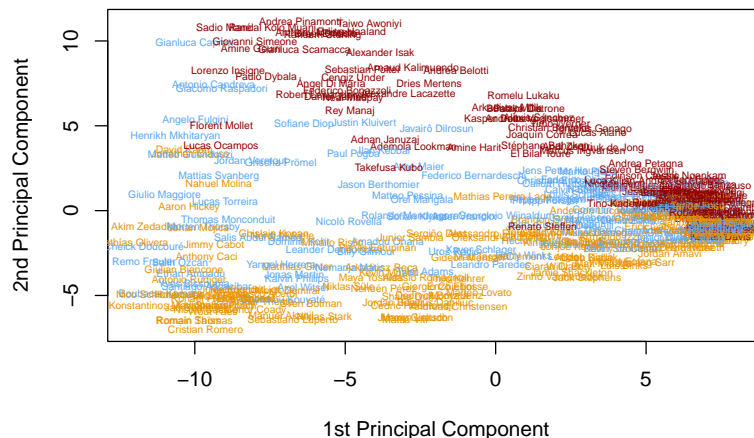
```
# Plot of KPCA
plot(rotated(KPC2),col=FinData$Position,
xlab="1st Principal Component",ylab="2nd Principal Component", cex = 0)
text(rotated(KPC2), labels = FinData$Name, col = colors[FinData$Position], cex = 0.5)
```



```
## KPCA with laplace
KPC4 <- kpca(~., data = data.frame(X), kernal = "laplacedot", kpar=list(sigma=0.01))

# Which components explain the most variation

# Plot of KPCA
plot(rotated(KPC4),col=FinData$Position,
xlab="1st Principal Component",ylab="2nd Principal Component", cex = 0)
text(rotated(KPC4), labels = FinData$Name, col = colors[FinData$Position], cex = 0.5)
```



```
# Run various t-sne's
tsne10 <- Rtsne(X,
dims = 2,
```

```
perplexity = 10,  
verbose = TRUE,  
max_iter = 1000)
```

```
## Performing PCA  
## Read the 327 x 26 data matrix successfully!  
## OpenMP is working. 1 threads.  
## Using no_dims = 2, perplexity = 10.000000, and theta = 0.500000  
## Computing input similarities...  
## Building tree...  
## Done in 0.03 seconds (sparsity = 0.131302)!  
## Learning embedding...  
## Iteration 50: error is 64.461934 (50 iterations in 0.04 seconds)  
## Iteration 100: error is 64.089607 (50 iterations in 0.04 seconds)  
## Iteration 150: error is 64.080614 (50 iterations in 0.04 seconds)  
## Iteration 200: error is 64.002647 (50 iterations in 0.03 seconds)  
## Iteration 250: error is 64.029060 (50 iterations in 0.03 seconds)  
## Iteration 300: error is 0.883456 (50 iterations in 0.04 seconds)  
## Iteration 350: error is 0.804676 (50 iterations in 0.04 seconds)  
## Iteration 400: error is 0.784886 (50 iterations in 0.03 seconds)  
## Iteration 450: error is 0.778897 (50 iterations in 0.03 seconds)  
## Iteration 500: error is 0.773616 (50 iterations in 0.04 seconds)  
## Iteration 550: error is 0.771468 (50 iterations in 0.03 seconds)  
## Iteration 600: error is 0.770868 (50 iterations in 0.03 seconds)  
## Iteration 650: error is 0.769373 (50 iterations in 0.03 seconds)  
## Iteration 700: error is 0.768151 (50 iterations in 0.03 seconds)  
## Iteration 750: error is 0.767278 (50 iterations in 0.04 seconds)  
## Iteration 800: error is 0.765927 (50 iterations in 0.03 seconds)  
## Iteration 850: error is 0.765456 (50 iterations in 0.04 seconds)  
## Iteration 900: error is 0.766979 (50 iterations in 0.04 seconds)  
## Iteration 950: error is 0.764892 (50 iterations in 0.04 seconds)  
## Iteration 1000: error is 0.765373 (50 iterations in 0.05 seconds)  
## Fitting performed in 0.73 seconds.
```

```
tsne40 <- Rtsne(X,  
  dims = 2,  
  perplexity = 40,  
  verbose = TRUE,  
  max_iter = 1000)
```

```
## Performing PCA  
## Read the 327 x 26 data matrix successfully!  
## OpenMP is working. 1 threads.  
## Using no_dims = 2, perplexity = 40.000000, and theta = 0.500000  
## Computing input similarities...  
## Building tree...  
## Done in 0.09 seconds (sparsity = 0.497770)!  
## Learning embedding...  
## Iteration 50: error is 52.906821 (50 iterations in 0.08 seconds)  
## Iteration 100: error is 52.438174 (50 iterations in 0.05 seconds)  
## Iteration 150: error is 52.271761 (50 iterations in 0.06 seconds)  
## Iteration 200: error is 52.251834 (50 iterations in 0.04 seconds)  
## Iteration 250: error is 52.263304 (50 iterations in 0.04 seconds)  
## Iteration 300: error is 0.534546 (50 iterations in 0.04 seconds)  
## Iteration 350: error is 0.520144 (50 iterations in 0.04 seconds)
```

```

## Iteration 400: error is 0.517245 (50 iterations in 0.05 seconds)
## Iteration 450: error is 0.514824 (50 iterations in 0.04 seconds)
## Iteration 500: error is 0.514618 (50 iterations in 0.04 seconds)
## Iteration 550: error is 0.514007 (50 iterations in 0.04 seconds)
## Iteration 600: error is 0.513306 (50 iterations in 0.04 seconds)
## Iteration 650: error is 0.513442 (50 iterations in 0.04 seconds)
## Iteration 700: error is 0.512678 (50 iterations in 0.04 seconds)
## Iteration 750: error is 0.511959 (50 iterations in 0.05 seconds)
## Iteration 800: error is 0.510278 (50 iterations in 0.04 seconds)
## Iteration 850: error is 0.509235 (50 iterations in 0.04 seconds)
## Iteration 900: error is 0.508714 (50 iterations in 0.04 seconds)
## Iteration 950: error is 0.508544 (50 iterations in 0.05 seconds)
## Iteration 1000: error is 0.506844 (50 iterations in 0.04 seconds)
## Fitting performed in 0.86 seconds.

