

# FIFA2019

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## 1. Ejemplos datos jugadores FIFA 2019

En FIFA 19 complete player dataset 18k+ FIFA 19 players, ~90 attributes extracted from the latest FIFA database

Tenemos acceso al data set de los jugadores del videojuego FIFA 2019. La información que aporta la página es la siguiente (para más información acudid a la página):

*About this file*

*data.csv includes lastest edition FIFA 2019 players attributes like Age, Nationality, Overall, Potential, Club, Value, Wage, Preferred Foot, International Reputation, Weak Foot, Skill Moves, Work Rate, Position, Jersey Number, Joined, Loaned From, Contract Valid Until, Height, Weight, LS, ST, RS, LW, LF, CF, RF, RW, LAM, CAM, RAM, LM, LCM, CM, RCM, RM, LWB, LDM, CDM, RDM, RWB, LB, LCB, CB, RCB, RB, Crossing, Finishing, Heading, Accuracy, ShortPassing, Volleys, Dribbling, Curve, FKAccuracy, LongPassing, BallControl, Acceleration, SprintSpeed, Agility, Reactions, Balance, ShotPower, Jumping, Stamina, Strength, LongShots, Aggression, Interceptions, Positioning, Vision, Penalties, Composure, Marking, StandingTackle, SlidingTackle, GK Diving, GK Handling, GK Kicking, GK Positioning, GK Reflexes, and Release Clause.*

## 1.1. Carga de los datos

Cragamos los datos y los visualizamos

```
data=read.csv("data.csv",stringsAsFactors = FALSE)
#data$Nationality=as.factor(data$Nationality)
head(data)
```

```
##   i..      ID      Name Age
## 1  0 158023      L. Messi 31
## 2  1 20801 Cristiano Ronaldo 33
## 3  2 190871      Neymar Jr 26
## 4  3 193080      De Gea 27
## 5  4 192985      K. De Bruyne 27
## 6  5 183277      E. Hazard 27
##
##                                     Photo Nationality
## 1 https://cdn.sofifa.org/players/4/19/158023.png Argentina
## 2 https://cdn.sofifa.org/players/4/19/20801.png Portugal
## 3 https://cdn.sofifa.org/players/4/19/190871.png Brazil
## 4 https://cdn.sofifa.org/players/4/19/193080.png Spain
## 5 https://cdn.sofifa.org/players/4/19/192985.png Belgium
## 6 https://cdn.sofifa.org/players/4/19/183277.png Belgium
##
##                                     Flag Overall Potential      Club
## 1 https://cdn.sofifa.org/flags/52.png      94      94      FC Barcelona
## 2 https://cdn.sofifa.org/flags/38.png      94      94      Juventus
## 3 https://cdn.sofifa.org/flags/54.png      92      93 Paris Saint-Germain
## 4 https://cdn.sofifa.org/flags/45.png      91      93 Manchester United
## 5 https://cdn.sofifa.org/flags/7.png       91      92 Manchester City
## 6 https://cdn.sofifa.org/flags/7.png       91      91      Chelsea
##
##                                     Club.Logo      Value      Wage Special
## 1 https://cdn.sofifa.org/teams/2/light/241.png â,-110.5M â,-565K 2202
## 2 https://cdn.sofifa.org/teams/2/light/45.png â,-77M â,-405K 2228
## 3 https://cdn.sofifa.org/teams/2/light/73.png â,-118.5M â,-290K 2143
## 4 https://cdn.sofifa.org/teams/2/light/11.png â,-72M â,-260K 1471
## 5 https://cdn.sofifa.org/teams/2/light/10.png â,-102M â,-355K 2281
## 6 https://cdn.sofifa.org/teams/2/light/5.png â,-93M â,-340K 2142
## Preferred.Foot International.Reputation Weak.Foot Skill.Moves      Work.Rate
## 1 Left 5 4 4 Medium/ Medium
## 2 Right 5 4 5 High/ Low
## 3 Right 5 5 5 High/ Medium
## 4 Right 4 3 1 Medium/ Medium
## 5 Right 4 5 4 High/ High
## 6 Right 4 4 4 High/ Medium
##
## Body.Type Real.Face Position Jersey.Number      Joined Loaned.From
## 1 Messi Yes RF 10 Jul 1, 2004
## 2 C. Ronaldo Yes ST 7 Jul 10, 2018
## 3 Neymar Yes LW 10 Aug 3, 2017
## 4 Lean Yes GK 1 Jul 1, 2011
## 5 Normal Yes RCM 7 Aug 30, 2015
## 6 Normal Yes LF 10 Jul 1, 2012
##
## Contract.Valid.Until Height Weight LS ST RS LW LF CF RF RW
## 1 2021 5'7 159lbs 88+2 88+2 88+2 92+2 93+2 93+2 93+2 92+2
## 2 2022 6'2 183lbs 91+3 91+3 91+3 89+3 90+3 90+3 90+3 89+3
## 3 2022 5'9 150lbs 84+3 84+3 84+3 89+3 89+3 89+3 89+3 89+3
```

