Code ▼

Data Prep Normalization and Dummies

Open Libraries

Hide

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```
library("ggplot2", lib.loc="/Library/Frameworks/R.framework/Versions/3.4/Resources/li
brary")
library("graphics", lib.loc="/Library/Frameworks/R.framework/Versions/3.4/Resources/l
ibrary")
library("gplots", lib.loc="/Library/Frameworks/R.framework/Versions/3.4/Resources/lib
rary")
library("dplyr")
library("lattice", lib.loc="/Library/Frameworks/R.framework/Versions/3.4/Resources/li
brary")
library("data.table", lib.loc="/Library/Frameworks/R.framework/Versions/3.4/Resources
/library")
library("datasets")
library("readxl")
library("stats")
library("caret")
library("VIM")
library("dummies")
```

Create Dummies

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```
dfwithDummies <- dummy.data.frame(dfDataSetKNN[2:30], sep = ".")
names(dfwithDummies)</pre>
```

```
[1] "Sex.F"
[2] "Sex.M"
[3] "Expel.N"
[4] "Expel.Y"
[5] "First.Gen.N"
[6] "First.Gen.Y"
[7] "Challenge Tag.N"
[8] "Challenge Tag.Y"
[9] "Boettcher.Semi.N"
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[11] "Boettcher.Final.N"
 [12] "Boettcher.Final.Y"
 [13] "Daniels.Semi.N"
 [14] "Daniels.Semi.Y"
 [15] "Daniels.Final.N"
 [16] "Daniels.Final.Y"
 [17] "Harvey.App.N"
 [18] "Harvey.App.Y"
 [19] "Harvey.Final.N"
 [20] "Harvey.Final.Y"
 [21] "FC.App.N"
 [22] "FC.App.Y"
 [23] "Thorson.App.N"
 [24] "Thorson.App.Y"
 [25] "Thorson.Admit.N"
 [26] "Thorson.Admit.Y"
 [27] "Summet.Participant.N"
 [28] "Summet.Participant.Y"
 [29] "Mines.Medal.N"
 [30] "Mines.Medal.Y"
 [31] "SPS.N"
 [32] "SPS.Y"
 [33] "Veteran.N"
 [34] "Veteran.Y"
 [35] "Legacy.N"
 [36] "Legacy.Y"
 [37] "Athlete.N"
 [38] "Athlete.Y"
 [39] "State.CO"
 [40] "State.Other"
 [41] "Citizenship.Foreign National/International"
 [42] "Citizenship.International"
 [43] "Citizenship.Missing"
 [44] "Citizenship.U.S. Citizen"
 [45] "Citizenship.U.S. Permanent Resident/Green Card Holder"
 [46] "Citizenship.Undocumented/DACA"
 [47] "Ethnicity.American Indian or Alaska Native"
 [48] "Ethnicity.Asian"
 [49] "Ethnicity.Black or African American"
 [50] "Ethnicity.Hispanic or Latino"
 [51] "Ethnicity.Missing"
 [52] "Ethnicity.Multiracial"
 [53] "Ethnicity.Native Hawaiian or Other Pacific Islander"
 [54] "Ethnicity.NotDeclared"
 [55] "Ethnicity.Unknown"
 [56] "Ethnicity.White"
 [57] "Major.App.Applied Mathematics & Statistics - Computational & Applied Mathemati
cs"
 [58] "Major.App.Applied Mathematics & Statistics - Statistics"
 [59] "Major.App.Chemical Engineering"
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[60] "Major.App.Chemical Engineering - Biological Engineering Specialty"
 [61] "Major.App.Chemistry"
 [62] "Major.App.Chemistry - Biochemistry Specialty"
 [63] "Major.App.Chemistry - Environmental Chemistry Specialty"
 [64] "Major.App.Civil Engineering"
 [65] "Major.App.Computer Science"
 [66] "Major.App.Economics"
 [67] "Major.App.Electrical Engineering"
 [68] "Major.App.Engineering Physics"
 [69] "Major.App.Environmental Engineering"
 [70] "Major.App.Geological Engineering"
 [71] "Major.App.Geophysical Engineering"
 [72] "Major.App.Mechanical Engineering"
 [73] "Major.App.Metallurgical & Materials Engineering"
 [74] "Major.App.Mining Engineering"
 [75] "Major.App.Missing"
 [76] "Major.App.Petroleum Engineering"
 [77] "Major.App.Undecided"
 [78] "First Contact.ACT"
 [79] "First Contact.Application"
 [80] "First Contact.Athlete Form"
 [81] "First Contact.Campus Visit"
 [82] "First Contact.College Fair"
 [83] "First Contact.FUF"
 [84] "First Contact.Girls Lead the Way"
 [85] "First Contact.GPA Form"
 [86] "First Contact.Inquiry Form"
 [87] "First Contact.Mailing"
 [88] "First Contact.Materials"
 [89] "First Contact.MEP"
 [90] "First Contact.Phone"
 [91] "First Contact.Preview Mines"
 [92] "First Contact.Royall Search"
 [93] "First Contact.SAT"
 [94] "First Contact.TOEFL"
 [95] "First Visit.Campus Tour"
 [96] "First Visit.Campus Visit"
 [97] "First Visit.Class Shadow"
 [98] "First Visit.Discover Mines"
 [99] "First Visit.Discovery Mines in Your City"
[100] "First Visit.Girls Lead the Way"
[101] "First Visit.Launch"
[102] "First Visit.Making The Connection"
[103] "First Visit.Meet Me at Mines"
[104] "First Visit.None"
[105] "First Visit.Preview Mines"
[106] "First Visit.Preview Mines In Your City"
[107] "Sport.Men's Varsity Baseball"
[108] "Sport.Men's Varsity Basketball"
[109] "Sport.Men's Varsity Football"
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[110] "Sport.Men's Varsity Golf"
[111] "Sport.Men's Varsity Soccer"
[112] "Sport.Men's Varsity Wrestling"
[113] "Sport.None"
[114] "Sport. Varsity Swimming/Diving"
[115] "Sport. Varsity Track/Field"
[116] "Sport. Varsity XCountry"
[117] "Sport.Women's Varsity Basketball"
[118] "Sport.Women's Varsity Soccer"
[119] "Sport.Women's Varsity Softball"
[120] "Sport.Women's Varsity Volleyball"
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summary(dfwithDummies)
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                       Sex.M
                                        Expel.N
                                                          Expel.Y
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                                      Harvey.App.N
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                                                                          Harvey.Final.N
Harvey.Final.Y
                       FC.App.N
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                                  Median :1.0000
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Median :0.000000
                  Median :1.000
Mean :0.996
                Mean
                       :0.00401
                                  Mean
                                       :0.9102
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                                                         :0.08982
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Mean :0.007538
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                       :0.986
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                  Max.