```

```

tsne70 <- Rtsne(X,
  dims = 2,
  perplexity = 70,
  verbose = TRUE,
  max_iter = 1000)

```

```

## Performing PCA
## Read the 327 x 26 data matrix successfully!
## OpenMP is working. 1 threads.
## Using no_dims = 2, perplexity = 70.000000, and theta = 0.500000
## Computing input similarities...
## Building tree...
## Done in 0.15 seconds (sparsity = 0.795182)!
## Learning embedding...
## Iteration 50: error is 46.411219 (50 iterations in 0.07 seconds)
## Iteration 100: error is 46.387002 (50 iterations in 0.05 seconds)
## Iteration 150: error is 46.391872 (50 iterations in 0.05 seconds)
## Iteration 200: error is 46.393652 (50 iterations in 0.08 seconds)
## Iteration 250: error is 46.391523 (50 iterations in 0.06 seconds)
## Iteration 300: error is 0.427371 (50 iterations in 0.06 seconds)
## Iteration 350: error is 0.415918 (50 iterations in 0.05 seconds)
## Iteration 400: error is 0.416952 (50 iterations in 0.04 seconds)
## Iteration 450: error is 0.416771 (50 iterations in 0.04 seconds)
## Iteration 500: error is 0.416701 (50 iterations in 0.05 seconds)
## Iteration 550: error is 0.416721 (50 iterations in 0.05 seconds)
## Iteration 600: error is 0.416810 (50 iterations in 0.04 seconds)
## Iteration 650: error is 0.416487 (50 iterations in 0.04 seconds)
## Iteration 700: error is 0.416427 (50 iterations in 0.05 seconds)
## Iteration 750: error is 0.416426 (50 iterations in 0.05 seconds)
## Iteration 800: error is 0.416421 (50 iterations in 0.04 seconds)
## Iteration 850: error is 0.416621 (50 iterations in 0.04 seconds)
## Iteration 900: error is 0.416479 (50 iterations in 0.04 seconds)
## Iteration 950: error is 0.416399 (50 iterations in 0.04 seconds)
## Iteration 1000: error is 0.416424 (50 iterations in 0.04 seconds)
## Fitting performed in 0.99 seconds.