## 4				2020	6'4	168lbs											
## 5				2023	5'11	154lbs	82+3	82+3	82+3	87+3	87+3	87+3	87+3	87+3	87+3		
## 6				2020	5'8	163lbs	83+3	83+3	83+3	89+3	88+3	88+3	88+3	88+3	89+3		
##	LAM	CAM	RAM	LM	LCM	CM	RCM	RM	LWB	LDM	CDM	RDM	RWB	LB	LCB		
## 1	93+2	93+2	93+2	91+2	84+2	84+2	84+2	91+2	64+2	61+2	61+2	61+2	64+2	59+2	47+2		
## 2	88+3	88+3	88+3	88+3	81+3	81+3	81+3	88+3	65+3	61+3	61+3	61+3	65+3	61+3	53+3		
## 3	89+3	89+3	89+3	88+3	81+3	81+3	81+3	88+3	65+3	60+3	60+3	60+3	65+3	60+3	47+3		
## 4																	
## 5	88+3	88+3	88+3	88+3	87+3	87+3	87+3	88+3	77+3	77+3	77+3	77+3	77+3	73+3	66+3		
## 6	89+3	89+3	89+3	89+3	82+3	82+3	82+3	89+3	66+3	63+3	63+3	63+3	66+3	60+3	49+3		
##	CB	RCB	RB	Crossing	Finishing	Heading	Accuracy	Short	Passing	Volleys							
## 1	47+2	47+2	59+2	84	95			70		90				86			
## 2	53+3	53+3	61+3	84	94			89		81				87			
## 3	47+3	47+3	60+3	79	87			62		84				84			
## 4				17	13			21		50				13			
## 5	66+3	66+3	73+3	93	82			55		92				82			
## 6	49+3	49+3	60+3	81	84			61		89				80			
##	Dribbling	Curve	FK	Accuracy	Long	Passing	Ball	Control	Acceleration	Sprint	Speed						
## 1		97	93		94		87		96		91			86			
## 2		88	81		76		77		94		89			91			
## 3		96	88		87		78		95		94			90			
## 4		18	21		19		51		42		57			58			
## 5		86	85		83		91		91		78			76			
## 6		95	83		79		83		94		94			88			
##	Agility	Reactions	Balance	Shot	Power	Jumping	Stamina	Strength	Long	Shots							
## 1		91	95	95	85	68	72	59	94								
## 2		87	96	70	95	95	88	79	93								
## 3		96	94	84	80	61	81	49	82								
## 4		60	90	43	31	67	43	64	12								
## 5		79	91	77	91	63	90	75	91								
## 6		95	90	94	82	56	83	66	80								
##	Aggression	Interceptions	Positioning	Vision	Penalties	Composure	Marking										
## 1		48	22	94	94	75	96	33									
## 2		63	29	95	82	85	95	28									
## 3		56	36	89	87	81	94	27									
## 4		38	30	12	68	40	68	15									
## 5		76	61	87	94	79	88	68									
## 6		54	41	87	89	86	91	34									
##	Standing	Tackle	Sliding	Tackle	GK	Diving	GK	Handling	GK	Kicking	GK	Positioning					
## 1		28		26	6	11	15	14									
## 2		31		23	7	11	15	14									
## 3		24		33	9	9	15	15									
## 4		21		13	90	85	87	88									
## 5		58		51	15	13	5	10									
## 6		27		22	11	12	6	8									
##	GK	Reflexes	Release	Clause													
## 1		8		â, -226.5M													
## 2		11		â, -127.1M													
## 3		11		â, -228.1M													
## 4		94		â, -138.6M													
## 5		13		â, -196.4M													
## 6		8		â, -172.1M													

```
str(data)
```

```
## 'data.frame':    18207 obs. of  89 variables:
## $ i..           : int  0 1 2 3 4 5 6 7 8 9 ...
## $ ID            : int 158023 20801 190871 193080 192985 183277 177003 176580 155862 2003
## $ Name          : chr  "L. Messi" "Cristiano Ronaldo" "Neymar Jr" "De Gea" ...
## $ Age           : int  31 33 26 27 27 27 32 31 32 25 ...
## $ Photo         : chr  "https://cdn.sofifa.org/players/4/19/158023.png" "https://cdn.sofifa.org/players/4/19/20801.png" ...
## $ Nationality   : chr  "Argentina" "Portugal" "Brazil" "Spain" ...
## $ Flag          : chr  "https://cdn.sofifa.org/flags/52.png" "https://cdn.sofifa.org/flags/52.png" ...
## $ Overall       : int  94 94 92 91 91 91 91 91 91 90 ...
## $ Potential     : int  94 94 93 93 92 91 91 91 91 93 ...
## $ Club          : chr  "FC Barcelona" "Juventus" "Paris Saint-Germain" "Manchester United" ...
## $ Club.Logo     : chr  "https://cdn.sofifa.org/teams/2/light/241.png" "https://cdn.sofifa.org/teams/2/light/241.png" ...
## $ Value         : chr  "â,-110.5M" "â,-77M" "â,-118.5M" "â,-72M" ...
## $ Wage          : chr  "â,-565K" "â,-405K" "â,-290K" "â,-260K" ...
## $ Special       : int  2202 2228 2143 1471 2281 2142 2280 2346 2201 1331 ...
## $ Preferred.Foot : chr  "Left" "Right" "Right" "Right" ...
## $ International.Reputation: int  5 5 5 4 4 4 4 5 4 3 ...
## $ Weak.Foot     : int  4 4 5 3 5 4 4 4 3 3 ...
## $ Skill.Moves   : int  4 5 5 1 4 4 4 3 3 1 ...