   FC.App.Y
                  Thorson.App.N
                                                     Thorson.Admit.N Thorson.Admit.
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                                                                     Median :0.0000
   Median :1.0000
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                                   Mean
                                          :0.04218
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                                                                     Mean
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   Mean :0.9966
                        Mean :0.003368
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                             :1.000000
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   Max.
          :1.0000
                        Max.
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                 Mines.Medal.Y
                                         SPS.N
                                                          SPS.Y
                                                                          Veteran.N
Veteran.Y
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      1st Qu.:0.00000
                       1st Qu.:1.0000
Median :1.0000
                 Median :0.0000000
                                     Median :1.0000
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                                                                        Median :1.0
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     Median :0.00000
                       Median :1.0000
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       :0.9995
                 Mean :0.0004812
                                   Mean :0.9933
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                                                             :0.006736
                                                                        Mean :0.9
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     Mean :0.06848
                       Mean :0.9267
 3rd Qu.:1.0000
                 3rd Qu.:0.0000000
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        :1.0000
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Mean
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                                                           :0.3026
       :0.0733
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                                         :0.02614
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      :0.03368
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Max. :1.00000 Citizenship.International Citizenship.Missing Citizenship.U.S. Citizen Citizenship.U.S. S. Permanent Resident/Green Card Holder Min. :0.000000	Max. :1.0000 Max.	:1.0000	Max. :1.	00000 Max.	:1.0000	Max. :	1.0000				
Note	Max. :1.00000										
Min. 1.000000	Citizenship.Internation	onal Citizen	ship.Missin	g Citizenshi	p.U.S. Citizer	n Citize	nship.U				
1	.S. Permanent Resident	Green Card	Holder								
St Qu.:0.000000	Min. :0.000000	Min.	:0.000000	Min. :0.	0000	Min.	:0.000				
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Mean :0.04731 Mean :0.0003208 Mean :0.7634	Mean :0.04731			an :0.7634							
3rd Qu.:0.00000 3rd Qu.:0.0000000 3rd Qu.:1.0000	3rd Qu.:0.00000	3rd Qu.:0.0	000000 3r	d Qu.:1.0000							

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:1.0000000
 Max.
        :1.00000
                       Max.
                                            Max.
                                                    :1.0000
 Major.App.Applied Mathematics & Statistics - Computational & Applied Mathematics
        :0.0000
 1st Qu.:0.0000
Median :0.0000
 Mean
        :0.0247
 3rd Qu.:0.0000
        :1.0000
Max.
Major.App.Applied Mathematics & Statistics - Statistics Major.App.Chemical Engineeri
ng
Min.
        :0.000000
                                                           Min.
                                                                   :0.00000
 1st Qu.:0.000000
                                                           1st Qu.:0.00000
Median :0.000000
                                                           Median :0.00000
        :0.007698
                                                           Mean
                                                                  :0.08677
 Mean
 3rd Qu.:0.000000
                                                           3rd Qu.: 0.00000
        :1.000000
                                                                   :1.00000
Max.
                                                           Max.
Major.App.Chemical Engineering - Biological Engineering Specialty Major.App.Chemistr
У
Min.
        :0.00000
                                                                     Min.
                                                                             :0.00000
 1st Qu.:0.00000
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 Median :0.00000
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Mean
                                                                     Mean
        :0.08051
                                                                             :0.01235
 3rd Qu.: 0.00000
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                                                                             :1.00000
Max.
        :1.00000
                                                                     Max.
Major.App.Chemistry - Biochemistry Specialty Major.App.Chemistry - Environmental Che
mistry Specialty Major. App. Civil Engineering
Min.
        :0.0000
                                                       :0.000000
                                               Min.
Min.