```

```

tsne100 <- Rtsne(X,
  dims = 2,
  perplexity = 100,
  verbose = TRUE,

```

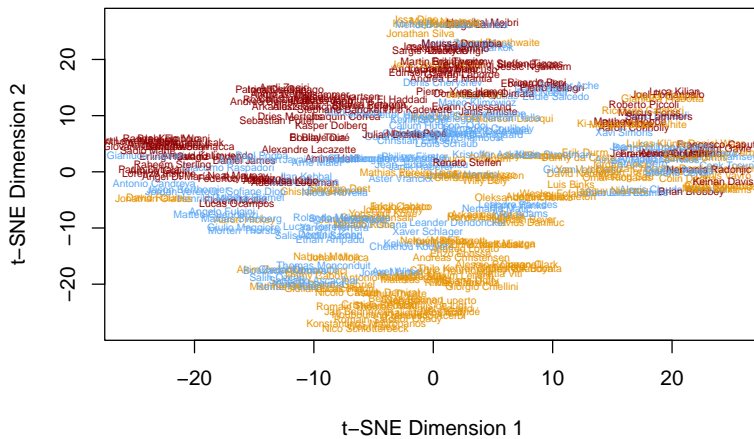
```

max_iter = 1000)

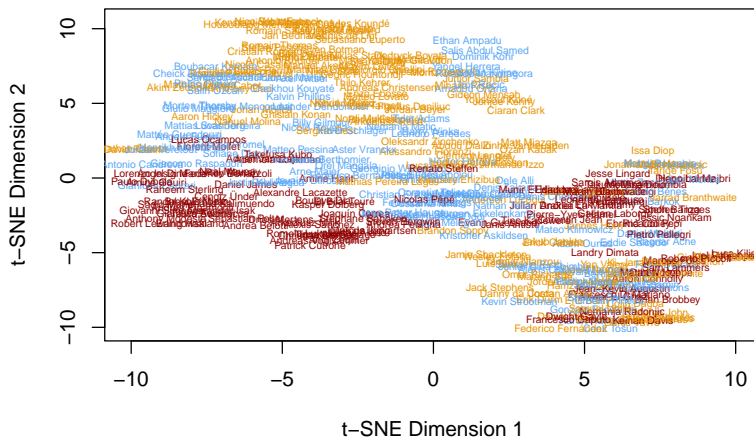
## Performing PCA
## Read the 327 x 26 data matrix successfully!
## OpenMP is working. 1 threads.
## Using no_dims = 2, perplexity = 100.000000, and theta = 0.500000
## Computing input similarities...
## Building tree...
## Done in 0.23 seconds (sparsity = 0.984635)!
## Learning embedding...
## Iteration 50: error is 42.426390 (50 iterations in 0.07 seconds)
## Iteration 100: error is 42.270474 (50 iterations in 0.08 seconds)
## Iteration 150: error is 42.270947 (50 iterations in 0.06 seconds)
## Iteration 200: error is 42.273738 (50 iterations in 0.05 seconds)
## Iteration 250: error is 42.272633 (50 iterations in 0.06 seconds)
## Iteration 300: error is 0.303756 (50 iterations in 0.05 seconds)
## Iteration 350: error is 0.272411 (50 iterations in 0.05 seconds)
## Iteration 400: error is 0.271995 (50 iterations in 0.04 seconds)
## Iteration 450: error is 0.272471 (50 iterations in 0.04 seconds)
## Iteration 500: error is 0.272071 (50 iterations in 0.05 seconds)
## Iteration 550: error is 0.272519 (50 iterations in 0.05 seconds)
## Iteration 600: error is 0.272389 (50 iterations in 0.05 seconds)
## Iteration 650: error is 0.272295 (50 iterations in 0.04 seconds)
## Iteration 700: error is 0.272110 (50 iterations in 0.05 seconds)
## Iteration 750: error is 0.272345 (50 iterations in 0.05 seconds)
## Iteration 800: error is 0.272139 (50 iterations in 0.05 seconds)
## Iteration 850: error is 0.272142 (50 iterations in 0.05 seconds)
## Iteration 900: error is 0.272730 (50 iterations in 0.05 seconds)
## Iteration 950: error is 0.272623 (50 iterations in 0.05 seconds)
## Iteration 1000: error is 0.272330 (50 iterations in 0.05 seconds)
## Fitting performed in 1.04 seconds.

# Plot t-SNE's
plot(tsne10$Y,
     col = colors[FinData$Position],
     t = "n",
     xlab = "t-SNE Dimension 1",
     ylab = "t-SNE Dimension 2")
text(tsne10$Y, labels = FinData$Name, col = colors[FinData$Position], cex = 0.5)

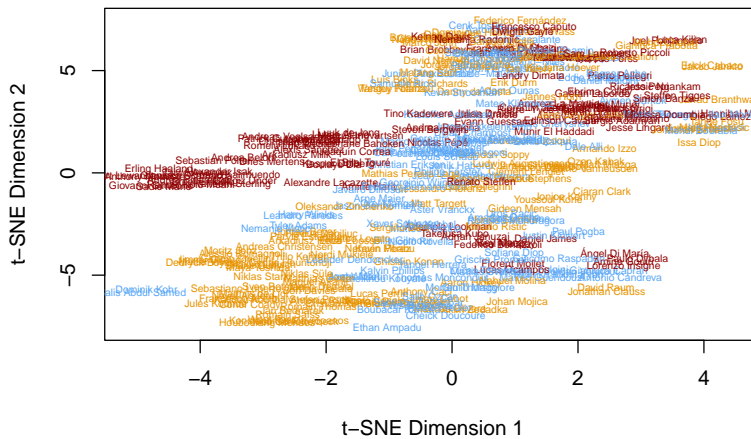
```



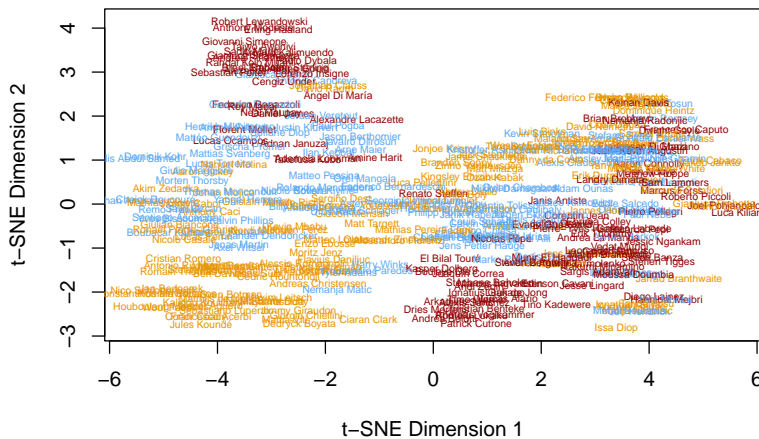
```
plot(tsne40$Y,
     col = colors[FinData$Position],
     t = "n",
     xlab = "t-SNE Dimension 1",
     ylab = "t-SNE Dimension 2")
text(tsne40$Y, labels = FinData$Name, col = colors[FinData$Position], cex = 0.5)
```



```
plot(tsne70$Y,
     col = colors[FinData$Position],
     t = "n",
     xlab = "t-SNE Dimension 1",
     ylab = "t-SNE Dimension 2")
text(tsne70$Y, labels = FinData$Name, col = colors[FinData$Position], cex = 0.5)
```