## $ Work.Rate     : chr  "Medium/ Medium" "High/ Low" "High/ Medium" "Medium/ Medium" ...
## $ Body.Type     : chr  "Messi" "C. Ronaldo" "Neymar" "Lean" ...
## $ Real.Face     : chr  "Yes" "Yes" "Yes" "Yes" ...
## $ Position      : chr  "RF" "ST" "LW" "GK" ...
## $ Jersey.Number : int  10 7 10 1 7 10 10 9 15 1 ...
## $ Joined        : chr  "Jul 1, 2004" "Jul 10, 2018" "Aug 3, 2017" "Jul 1, 2011" ...
## $ Loaned.From   : chr  "" "" "" "" ...
## $ Contract.Valid.Until : chr  "2021" "2022" "2022" "2020" ...
## $ Height        : chr  "5'7" "6'2" "5'9" "6'4" ...
## $ Weight        : chr  "159lbs" "183lbs" "150lbs" "168lbs" ...
## $ LS           : chr  "88+2" "91+3" "84+3" "" ...
## $ ST           : chr  "88+2" "91+3" "84+3" "" ...
## $ RS           : chr  "88+2" "91+3" "84+3" "" ...
## $ LW           : chr  "92+2" "89+3" "89+3" "" ...
## $ LF           : chr  "93+2" "90+3" "89+3" "" ...
## $ CF           : chr  "93+2" "90+3" "89+3" "" ...
## $ RF           : chr  "93+2" "90+3" "89+3" "" ...
## $ RW           : chr  "92+2" "89+3" "89+3" "" ...
## $ LAM          : chr  "93+2" "88+3" "89+3" "" ...
## $ CAM          : chr  "93+2" "88+3" "89+3" "" ...
## $ RAM          : chr  "93+2" "88+3" "89+3" "" ...
## $ LM           : chr  "91+2" "88+3" "88+3" "" ...
## $ LCM          : chr  "84+2" "81+3" "81+3" "" ...
## $ CM           : chr  "84+2" "81+3" "81+3" "" ...
## $ RCM          : chr  "84+2" "81+3" "81+3" "" ...
## $ RM           : chr  "91+2" "88+3" "88+3" "" ...
## $ LWB         : chr  "64+2" "65+3" "65+3" "" ...
## $ LDM         : chr  "61+2" "61+3" "60+3" "" ...
## $ CDM         : chr  "61+2" "61+3" "60+3" "" ...
## $ RDM         : chr  "61+2" "61+3" "60+3" "" ...
## $ RWB         : chr  "64+2" "65+3" "65+3" "" ...
## $ LB          : chr  "59+2" "61+3" "60+3" "" ...
```

```
## $ LCB : chr "47+2" "53+3" "47+3" "" ...
## $ CB : chr "47+2" "53+3" "47+3" "" ...
## $ RCB : chr "47+2" "53+3" "47+3" "" ...
## $ RB : chr "59+2" "61+3" "60+3" "" ...
## $ Crossing : int 84 84 79 17 93 81 86 77 66 13 ...
## $ Finishing : int 95 94 87 13 82 84 72 93 60 11 ...
## $ HeadingAccuracy : int 70 89 62 21 55 61 55 77 91 15 ...
## $ ShortPassing : int 90 81 84 50 92 89 93 82 78 29 ...
## $ Volleys : int 86 87 84 13 82 80 76 88 66 13 ...
## $ Dribbling : int 97 88 96 18 86 95 90 87 63 12 ...
## $ Curve : int 93 81 88 21 85 83 85 86 74 13 ...
## $ FKAccuracy : int 94 76 87 19 83 79 78 84 72 14 ...
## $ LongPassing : int 87 77 78 51 91 83 88 64 77 26 ...
## $ BallControl : int 96 94 95 42 91 94 93 90 84 16 ...
## $ Acceleration : int 91 89 94 57 78 94 80 86 76 43 ...
## $ SprintSpeed : int 86 91 90 58 76 88 72 75 75 60 ...
## $ Agility : int 91 87 96 60 79 95 93 82 78 67 ...
## $ Reactions : int 95 96 94 90 91 90 90 92 85 86 ...
## $ Balance : int 95 70 84 43 77 94 94 83 66 49 ...
## $ ShotPower : int 85 95 80 31 91 82 79 86 79 22 ...
## $ Jumping : int 68 95 61 67 63 56 68 69 93 76 ...
## $ Stamina : int 72 88 81 43 90 83 89 90 84 41 ...
## $ Strength : int 59 79 49 64 75 66 58 83 83 78 ...
## $ LongShots : int 94 93 82 12 91 80 82 85 59 12 ...
## $ Aggression : int 48 63 56 38 76 54 62 87 88 34 ...
## $ Interceptions : int 22 29 36 30 61 41 83 41 90 19 ...
## $ Positioning : int 94 95 89 12 87 87 79 92 60 11 ...
## $ Vision : int 94 82 87 68 94 89 92 84 63 70 ...
## $ Penalties : int 75 85 81 40 79 86 82 85 75 11 ...
## $ Composure : int 96 95 94 68 88 91 84 85 82 70 ...
## $ Marking : int 33 28 27 15 68 34 60 62 87 27 ...
## $ StandingTackle : int 28 31 24 21 58 27 76 45 92 12 ...
## $ SlidingTackle : int 26 23 33 13 51 22 73 38 91 18 ...
## $ GKDiving : int 6 7 9 90 15 11 13 27 11 86 ...
## $ GKHandling : int 11 11 9 85 13 12 9 25 8 92 ...
## $ GKKicking : int 15 15 15 87 5 6 7 31 9 78 ...
## $ GKPositioning : int 14 14 15 88 10 8 14 33 7 88 ...
## $ GKReflexes : int 8 11 11 94 13 8 9 37 11 89 ...
## $ Release.Clause : chr "â,-226.5M" "â,-127.1M" "â,-228.1M" "â,-138.6M" ...
```