       :0.00000
 1st Qu.:0.0000
                                                1st Ou.:0.000000
1st Qu.:0.00000
Median :0.0000
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Median :0.00000
        :0.0255
                                                       :0.003368
Mean
                                               Mean
       :0.06287
Mean
 3rd Qu.:0.0000
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3rd Qu.:0.00000
Max.
        :1.0000
                                                       :1.000000
                                               Max.
Max.
       :1.00000
 Major.App.Computer Science Major.App.Economics Major.App.Electrical Engineering Majo
r.App.Engineering Physics
Min.
        :0.0000
                             Min.
                                    :0.00000
                                                  Min.
                                                                                    Min.
                                                         :0.00000
:0.00000
                                                  1st Qu.:0.00000
                             1st Qu.:0.00000
 1st Qu.:0.0000
                                                                                    1st
Ou.:0.00000
Median :0.0000
                             Median :0.00000
                                                  Median :0.00000
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an :0.00000
Mean
        :0.1007
                             Mean
                                    :0.01299
                                                  Mean
                                                         :0.06977
                                                                                    Mean
:0.04683
 3rd Qu.:0.0000
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Qu.:0.00000
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Max.	:1.0000	Max.	:1.00	000	Max.	:1.0	0000		Max.
:1.0000	0								
Major.	App.Environmenta	l Engineer	ring Maj	or.App.	Geologi	cal E	ngineering	Major.A	pp.Geoph
	Engineering	_			_			-	
Min.	:0.00000		Min	. :0.	0000			Min.	:0.00000
0									
1st Qu	.:0.00000		1st	Qu.:0.	0000			1st Qu.	:0.00000
0				_				_	
Median	:0.00000		Med	lian :0.	0000			Median	:0.00000
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Mean	:0.05437		Mea	ın :0.	0162			Mean	:0.00545
3									
3rd Ou	.:0.00000		3rd	l Qu.:0.	0000			3rd Ou.	:0.00000
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Max.	:1.00000		Max	:1.	0000			Max.	:1.00000
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Major.	App.Mechanical E	ngineering	Major.	App.Met	allurgi	.cal &	Materials	Enginee	ering Maj
	TI Mining Engineeri		_					•	3
Min.	:0.0000	3	Min.	:0.000	00				Min
. :0.	00000	Min.	:0.0000	000					
1st Qu	.:0.0000		1st Qu	.:0.000	00				1st
Qu.:0.0	00000	1st Qu.:	0.00000	0					
Median	:0.0000		Median	:0.000	00				Med
ian :0.	00000	Median	:0.0000	00					
Mean	:0.2388		Mean	:0.019	73				Mea
n :0.	009784	Mean	:0.0032	808					
3rd Qu	.:0.0000		3rd Qu	.:0.000	00				3rd
Qu.:0.0	00000	3rd Qu.:	:0.00000	0					
Max.	:1.0000		Max.	:1.000	00				Max
. :1.0	00000	Max.	:1.0000	000					
Major.	App.Petroleum En	gineering	Major.A	.pp.Unde	cided F	'irst	Contact.AC	r First	Contact.
Applicat	tion First Conta	ct.Athlete	e Form						
Min.	:0.00000		Min.	:0.0000	0 M	lin.	:0.00000	Min.	:0.0000
Min.	:0.00000								
1st Qu	.:0.0000		1st Qu.	:0.0000	0 1	st Qu	.:0.00000	1st Qu	1.:0.0000
1st Qu.	:0.00000								
Median	:0.00000		Median	:0.0000	0 M	ledian	:0.00000	Median	:0.0000
Median	:0.00000								
Mean	:0.03801		Mean	:0.0803	5 M	lean	:0.09447	Mean	:0.1524
Mean	:0.006897								
3rd Qu	.:0.0000		3rd Qu.	:0.0000	0 3	rd Qu	.:0.00000	3rd Qu	1.:0.0000
3rd Qu.	:0.00000								
Max.	:1.00000		Max.	:1.0000	0 M	lax.	:1.00000	Max.	:1.0000
Max.	:1.000000								
First	Contact.Campus V	isit First	t Contac	t.Colle	ge Fair	Firs	t Contact.	FUF Firs	t Contac
t.Girls	Lead the Way Fi	rst Contac	ct.GPA F	orm					
Min.	:0.0000	Min.	:0.00	0000		Min.	:0.0000	Min.	:0.00
0000	Mi	n. :0.00	0000						
1st Qu	.:0.0000	1st (Qu.:0.00	0000		1st	Qu.:0.0000	1st	Qu.:0.00