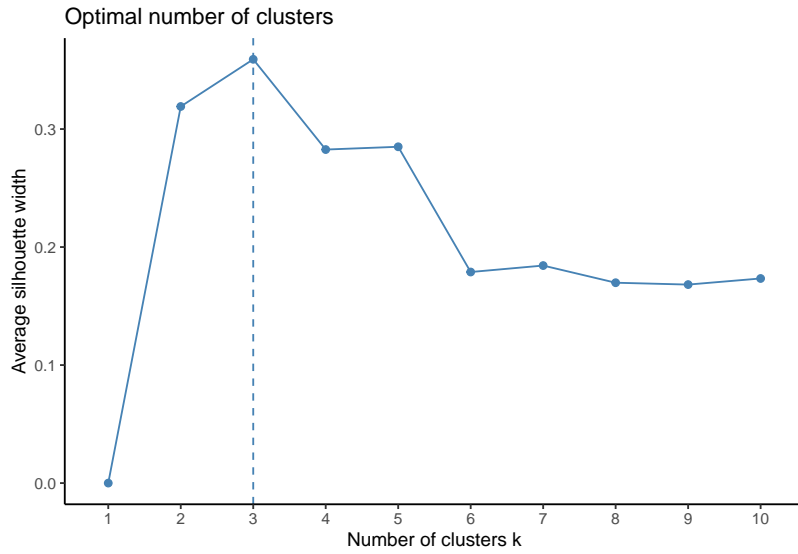


```
plot(tsne100$Y,
     col = colors[FinData$Position],
     t = "n",
     xlab = "t-SNE Dimension 1",
     ylab = "t-SNE Dimension 2")
text(tsne100$Y, labels = FinData$Name, col = colors[FinData$Position], cex = 0.5)
```

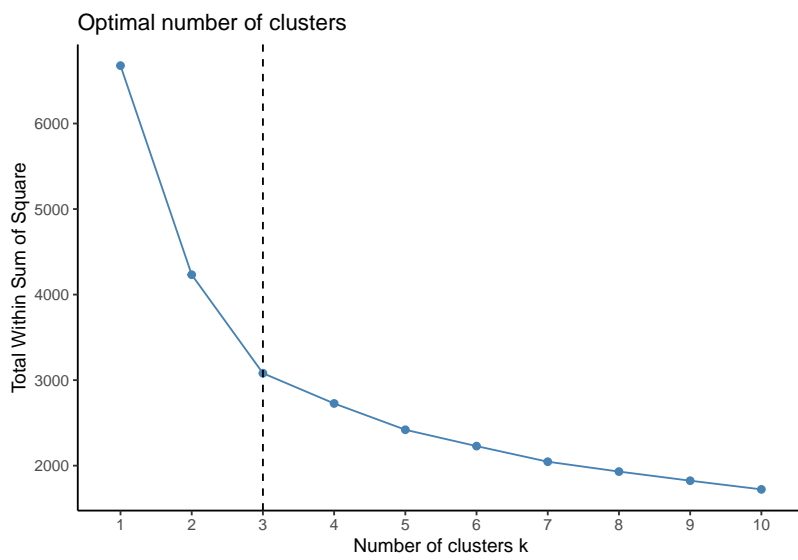


## Cluster Analysis

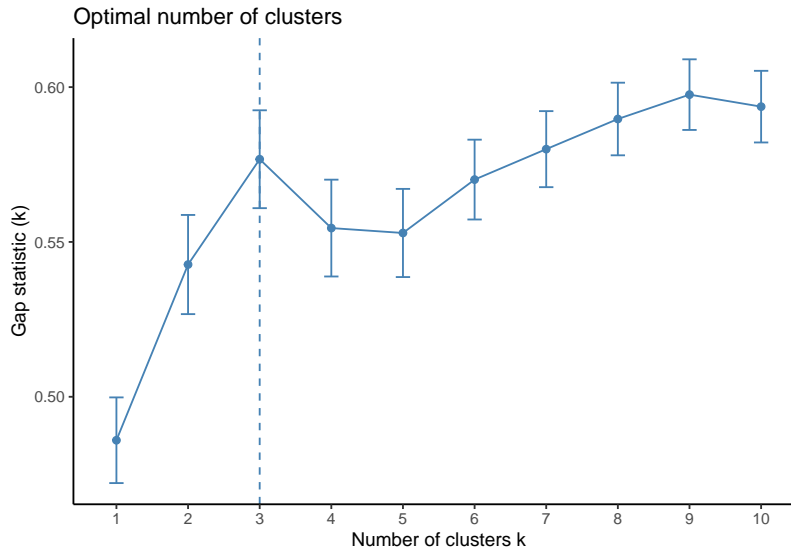
```
# Hierarchical Clustering (Agglomerative)
cols <- c("darkgrey", "#679920", "#502491")
# Obtain the number of clusters
fviz_nbclust(robPCA$scores, hcut, method = "silhouette") +
  theme_classic()
```