## 1.2. Algunos estadísticos por nacionalidad

Calculamos la media de la edad de los jugadores por nacionalidad. Como hay muchas nacionalidades ordenamos y visualizamos las o nacionalidades más abundantes.

```
head(aggregate(Age~Nationality,data=data,FUN=mean))
```

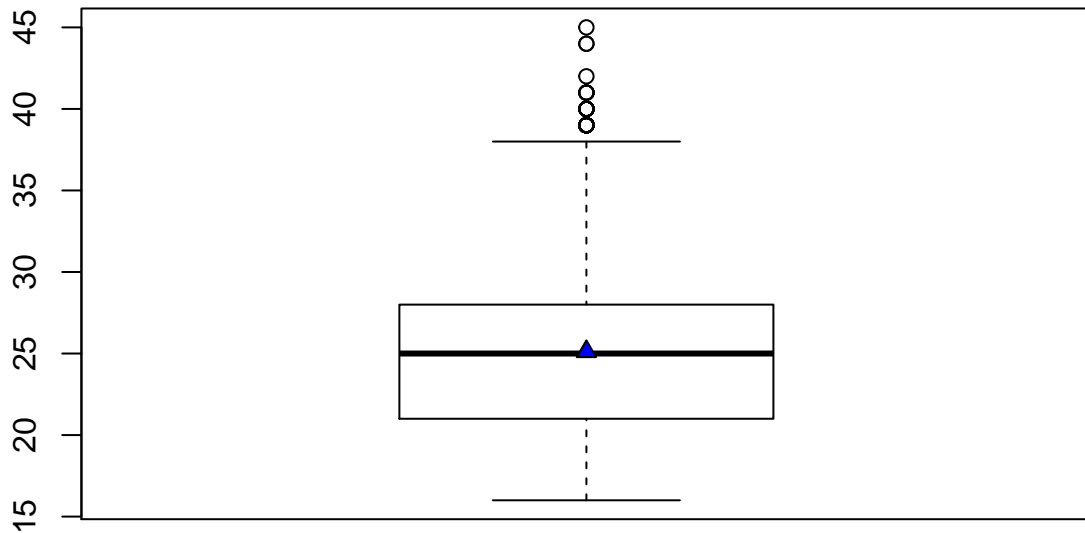
```
##      Nationality      Age
## 1      Afghanistan 22.50000
## 2           Albania 24.02500
## 3           Algeria 27.05000
## 4           Andorra 28.00000
## 5           Angola 25.86667
```

```
## 6 Antigua & Barbuda 22.75000
```

```
head(sort(table(data$Nationality),decreasing = TRUE))
```

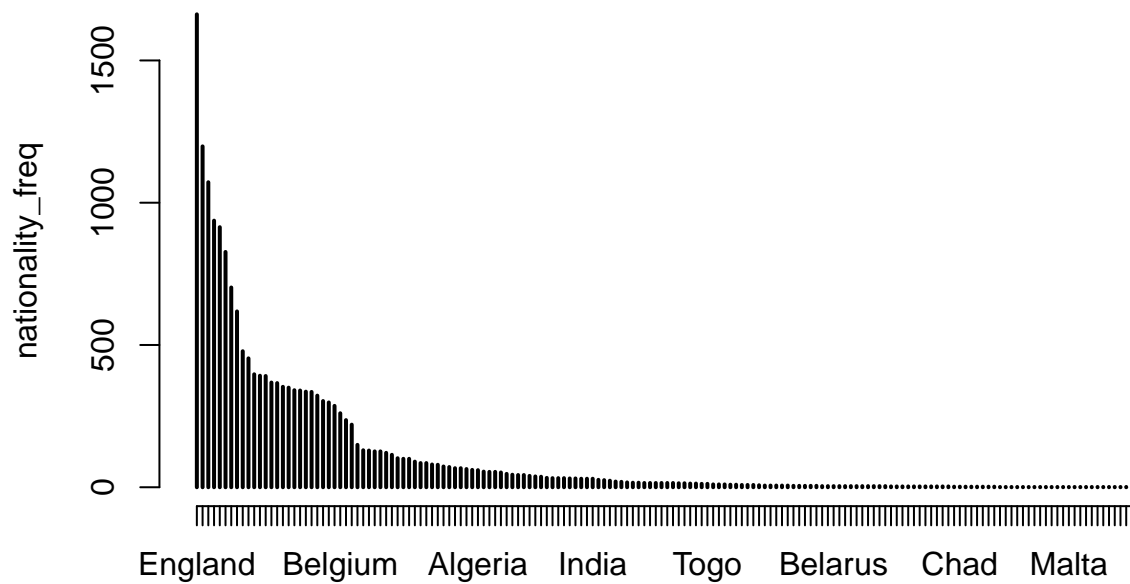
```
##  
##   England   Germany   Spain Argentina   France   Brazil  
##    1662     1198     1072      937      914     827
```

```
boxplot(data$Age)  
points(mean(data$Age),pch=24,bg="blue")
```



Dibujamos todos las frecuencias de la nacionalidades. Seleccionando las 10 más frecuentes

```
nationality_freq=sort(table(data$Nationality),decreasing=TRUE)  
plot(nationality_freq)# no se ve seleccionemos top 10
```