0000	1s	t Qu.:0.00	0000						

Mean	Median :0.0000	Median :0.000000	Median:0.0000 Med	lian :0.00
1443				
1443		Mean :0.003368	Mean :0.1545 Mea	in :0.00
MAX	1443 Mean	:0.003368		
MAX	3rd Qu.:0.0000	3rd Qu.:0.000000	3rd Qu.:0.0000 3rd	Qu.:0.00
Nax		.:0.00000		_
First Contact.Phouley Form First Contact.Mailing First Contact.Materials First Contact.Phone Min.	Max. :1.0000	Max. :1.000000	Max. :1.0000 Max	:1.00
Ct. MEP	0000 Max.	:1.000000		
Min. 1.00000	First Contact.Inquiry Form	First Contact.Mailing 1	First Contact.Materials Fi	rst Conta
1st qu.:0.00000				
1st Qu.:0.00000	Min. :0.00000	Min. :0.0000000	Min. :0.000000 Mi	n. :0.0
00000	00000 Min. :0.0000000			
Median	1st Qu.:0.00000	1st Qu.:0.0000000	1st Qu.:0.000000 1s	t Qu.:0.0
Mean 10.01588 Mean :0.0004812 Mean :0.003368 Mean :0.00 02727 Mean :0.001688 3rd Qu : 0.0000000 3rd Qu : 0.000000 3rd Qu : 0.000000 Max. :1.000000 Min. :0.00000 Min. :0.000000 Min. :0.000000 Mi	00000 1st Qu.:0.0000000			
Mean	Median :0.00000	Median :0.0000000	Median :0.000000 Me	dian :0.0
02727	00000 Median :0.0000000			
3rd Qu.:0.00000	Mean :0.01588	Mean :0.0004812	Mean :0.003368 Me	an :0.0
Max. :1.00000 Max. :1.000000 Min. :0.00000 Median :0.000000 Median :0	02727 Mean :0.0001604			
Max. :1.00000 Max. :1.000000 Max. :1.000000 Max. :1.000000 Max. :1.000000 Max. :1.0000000 Max. :1.0000000 Max. :1.0000000 Max. :1.0000000 Min. :0.000000 Min. :0.0000000 Min. :0.0000000 Min. :0.0000000 Min. <td>3rd Qu.:0.00000</td> <td>3rd Qu.:0.0000000</td> <td>3rd Qu.:0.000000 3r</td> <td>d Qu.:0.0</td>	3rd Qu.:0.00000	3rd Qu.:0.0000000	3rd Qu.:0.000000 3r	d Qu.:0.0
Name	00000 3rd Qu.:0.0000000			
First Contact.Preview Mines	Max. :1.00000	Max. :1.0000000	Max. :1.000000 Ma	x. :1.0
Min. :0.00000	00000 Max. :1.0000000			
Min. :0.00000 Min. :0.00000 Min. :0.00000 Min. :0.00000 Min. :0.00000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Median :0.000000 Ist Qu.:0.00000 Median :0.000000 Max. :1.00000 Max. :1.00000 Max. :1.00000 Min. :0.000000 Min. :0.000000 Min. :0.0000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Median :0.0000000 Median :0.0000000 Median	First Contact.Preview Mine	s First Contact.Royall	Search First Contact.SAT F	irst Cont
1st Qu::0.00000	act.TOEFL First Visit.Campu	s Tour		
1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Max. :1.00000 Max. :1.00000 Max. :1.00000 Max. :1.00000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Median :0.000000	Min. :0.00000	Min. :0.0000	Min. :0.00000 M	in. :0.
Median :0.00000 Mean :0.3973 Mean :0.02422 Mean :0.00000 Mean :0.002422 Mean :0.00000 Mean :0.000000 3rd Qu.:0.00000 3rd Qu.:0.00000 3rd Qu.:0.00000 Max. :1.00000 Max. :1.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Median :0.000000	0000000 Min. :0.00000			
Median : 0.00000	1st Qu.:0.00000	1st Qu.:0.0000	1st Qu.:0.00000 1	st Qu.:0.
Mean :0.01395 Mean :0.3973 Mean :0.02422 Mean :0.001604 Mean :0.08613 :0.001604 Mean :0.08613 :0.000000 3rd Qu ::0.00000 Max. :1.00000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Min. :0.000000 Median :0.00000 Median :0.000000 Median :0.00000 Median :0.000000 Median :0.00000 Median :0.000000 Median :0.00000 Median :0.000000 Median :0.000000 Median :0.000000 Median :0.00000 Median :0.000000 Median :0.00000 Median :0.000000 Median :0.000000 Median :0.000000 Median :0.000000 Median :0.000000	0000000 1st Qu.:0.00000			
Mean :0.01395 Mean :0.3973 Mean :0.02422 Mean :0.0000000 3rd Qu.:0.00000 Max. :1.00000 Min. :0.000000 Min. :0.0000000				

LITEC ATETC.GILIE DE	ad the Way First Visit.Launc	h First Visit.Making The Connection
First Visit.Meet Me a	t Mines First Visit.None	
Min. :0.000000	Min. :0.00000	Min. :0.0000
Min. :0.000000	Min. :0.0000	
1st Qu.:0.000000	1st Qu.:0.00000	1st Qu.:0.0000
1st Qu.:0.000000	1st Qu.:0.0000	
Median :0.000000	Median :0.00000	Median :0.0000
Median :0.000000	Median :1.0000	
Mean :0.003528	Mean :0.03176	Mean :0.0154
Mean :0.005293	Mean :0.5931	
3rd Qu.:0.000000	3rd Qu.:0.00000	3rd Qu.:0.0000
3rd Qu.:0.000000	3rd Qu.:1.0000	
Max. :1.000000	Max. :1.00000	Max. :1.0000
Max. :1.000000	Max. :1.0000	
First Visit.Preview	Mines First Visit.Preview Mi	nes In Your City Sport.Men's Varsity