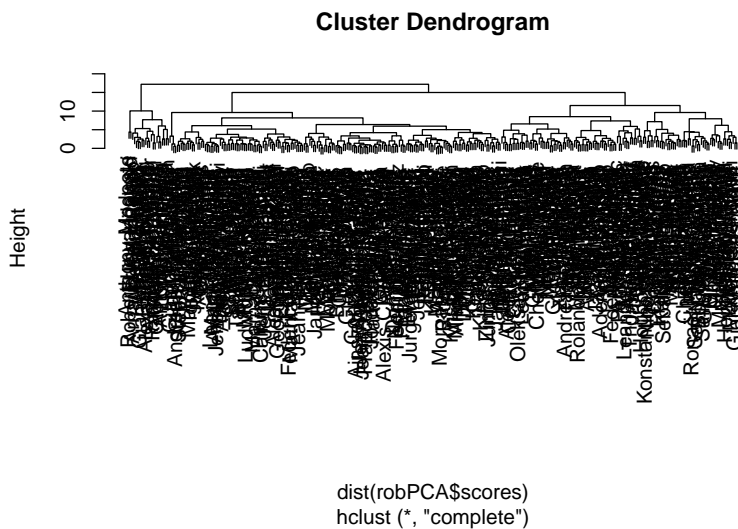
```
fviz_nbclust(robPCA$scores, hcut, method = "wss") + theme_classic() +
  geom_vline(xintercept = 3, linetype = 2)
```



```
fviz_nbclust(robPCA$scores, hcut, method = "gap_stat") +
  theme_classic()
```



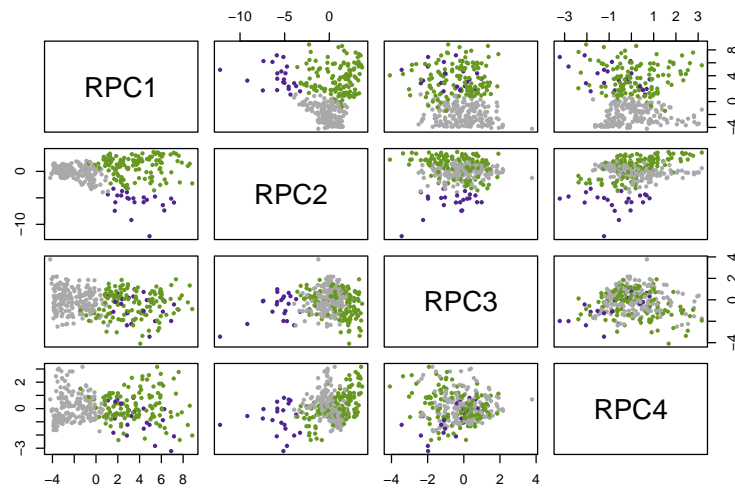
```
# Obtain hierachical clustering
clusters <- hclust(dist(robPCA$scores),method ="complete" )
plot(clusters)
```



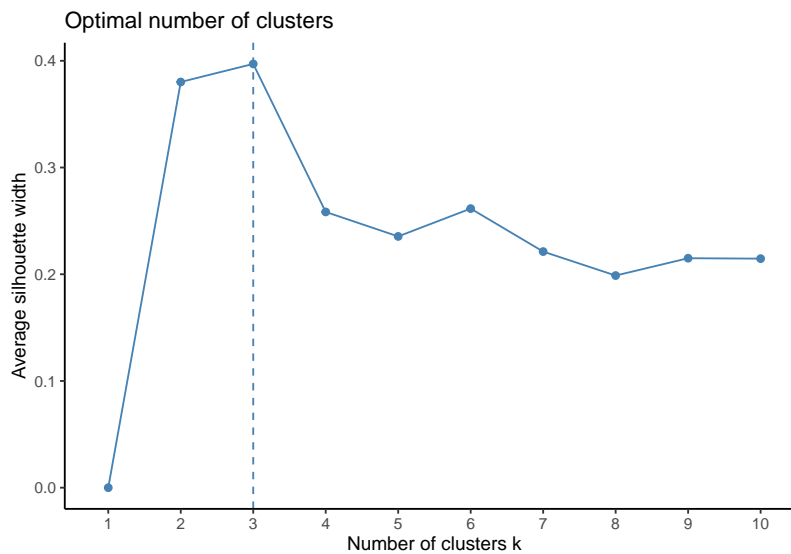
```
# Cut hierarchical tree
clusterCut <- cutree(clusters, 3)

# Plot Clusters
pairs(robPCA$scores[,1:4], col = cols[clusterCut],pch = 16, cex = 0.7)
```