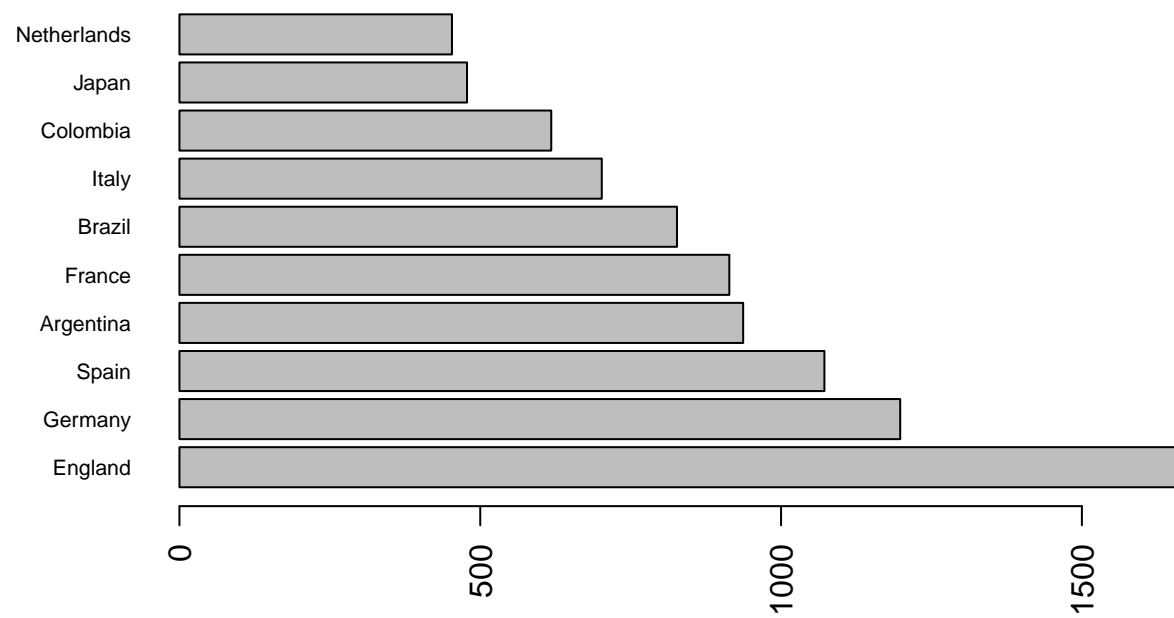
```
selected_nationalities=names(nationality_freq)[1:10]
selected_nationalities
```

```
## [1] "England"      "Germany"      "Spain"        "Argentina"    "France"
## [6] "Brazil"       "Italy"        "Colombia"     "Japan"        "Netherlands"
```

```
selected_data=data[data$Nationality %in% selected_nationalities,]
```

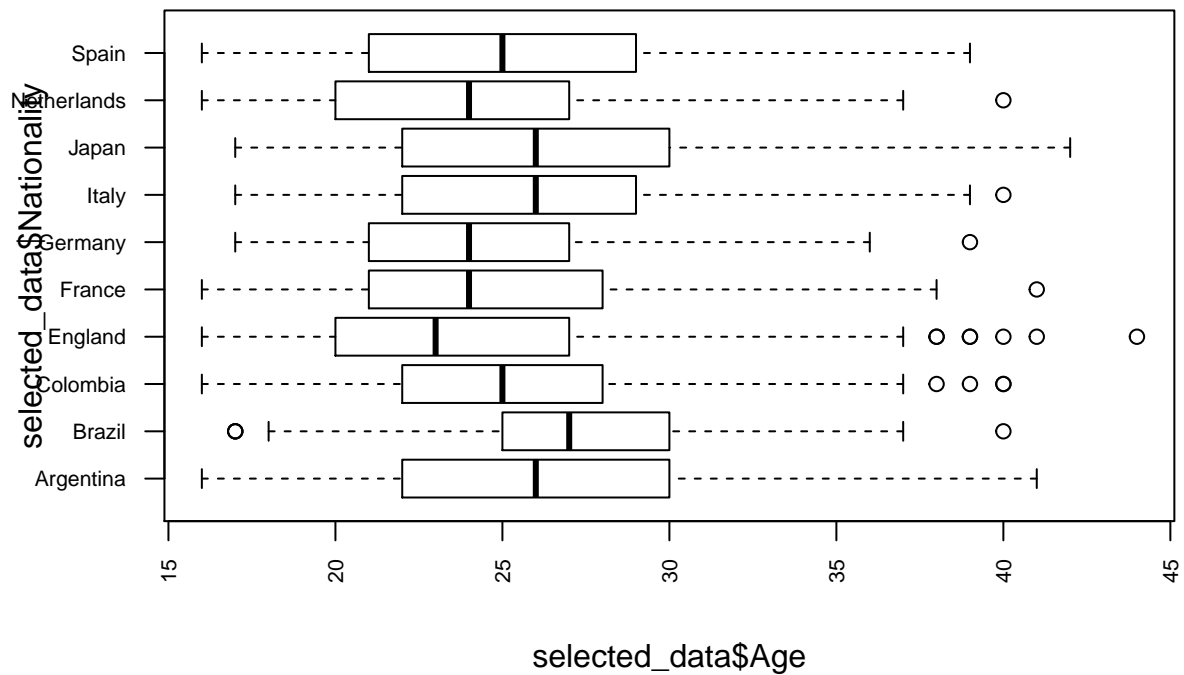
Para las 10 nacionalidades más frecuentes dibujamos el diagrama de cajas de las edades

```
nationality_freq=sort(table(selected_data$Nationality),decreasing=TRUE)
barplot(nationality_freq,las=2,cex.names=0.7,hORIZ=TRUE)# alterat cex.names
```



```
boxplot(selected_data$Age~selected_data$Nationality,horizontal=TRUE,las=2,cex.axis=0.7)# alerta cex.nam
```





## 2. Preguntas

### 2.1. Pregunta 1

¿Que proporción de jugadores su Overall es igual a su Potencial?