Baseball Sport.Men's		
Min. :0.00000	Min. :0.00000	Min. :0.000000
Min. :0.000000		
1st Qu.:0.00000	1st Qu.:0.00000	1st Qu.:0.0000000
1st Qu.:0.000000	~	~
Median :0.00000	Median :0.00000	Median :0.0000000
Median :0.000000		
Mean :0.03111	Mean :0.03865	Mean :0.0009623
Mean :0.001443		
3rd Qu.:0.00000	3rd Qu.:0.00000	3rd Qu.:0.0000000
3rd Qu.:0.000000	010 guitto 0000	0_0 gustottottot
	Max. :1.00000	Max. :1.0000000
Max. :1.00000	Max. :1.00000	Max. :1.0000000
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Max. :1.00000 Max. :1.000000 Sport.Men's Varsity	Football Sport.Men's Varsity	Max. :1.0000000 Golf Sport.Men's Varsity Soccer Spo
Max. :1.00000 Max. :1.000000 Sport.Men's Varsity rt.Men's Varsity Wres	Football Sport.Men's Varsity tling Sport.None	Golf Sport.Men's Varsity Soccer Spo
Max. :1.00000 Max. :1.000000 Sport.Men's Varsity rt.Men's Varsity Wres Min. :0.00000	Football Sport.Men's Varsity tling Sport.None Min. :0.0000000	
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Max. :1.00000 Max. :1.000000 Sport.Men's Varsity rt.Men's Varsity Wres Min. :0.00000 . :0.000000 1st Qu.:0.000000 Qu.:0.000000 Median :0.000000 ian :0.000000 Mean :0.01363 n :0.002406	Football Sport.Men's Varsity tling Sport.None	Golf Sport.Men's Varsity Soccer Spo Min. :0.0000000 Min 1st Qu.:0.0000000 1st Median :0.0000000 Med Mean :0.0009623 Mea
Max. :1.000000 Max. :1.000000 Sport.Men's Varsity rt.Men's Varsity Wres Min. :0.000000 . :0.0000000 1st Qu.:0.000000 Qu.:0.0000000 Median :0.000000 ian :0.0000000 Mean :0.01363 n :0.002406 3rd Qu.:0.000000	Football Sport.Men's Varsity tling Sport.None	Golf Sport.Men's Varsity Soccer Spo Min. :0.0000000 Min 1st Qu.:0.0000000 1st Median :0.0000000 Med
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Max. :1.000000 Max. :1.000000 Sport.Men's Varsity rt.Men's Varsity Wres Min. :0.000000 :0.0000000 1st Qu.:0.000000 Median :0.000000 Mean :0.01363 n :0.002406 3rd Qu.:0.00000 Qu.:0.000000 Max. :1.000000 Sport.Varsity Swimming .Women's Varsity Bask	Football Sport.Men's Varsity tling Sport.None	Golf Sport.Men's Varsity Soccer Spo Min. :0.00000000 Min 1st Qu.:0.0000000 1st Median :0.0000000 Med Mean :0.0009623 Mea 3rd Qu.:0.0000000 3rd Max. :1.0000000 Max ek/Field Sport.Varsity XCountry Sport
Max. :1.00000 Max. :1.000000 Sport.Men's Varsity rt.Men's Varsity Wres Min. :0.000000 . :0.000000 lst Qu.:0.000000 Qu.:0.000000 Median :0.000000 ian :0.002406 3rd Qu.:0.00000 Qu.:0.000000 Max. :1.00000 . :1.000000 Sport.Varsity Swimmi .Women's Varsity Bask Min. :0.0000000	Football Sport.Men's Varsity tling Sport.None	Golf Sport.Men's Varsity Soccer Spo Min. :0.0000000 Min 1st Qu.:0.0000000 1st Median :0.0000000 Med Mean :0.0009623 Mea 3rd Qu.:0.0000000 3rd Max. :1.0000000 Max
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Max. :1.00000 Max. :1.000000 Sport.Men's Varsity rt.Men's Varsity Wres Min. :0.000000 . :0.000000 lst Qu.:0.000000 Qu.:0.000000 Median :0.000000 Mean :0.01363 n :0.002406 3rd Qu.:0.00000 Qu.:0.000000 Max. :1.00000 . :1.000000 Sport.Varsity Swimmi .Women's Varsity Bask Min. :0.0000000 1st Qu.:0.0000000 1st Qu.:0.0000000	Football Sport.Men's Varsity tling Sport.None	Min. :0.0000000 Min 1st Qu.:0.0000000 Med Median :0.0000000 Med Mean :0.0009623 Mea 3rd Qu.:0.0000000 3rd Max. :1.0000000 Max
Max. :1.00000 Max. :1.000000 Sport.Men's Varsity rt.Men's Varsity Wres Min. :0.000000 . :0.000000 lst Qu.:0.000000 Qu.:0.000000 Median :0.000000 Mean :0.01363 n :0.002406 3rd Qu.:0.00000 Qu.:0.000000 Max. :1.00000 . :1.000000 Sport.Varsity Swimmi .Women's Varsity Bask Min. :0.0000000 :0.000000 lst Qu.:0.0000000 1st Qu.:0.00000000 u.:0.0000000	Football Sport.Men's Varsity tling Sport.None	Min. :0.0000000 Min 1st Qu.:0.0000000 Med Median :0.0000000 Med Mean :0.0009623 Mea 3rd Qu.:0.0000000 Max ek/Field Sport.Varsity XCountry Sport Min. :0.0000000 Min. 1st Qu.:0.0000000 1st Q
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Mean :0.0001604	Mean	:0.002406	Mean	:0.0006415	Mean
:0.001123					
3rd Qu.:0.0000000	3rd Qu	.:0.000000	3rd Qu	1.:0.0000000	3rd Q
u.:0.000000					
Max. :1.0000000	Max.	:1.000000	Max.	:1.0000000	Max.