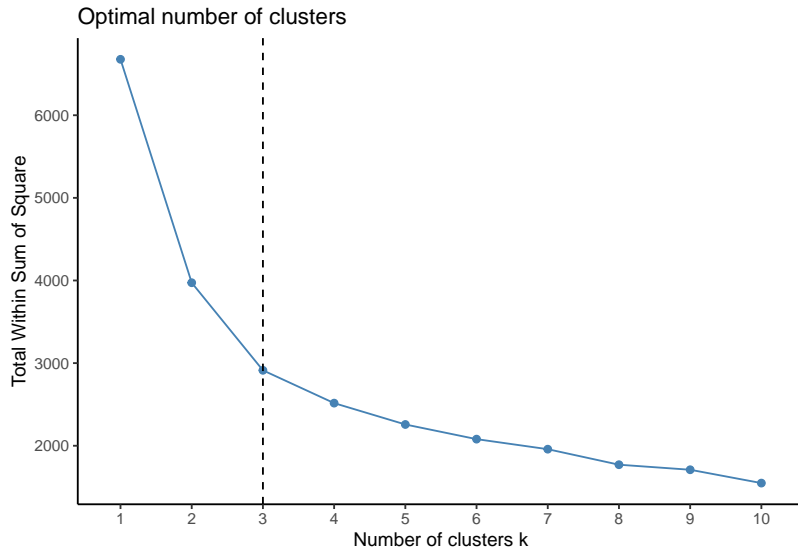




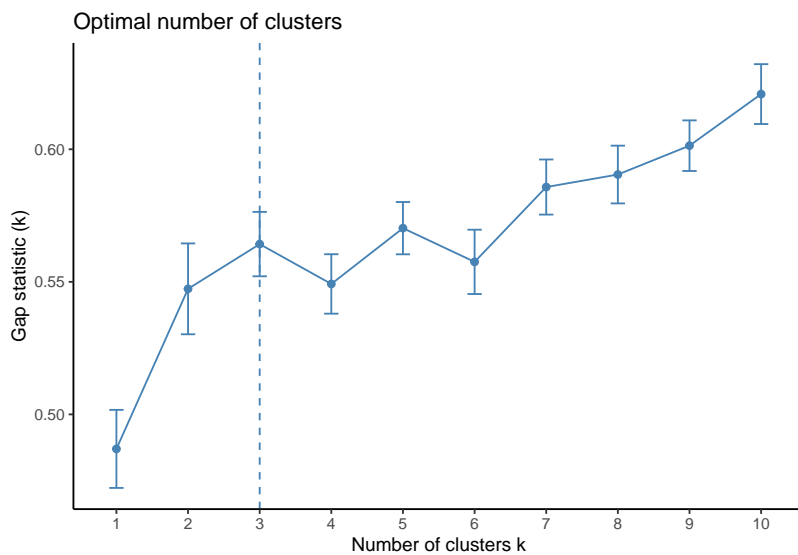
```
cols <- c( "#502491", "#679920", "darkgrey")
# Obtain the number of clusters
fviz_nbclust(robPCA$scores, kmeans, method = "silhouette") +
  theme_classic()
```



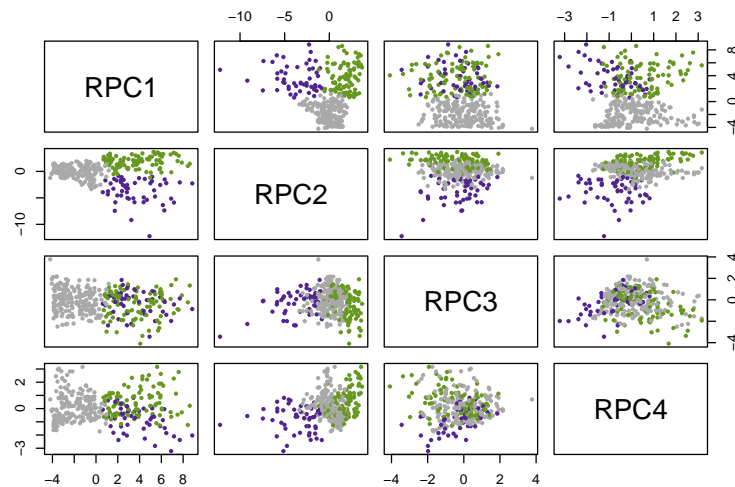
```
fviz_nbclust(robPCA$scores, kmeans, method = "wss")+ theme_classic() +
  geom_vline(xintercept = 3, linetype = 2)
```



```
fviz_nbclust(robPCA$scores, kmeans, method = "gap_stat") +  
  theme_classic()
```



```
# Obtain kmeans clustering  
kmeans1 <- kmeans(robPCA$scores, 3)  
  
# Plot clusters  
pairs(robPCA$scores[,1:4], col=cols[kmeans1$cluster], pch=16, cex=0.7)
```



```
#points(kmeans1$centers,col=1:4,pch=8)

# Cluster 1 is purple
# Cluster 2 is green
# Cluster 3 is grey

# Choose between these 2 seeds # 3000 does work slightly better
set.seed(3000)

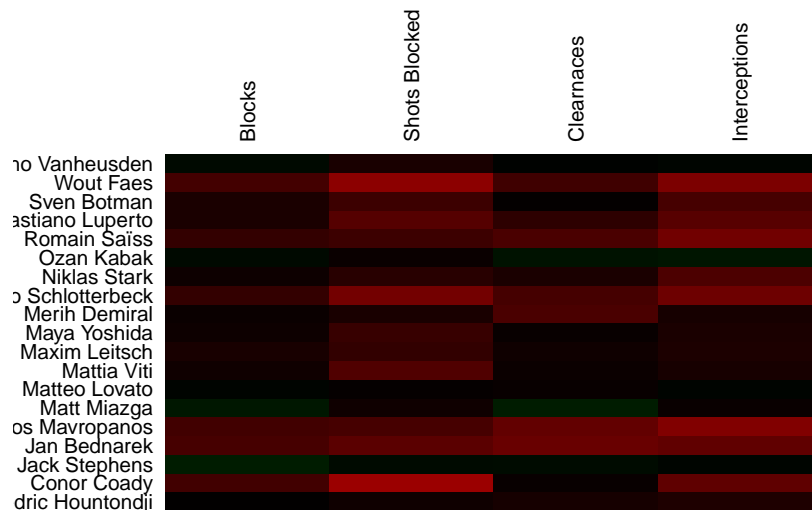
# Biclustering using ISA
isa.result <- isa(X)

# Turn result into a workable bicluster
biii <- isa.biclust(isa.result)

#plotclust(X, biii)

#parallelCoordinates(X, biii,number = 1)
#parallelCoordinates(X, biii,number = 2)
#parallelCoordinates(X, biii,number = 3)

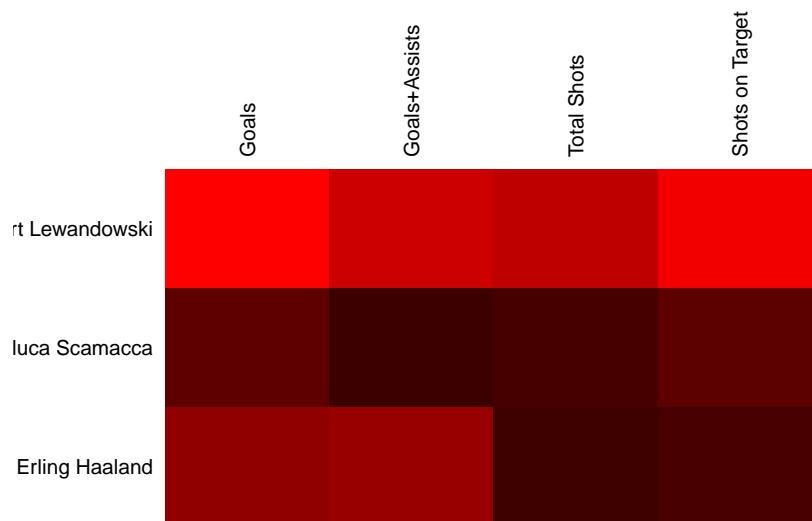
##### Defensive Biclustering
# 14 better than 3
#drawHeatmap(X,biii, 3)
# Both 11 and 14 are informative but maybe just use 14
#drawHeatmap(X,biii, 11)
drawHeatmap(X,biii, 14)
```