### 2.2. Pregunta 2

Crea una data frame llamado `data4` a partir de `data` con solo los jugadores de los equipos “FC Barcelona”, “Juventus”, “Paris Saint-Germain” “Manchester United”.

```
data4=data[data$Club %in% c("FC Barcelona", "Juventus","Paris Saint-Germain", "Manchester United"),]
head(data4)
```

```
##      i..      ID      Name Age
## 1      0 158023      L. Messi 31
## 2      1 20801 Cristiano Ronaldo 33
## 3      2 190871      Neymar Jr 26
## 4      3 193080      De Gea 27
## 8      7 176580      L. Suárez 31
## 16     15 211110      P. Dybala 24
##
##                                     Photo Nationality
## 1 https://cdn.sofifa.org/players/4/19/158023.png  Argentina
```

## 2	https://cdn.sofifa.org/players/4/19/20801.png	Portugal
## 3	https://cdn.sofifa.org/players/4/19/190871.png	Brazil
## 4	https://cdn.sofifa.org/players/4/19/193080.png	Spain
## 8	https://cdn.sofifa.org/players/4/19/176580.png	Uruguay
## 16	https://cdn.sofifa.org/players/4/19/211110.png	Argentina
##	Flag Overall Potential	Club
## 1	https://cdn.sofifa.org/flags/52.png 94 94	FC Barcelona
## 2	https://cdn.sofifa.org/flags/38.png 94 94	Juventus
## 3	https://cdn.sofifa.org/flags/54.png 92 93	Paris Saint-Germain
## 4	https://cdn.sofifa.org/flags/45.png 91 93	Manchester United
## 8	https://cdn.sofifa.org/flags/60.png 91 91	FC Barcelona
## 16	https://cdn.sofifa.org/flags/52.png 89 94	Juventus
##	Club.Logo Value Wage Special	
## 1	https://cdn.sofifa.org/teams/2/light/241.png â,~110.5M â,~565K	2202
## 2	https://cdn.sofifa.org/teams/2/light/45.png â,~77M â,~405K	2228
## 3	https://cdn.sofifa.org/teams/2/light/73.png â,~118.5M â,~290K	2143
## 4	https://cdn.sofifa.org/teams/2/light/11.png â,~72M â,~260K	1471
## 8	https://cdn.sofifa.org/teams/2/light/241.png â,~80M â,~455K	2346
## 16	https://cdn.sofifa.org/teams/2/light/45.png â,~89M â,~205K	2092
##	Preferred.Foot International.Reputation Weak.Foot Skill.Moves	Work.Rate
## 1	Left 5 4	4 Medium/ Medium
## 2	Right 5 4	5 High/ Low
## 3	Right 5 5	5 High/ Medium
## 4	Right 4 3	1 Medium/ Medium
## 8	Right 5 4	3 High/ Medium
## 16	Left 3 3	4 High/ Medium
##	Body.Type Real.Face Position Jersey.Number	Joined Loaned.From
## 1	Messi Yes RF 10	Jul 1, 2004
## 2	C. Ronaldo Yes ST 7	Jul 10, 2018
## 3	Neymar Yes LW 10	Aug 3, 2017
## 4	Lean Yes GK 1	Jul 1, 2011
## 8	Normal Yes RS 9	Jul 11, 2014
## 16	Normal Yes LF 21	Jul 1, 2015
##	Contract.Valid.Until Height Weight LS ST RS LW LF CF RF RW	
## 1	2021 5'7 159lbs 88+2 88+2 88+2 92+2 93+2 93+2 93+2 92+2	
## 2	2022 6'2 183lbs 91+3 91+3 91+3 89+3 90+3 90+3 90+3 89+3	
## 3	2022 5'9 150lbs 84+3 84+3 84+3 89+3 89+3 89+3 89+3 89+3	
## 4	2020 6'4 168lbs	
## 8	2021 6'0 190lbs 87+5 87+5 87+5 86+5 87+5 87+5 87+5 86+5	
## 16	2022 5'10 165lbs 83+3 83+3 83+3 87+3 86+3 86+3 86+3 87+3	
##	LAM CAM RAM LM LCM CM RCM RM LWB LDM CDM RDM RWB LB LCB	
## 1	93+2 93+2 93+2 91+2 84+2 84+2 84+2 91+2 64+2 61+2 61+2 61+2 64+2 59+2 47+2	
## 2	88+3 88+3 88+3 88+3 81+3 81+3 81+3 88+3 65+3 61+3 61+3 61+3 65+3 61+3 53+3	
## 3	89+3 89+3 89+3 88+3 81+3 81+3 81+3 88+3 65+3 60+3 60+3 60+3 65+3 60+3 47+3	
## 4		
## 8	85+5 85+5 85+5 84+5 79+5 79+5 79+5 84+5 69+5 68+5 68+5 68+5 69+5 66+5 63+5	
## 16	87+3 87+3 87+3 86+3 79+3 79+3 79+3 86+3 62+3 58+3 58+3 58+3 62+3 56+3 45+3	
##	CB RCB RB Crossing Finishing HeadingAccuracy ShortPassing Volleys	
## 1	47+2 47+2 59+2 84 95 70 90 86	
## 2	53+3 53+3 61+3 84 94 89 81 87	
## 3	47+3 47+3 60+3 79 87 62 84 84	
## 4		17 13 21 50 13
## 8	63+5 63+5 66+5 77 93 77 82 88	
## 16	45+3 45+3 56+3 82 84 68 87 88	

##	Dribbling	Curve	FKAccuracy	LongPassing	BallControl	Acceleration	SprintSpeed
## 1	97	93	94	87	96	91	86
## 2	88	81	76	77	94	89	91
## 3	96	88	87	78	95	94	90
## 4	18	21	19	51	42	57	58
## 8	87	86	84	64	90	86	75
## 16	92	88	88	75	92	87	83

##	Agility	Reactions	Balance	ShotPower	Jumping	Stamina	Strength	LongShots
## 1	91	95	95	85	68	72	59	94
## 2	87	96	70	95	95	88	79	93
## 3	96	94	84	80	61	81	49	82
## 4	60	90	43	31	67	43	64	12
## 8	82	92	83	86	69	90	83	85
## 16	91	86	85	82	75	80	65	88

##	Aggression	Interceptions	Positioning	Vision	Penalties	Composure	Marking
## 1	48	22	94	94	75	96	33
## 2	63	29	95	82	85	95	28
## 3	56	36	89	87	81	94	27
## 4	38	30	12	68	40	68	15
## 8	87	41	92	84	85	85	62
## 16	48	32	84	87	86	84	23