:1.000000					
Sport.Women's Varsity Soccer	Sport.W	omen's Varsity Soft	ball Sp	port.Women's Var	sity Vo
lleyball					
Min. :0.000000	Min.	:0.000000	M	in. :0.0000000	
1st Qu.:0.0000000	1st Qu.	:0.000000	18	st Qu.:0.0000000	
Median :0.0000000	Median	:0.0000000	Me	edian :0.0000000	
Mean :0.0006415	Mean	:0.0004812	Me	ean :0.0008019	
3rd Qu.:0.0000000	3rd Qu.	:0.000000	31	cd Qu.:0.0000000	
Max. :1.0000000	Max.	:1.0000000	Mā	ax. :1.0000000	

Hide

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str(dfwithDummies)

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'data.frame':
                6235 obs. of 120 variables:
 $ Sex.F
                                                                                     :
int 0 0 0 0 0 0 1 0 1 1 ...
 $ Sex.M
int
    1 1 1 1 1 1 0 1 0 0 ...
 $ Expel.N
                                                                                     :
    1 1 1 1 1 1 0 1 1 1 ...
int
 $ Expel.Y
int 0 0 0 0 0 0 1 0 0 0 ...
 $ First.Gen.N
    1 1 1 1 1 1 0 1 1 1 ...
int
$ First.Gen.Y
   0 0 0 0 0 0 1 0 0 0 ...
 $ Challenge Tag.N
    1 1 1 1 1 1 1 1 1 1 ...
 $ Challenge Tag.Y
    0 0 0 0 0 0 0 0 0 0 ...
 $ Boettcher.Semi.N
    1 1 1 1 1 1 1 1 1 1 ...
int
 $ Boettcher.Semi.Y
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Boettcher.Final.N
    1 1 1 1 1 1 1 1 1 1 ...
int
 $ Boettcher.Final.Y
   0 0 0 0 0 0 0 0 0 0 ...
int
$ Daniels.Semi.N
    1 1 1 1 1 1 1 1 1 1 ...
int
 $ Daniels.Semi.Y
    0 0 0 0 0 0 0 0 0 0 ...
int
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<pre>\$ Daniels.Final.N</pre>	:
int 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Daniels.Final.Y</pre>	:
int 0 0 0 0 0 0 0 0 0	
\$ Harvey.App.N	:
int 1 1 1 1 1 1 1 1 1 1	
\$ Harvey.App.Y	:
int 0 0 0 0 0 0 0 0 0	
\$ Harvey.Final.N	:
int 1 1 1 1 1 1 1 1 1	
\$ Harvey.Final.Y	:
int 0 0 0 0 0 0 0 0 0	
\$ FC.App.N	:
int 1 1 1 1 1 1 1 1 1	•
\$ FC.App.Y	:
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\$ Thorson.App.N	:
int 1 1 1 1 1 1 1 1 1	•
\$ Thorson.App.Y	:
int 0 0 0 0 0 0 0 0 0	•
\$ Thorson.Admit.N	•
int 1 1 1 1 1 1 1 1 1	:
\$ Thorson.Admit.Y	
int 0 0 0 0 0 0 0 0	:
\$ Summet.Participant.N	•
int 1 1 1 1 1 1 1 1 1 1	
\$ Summet.Participant.Y	:
int 0 0 0 0 0 0 0 0 0	
\$ Mines.Medal.N	:
int 1 1 1 1 1 1 1 1 1 1	
\$ Mines.Medal.Y	:
int 0 0 0 0 0 0 0 0 0	
\$ SPS.N	:
int 1 1 1 1 1 1 1 1 1 1	
\$ SPS.Y	:
int 0 0 0 0 0 0 0 0 0	
\$ Veteran.N	:
int 1 1 1 1 1 1 1 1 1 1	
\$ Veteran.Y	:
int 0 0 0 0 0 0 0 0 0	
\$ Legacy.N	:
\$ Legacy.N int 1 1 1 1 1 1 1 1 1	:
<pre>\$ Legacy.N int 1 1 1 1 1 1 1 1 1 \$ Legacy.Y</pre>	:
<pre>\$ Legacy.N int 1 1 1 1 1 1 1 1 1 1 \$ Legacy.Y int 0 0 0 0 0 0 0 0 0</pre>	
<pre>\$ Legacy.N int 1 1 1 1 1 1 1 1 1 1 \$ Legacy.Y int 0 0 0 0 0 0 0 0 0 \$ Athlete.N</pre>	
<pre>\$ Legacy.N int 1 1 1 1 1 1 1 1 1 1 1 \$ Legacy.Y int 0 0 0 0 0 0 0 0 0 \$ Athlete.N int 1 1 1 1 1 1 1 1 1 1</pre>	:
<pre>\$ Legacy.N int 1 1 1 1 1 1 1 1 1 1 1 1 \$ Legacy.Y int 0 0 0 0 0 0 0 0 0 \$ Athlete.N int 1 1 1 1 1 1 1 1 1 1 \$ Athlete.Y</pre>	:
<pre>\$ Legacy.N int 1 1 1 1 1 1 1 1 1 1 1 1 \$ Legacy.Y int 0 0 0 0 0 0 0 0 0 0 \$ Athlete.N int 1 1 1 1 1 1 1 1 1 1 1 \$ Athlete.Y int 0 0 0 0 0 0 0 0 0 0</pre>	:
<pre>\$ Legacy.N int 1 1 1 1 1 1 1 1 1 1 1 1 \$ Legacy.Y int 0 0 0 0 0 0 0 0 0 0 \$ Athlete.N int 1 1 1 1 1 1 1 1 1 1 \$ Athlete.Y int 0 0 0 0 0 0 0 0 0 0 \$ State.CO</pre>	:
<pre>\$ Legacy.N int 1 1 1 1 1 1 1 1 1 1 1 1 \$ Legacy.Y int 0 0 0 0 0 0 0 0 0 0 \$ Athlete.N int 1 1 1 1 1 1 1 1 1 1 1 \$ Athlete.Y int 0 0 0 0 0 0 0 0 0 0</pre>	:

```
$ State.Other
                                                                                   :
int 0 1 1 0 1 0 1 1 1 1 ...