Biclust er 14 (size 19 x 4 )

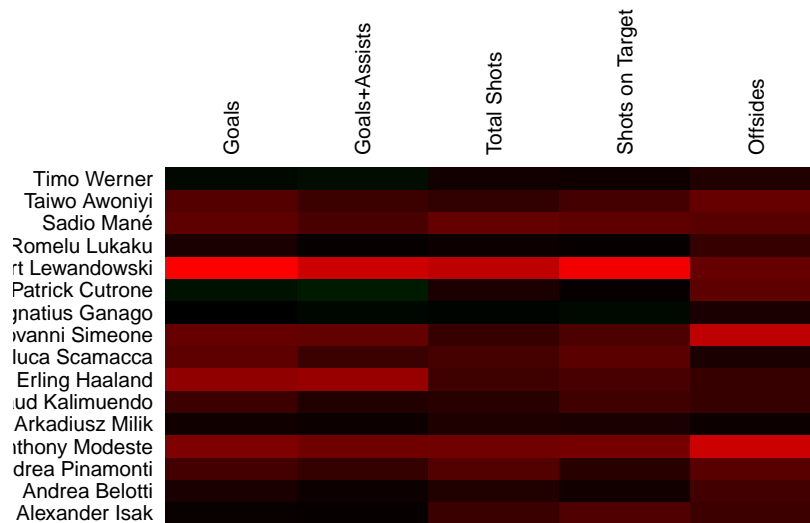
```
# 14 better than 17
#drawHeatmap(X,biii, 17)
# Same as 17 but less info
#drawHeatmap(X,biii, 19)

##### Attacking Biclust ering
drawHeatmap(X,biii, 5)
```



Biclust er 5 (size 3 x 4 )

```
# 16 is better than 12
#drawHeatmap(X,biii, 12)
# 16 better than 12
#drawHeatmap(X,biii, 13)
drawHeatmap(X,biii, 16)
```



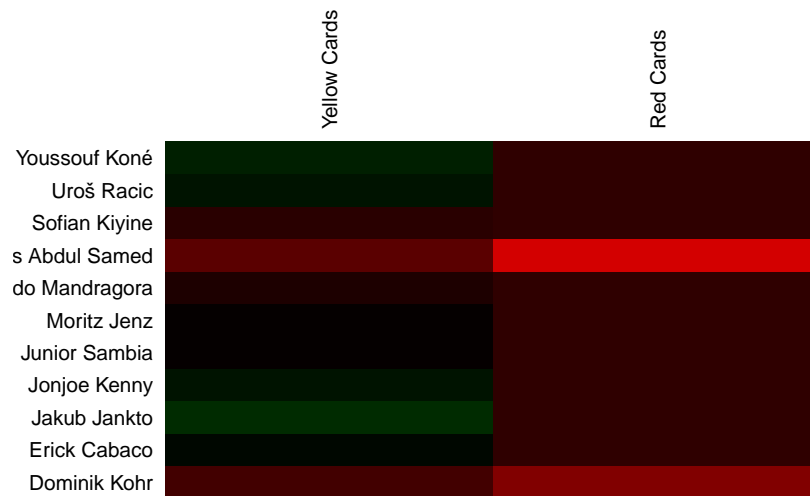
Bicluster 16 (size 16 x 5)

*# Definitely include all above*

**##### Misc Biclustering**

*# Not sure what yellow cards and red cards tell us. Maybe more aggressive players*