##	StandingTackle	SlidingTackle	GKDividing	GKHandling	GKKicking	GKPositioning
## 1	28	26	6	11	15	14
## 2	31	23	7	11	15	14
## 3	24	33	9	9	15	15
## 4	21	13	90	85	87	88
## 8	45	38	27	25	31	33
## 16	20	20	5	4	4	5

##	GKReflexes	Release.Clause
## 1	8	â,~226.5M
## 2	11	â,~127.1M
## 3	11	â,~228.1M
## 4	94	â,~138.6M
## 8	37	â,~164M
## 16	8	â,~153.5M

## 2.3. Pregunta 3

Discretiza a un factor ordenado llamado `Overall_Level` en 5 niveles “Low”, “Regular”, “Best”, “Very Best”, “Ace”, el Overall de los jugadores de `data4`.

```
Overall_Level=ordered(cut(data4$Overall,breaks=5),
                      labels=c("Low","Regular","Best","Very Best","Ace"))
Overall_Level
```

##	[1]	Ace	Ace	Ace	Ace	Ace	Ace	Ace
##	[8]	Ace	Ace	Ace	Ace	Ace	Ace	Ace
##	[15]	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best
##	[22]	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best
##	[29]	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best
##	[36]	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best
##	[43]	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best
##	[50]	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best	Very Best

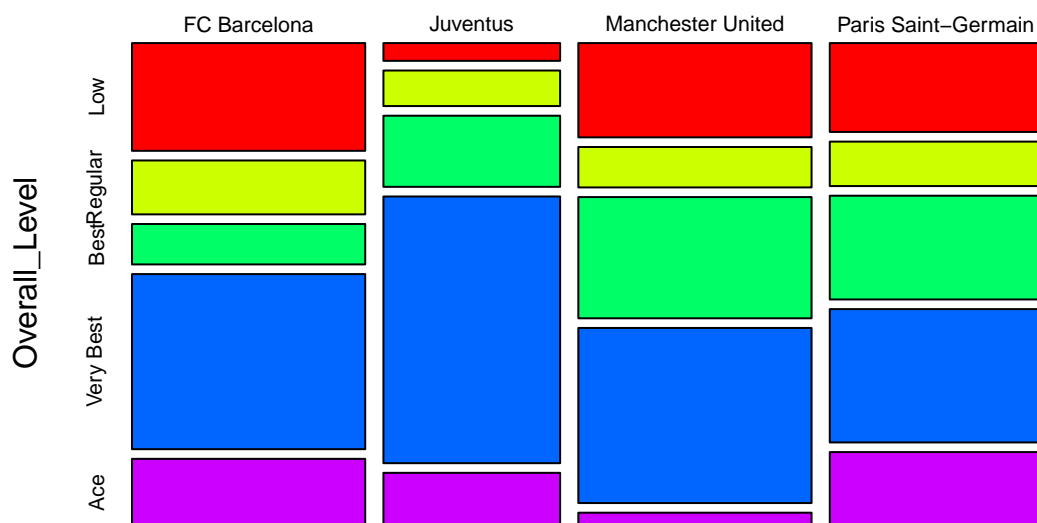
```
## [57] Very Best Very Best Very Best Very Best Very Best Very Best Very Best
## [64] Very Best Best      Best      Best      Best      Best      Best
## [71] Best      Best      Best      Best      Best      Best      Best
## [78] Best      Best      Best      Best      Best      Best      Best
## [85] Best      Best      Best      Regular   Regular   Regular   Regular
## [92] Regular   Regular   Regular   Regular   Regular   Regular   Regular
## [99] Regular   Low       Low       Low       Low       Low       Low
## [106] Low        Low        Low        Low        Low        Low        Low
## [113] Low        Low        Low        Low        Low        Low        Low
## [120] Low        Low
## Levels: Low < Regular < Best < Very Best < Ace
```

## 2.4. Pregunta 4

Dibuja un diagrama de mosaico de las proporciones globales de Overall\_Level por los 4 clubes.

```
mosaicplot(prop.table(table(data4$Club,Overall_Level)),
  main="Diagram de mosaico de proporciones del Overal_level y Club",
  color = rainbow(5))
```

## Diagram de mosaico de proporciones del Overal\_level y Club



## 2.5. Pregunta 5

Calcula los porcentajes de Overall\_Level por club. ¿Qué club tiene un mayor porcentaje de jugadores Ace?.

```
prop.table(table(Overall_Level,data4$Club),margin=2)
```

```
##
## Overall_Level FC Barcelona Juventus Manchester United Paris Saint-Germain
## Low 0.24242424 0.04000000 0.21212121 0.20000000
## Regular 0.12121212 0.08000000 0.09090909 0.10000000
## Best 0.09090909 0.16000000 0.27272727 0.23333333
## Very Best 0.39393939 0.60000000 0.39393939 0.30000000
## Ace 0.15151515 0.12000000 0.03030303 0.16666667
```

## 2.6. Pregunta 6

Del total de Ace entre los 4 clubes ¿qué club tiene el menor porcentaje?

```
prop.table(table(Overall_Level,data4$Club),margin=1)
```