 $ Citizenship.Foreign National/International
                                                                                   :
int 0 0 0 0 0 0 1 0 0 0 ...
 $ Citizenship.International
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Citizenship.Missing
                                                                                   :
int 0000000000...
 $ Citizenship.U.S. Citizen
int 1 1 1 1 1 1 0 1 1 1 ...
 $ Citizenship.U.S. Permanent Resident/Green Card Holder
                                                                                   :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Citizenship.Undocumented/DACA
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.American Indian or Alaska Native
   0 0 0 0 0 0 0 0 0 0 ...
$ Ethnicity.Asian
    1 0 0 0 0 0 1 0 0 0 ...
 $ Ethnicity.Black or African American
                                                                                   :
   0 0 0 0 1 0 0 0 0 0 ...
 $ Ethnicity. Hispanic or Latino
   0 0 0 0 0 0 0 1 0 0 ...
 $ Ethnicity.Missing
int 0 0 0 0 0 0 0 0 0 0 ...
$ Ethnicity.Multiracial
int 0000000000...
$ Ethnicity.Native Hawaiian or Other Pacific Islander
int 0 0 0 0 0 0 0 0 0 0 ...
$ Ethnicity.NotDeclared
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.Unknown
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.White
int 0 1 1 1 0 1 0 0 1 1 ...
 $ Major.App.Applied Mathematics & Statistics - Computational & Applied Mathematics:
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Applied Mathematics & Statistics - Statistics
                                                                                   :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemical Engineering
                                                                                   :
int 0 0 0 0 0 0 0 1 0 0 ...
 $ Major.App.Chemical Engineering - Biological Engineering Specialty
                                                                                   :
int 0 0 0 0 0 0 0 1 0 ...
 $ Major.App.Chemistry
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemistry - Biochemistry Specialty
                                                                                   :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemistry - Environmental Chemistry Specialty
                                                                                   :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Civil Engineering
                                                                                   :
    1 0 0 0 0 0 0 0 0 1 ...
```

```
$ Major.App.Computer Science
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Economics
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Electrical Engineering
int 0 0 0 0 0 0 1 0 0 0 ...
 $ Major.App.Engineering Physics
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Environmental Engineering
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Geological Engineering
                                                                                   :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Geophysical Engineering
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Mechanical Engineering
int 0 1 1 1 1 0 0 0 0 0 ...
 $ Major.App.Metallurgical & Materials Engineering
   0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Mining Engineering
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Missing
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Petroleum Engineering
int 0 0 0 0 0 0 0 0 0 0 ...
$ Major.App.Undecided
int 0 0 0 0 0 1 0 0 0 0 ...
$ First Contact.ACT
int 1 1 0 0 0 0 0 0 0 0 ...
$ First Contact.Application
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Athlete Form
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Campus Visit
int 0 0 0 1 0 1 0 0 1 1 ...
 $ First Contact.College Fair
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.FUF
                                                                                   :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Girls Lead the Way
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.GPA Form
int 0 0 1 0 0 0 0 0 0 0 ...
 $ First Contact.Inquiry Form
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Mailing
                                                                                   :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Materials
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.MEP
                                                                                   :
int 0000000000...
```

```
$ First Contact.Phone
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Preview Mines
    0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Royall Search
int 0 0 0 0 1 0 0 1 0 0 ...
 $ First Contact.SAT
int 0 0 0 0 0 0 1 0 0 0 ...
 $ First Contact.TOEFL
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Visit.Campus Tour
int 0 1 0 0 0 0 0 0 0 0 ...
 $ First Visit.Campus Visit
int 0 0 0 1 0 1 0 0 1 1 ...
 $ First Visit.Class Shadow
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Visit.Discover Mines
    0 0 0 0 0 0 0 0 0 0 ...
 $ First Visit.Discovery Mines in Your City
    0 0 0 0 0 0 0 0 0 0 ...