`drawHeatmap(X,biii, 2)`

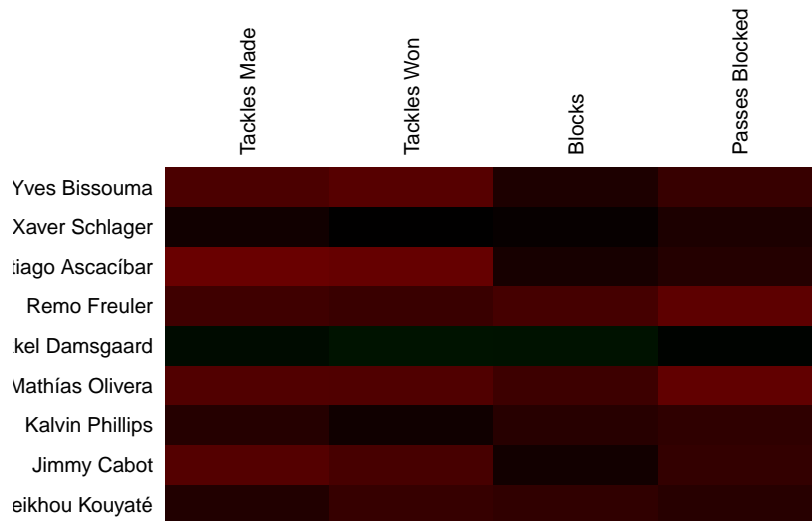


Bicluster 2 (size 11 x 2)

**##### CDM Biclustering**

*# 15 gives more information*

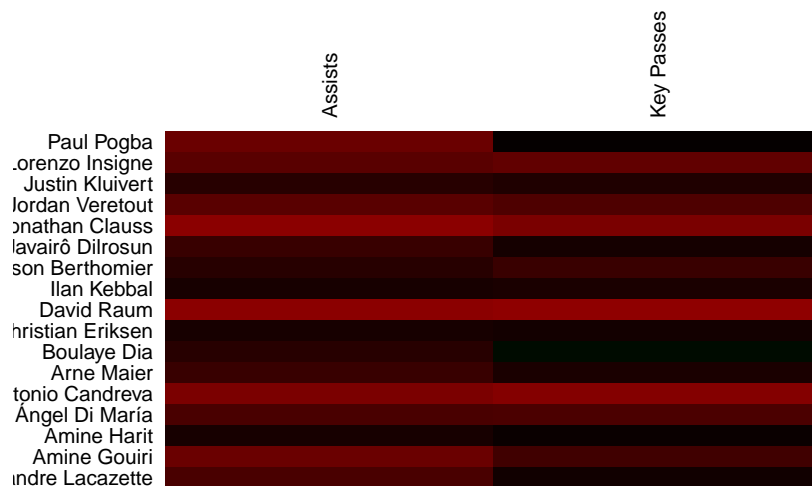
`drawHeatmap(X,biii, 4)`



Bicluster 4 (size 9 x 4)

```
#drawHeatmap(X,biii, 15)
#drawHeatmap(X,biii, 18)
```

```
##### CAM Biclustering
# 10 holds more information than 1
#drawHeatmap(X,biii, 1)
#drawHeatmap(X,biii, 6)
drawHeatmap(X,biii, 10)
```



Bicluster 10 (size 17 x 2)

```
#kmeans1$cluster
#which(clusterCut==3)
# From the 19th bicluster onwards, biclusters were more broad and were difficult to interpret due to the

# Obtain original data
Data<-FinData
# Change position to numeric
Data$Position<- as.numeric(Data$Position)
# Change league to numeric
```

```

Data$League<- as.numeric(as.factor(Data$League))
# Obtain unique names of variables
names(Data) <- make.names(names(Data), unique=TRUE)

# Data that will be used for modelling
all<-Data[,c(3,35,1,2,6,8:11,15:24,27:29,33)]
# Specify link function for both response variables
fam<- c("gaussian", "gaussian") #defining the distributions of dependent variables

# Names
n0<-names(all)
# Response names
ny_all<- n0[1:2]
# Covariate names
nx_all<- n0[4:length(n0)]

# Specify model formula
form_all<- multivariateFormula(ny_all,nx_all)
# Use a subset for CV
sub <- sample(1:nrow(all),35,replace=FALSE)
# Obtain subset (Training set)
sub_fit <- (1:nrow(all))[-sub]

# Specify covariate design matrix of data data
X<- model.matrix(form_all, data=all)[,-1]
# Specify covariate design matrix for test data
xnew <- model.matrix(form_all, data=Data[sub,])
# Specify response matrix of data
Y<-all[,ny_all]

# Perform MVGLM on training set
player_glm<- multivariateGlm.fit(Y[sub_fit,,drop=FALSE],
                                X[sub_fit,,drop=FALSE],
                                family=fam,size=NULL)

# Obtain coefficients
coefs <- as.matrix(sapply(player_glm,coef))

# Predict for test set
pred.glm <- multivariatePredictGlm(xnew,family=fam,beta=coefs)

# Obtain RMSE and comparison of results
sqrt(mean((Y[sub,1]-pred.glm[,1])^2))

## [1] 11.21581
sqrt(mean((Y[sub,2]-pred.glm[,2])^2))

## [1] 5.067235
MKV<-cbind(Y[sub,1],pred.glm[,1])
OVR<-cbind(Y[sub,2],pred.glm[,2])

```