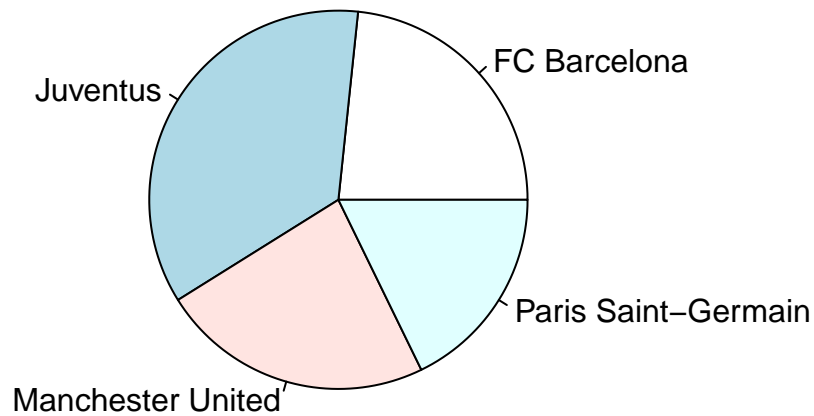
```
##
## Overall_Level FC Barcelona Juventus Manchester United Paris Saint-Germain
## Low 0.36363636 0.04545455 0.31818182 0.27272727
## Regular 0.33333333 0.16666667 0.25000000 0.25000000
## Best 0.13043478 0.17391304 0.39130435 0.30434783
## Very Best 0.26000000 0.30000000 0.26000000 0.18000000
## Ace 0.35714286 0.21428571 0.07142857 0.35714286
```

## 2.7. Pregunta 7

Calcula un diagrama de tarta de la proporción de Aces entre los 4 clubes

```
pie(prop.table(table(Overall_Level,data4$Club),margin=2)[4,],main="Propociones de Ace entre los 4 clubes")
```

## Proporciones de Ace entre los 4 clubes



### 2.8. Pregunta 8

- a) Calcula overall medio y la desviación típica para cada uno de los 4 clubs
- b) Dibuja en un mismo gráfico. los diagrama de caja de Overall para cada uno de los 4 clubs. Añade a cada diagram de caja el valor medio de Overall en forma de rombo del color de cada club.

```
aggregate(Overall~Club,data=data4,FUN= function(x) {c(media=mean(x),sd=sd(x))})
```

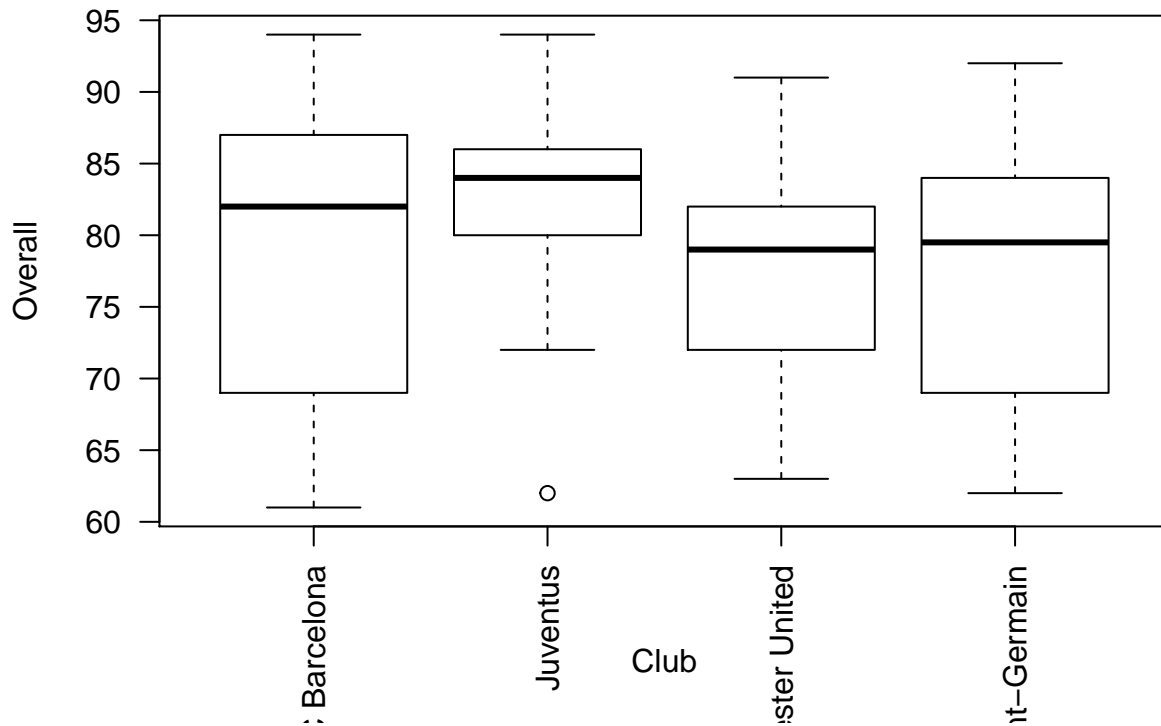
```
##           Club Overall.media Overall.sd
## 1      FC Barcelona   78.030303   9.583465
## 2          Juventus   82.280000   6.560742
## 3 Manchester United   77.242424   7.701584
## 4 Paris Saint-Germain  77.433333   9.023660
```

```
medias=medias=aggregate(Overall~Club,FUN=mean,data = data4)
medias
```

```
##           Club Overall
## 1      FC Barcelona 78.03030
## 2          Juventus 82.28000
## 3 Manchester United 77.24242
## 4 Paris Saint-Germain 77.43333
```

```
boxplot(Overall~Club,data=data4,las=2)
points(medias,pch=24,col=rainbow(4),bg=rainbow(4))
```

```
## Warning in data.matrix(x): NAs introducidos por coerción
```



```
## Pregunta 9 Hay un club con un dato atípico. Averiguar quién es, es decir da su nombre.
```

```
x=which.min(data4$Overall[data4$Club=="Juventus"])
x
```

```
## [1] 25
```

```
data4[x,"Name"]
```

```
## [1] "M. Pjanić"
```

## 2.9. Pregunta 10

Se puntua la presentación.