  [list output truncated]
 - attr(*, "dummies")=List of 26
  ..$ Sex
                        : int
                                3 4
  ..$ Expel
                         : int
  ..$ First.Gen
                         : int
                                5 6
  ..$ Challenge Tag
                         : int
  ..$ Boettcher.Semi
                        : int
  ..$ Boettcher.Final
                        : int
                                11 12
  .. $ Daniels.Semi
                        : int
                                13 14
  ..$ Daniels.Final
                        : int
                                15 16
  ..$ Harvey.App
                                17 18
                        : int
  ..$ Harvey.Final
                         : int
                                19 20
  ..$ FC.App
                                21 22
                         : int
  ..$ Thorson.App
                         : int
                                23 24
  ..$ Thorson.Admit
                        : int
                                25 26
  ..$ Summet.Participant: int
                                27 28
                        : int
  ..$ Mines.Medal
                                29 30
  ..$ SPS
                         : int
                                31 32
  ..$ Veteran
                        : int
                                33 34
  ..$ Legacy
                        : int
                                35 36
  ..$ Athlete
                        : int
                                37 38
  ..$ State
                         : int
                                39 40
  .. $ Citizenship
                        : int
                                41 42 43 44 45 46
  ..$ Ethnicity
                        : int
                                47 48 49 50 51 52 53 54 55 56
  ..$ Major.App
                        : int
                                57 58 59 60 61 62 63 64 65 66 ...
  ..$ First Contact
                        : int
                                78 79 80 81 82 83 84 85 86 87 ...
  ..$ First Visit
                         : int
                                95 96 97 98 99 100 101 102 103 104 ...
                                107 108 109 110 111 112 113 114 115 116 ...
  ..$ Sport
                         : int
```

Hide

```
dfJustNum <- dfDataSetKNN[31:48]
str(dfJustNum)</pre>
```

```
'data.frame':
               6235 obs. of 18 variables:
$ App.Created.Days
                         : num
                                339 339 339 339 335 335 333 333 333 ...
                                20 24 31 35 35 23 33 18 19 19 ...
$ Age
                         : num
$ HS.GPA
                         : num
                                3.88 3.48 4 3.16 3.9 ...
$ SATR.Converted
                               1370 1400 1400 1460 1370 1540 1190 1370 1430 1350 ...
                         : num
                               3 3 1 3 1 2 3 2 2 3 ...
$ Review.OutsideActivity: num
$ Review.Leadership
                               2 1 0 0 1 2 3 0 1 3 ...
                         : num
$ Review.WorkExp
                               2 2 0 1 0 0 0 1 0 3 ...
                         : num
$ Review.WorkEthic
                         : num
                                3 3 0 0 2 2 2 1 2 3 ...
$ Review.ExpDiversity
                                3 2 0 1 1 1 3 1 2 2 ...
                         : num
$ Review.DesireAttend
                                2 2 0 2 1 3 3 1 3 3 ...
                         : num
$ Review.Affinity
                                2 2 1 0 1 2 3 1 2 3 ...
                         : num
$ Review.InnovEntrep
                                1 0 0 0 0 0 1 0 1 3 ...
                         : num
                                3 2 0 1 1 2 3 3 2 3 ...
$ Review.Teamwork
                         : num
                                7 8 7 8 8 7 5 6 8 10 ...
$ Review.OverallFit
                        : num
$ Logins.60Days
                                0 0 0 0 0 0 0 0 0 0 ...
                        : num
$ EventCount.All
                         : num
                                0 1 0 0 0 0 0 0 0 2 ...
$ EventCount.Admitted : num
                                0 0 0 0 0 0 0 0 0 2 ...
$ EventCount.Campus
                     : num
                                0 1 0 0 0 0 0 0 0 2 ...
```

Hide

Hide

```
dfNumAndDummies <- cbind(dfwithDummies, dfJustNum)
str(dfNumAndDummies)</pre>
```

```
'data.frame':
                6235 obs. of 138 variables:
 $ Sex.F
int 0 0 0 0 0 0 1 0 1 1 ...
 $ Sex.M
    1 1 1 1 1 1 0 1 0 0 ...
int
 $ Expel.N
int
    1 1 1 1 1 1 0 1 1 1 ...
 $ Expel.Y
    0 0 0 0 0 0 1 0 0 0 ...
 $ First.Gen.N
    1 1 1 1 1 1 0 1 1 1 ...
int
 $ First.Gen.Y
   0 0 0 0 0 0 1 0 0 0 ...
int
 $ Challenge Tag.N
int
    1 1 1 1 1 1 1 1 1 1 ...
 $ Challenge Tag.Y
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Boettcher.Semi.N
```

int 1 1 1 1 1 1 1 1 1 1	
\$ Boettcher.Semi.Y	:
int 0 0 0 0 0 0 0 0 0	
\$ Boettcher.Final.N	:
int 1 1 1 1 1 1 1 1 1	
<pre>\$ Boettcher.Final.Y</pre>	:
int 0 0 0 0 0 0 0 0 0	
<pre>\$ Daniels.Semi.N</pre>	:
int 1 1 1 1 1 1 1 1 1	
<pre>\$ Daniels.Semi.Y</pre>	:
int 0 0 0 0 0 0 0 0 0	
<pre>\$ Daniels.Final.N</pre>	:
int 1 1 1 1 1 1 1 1 1	
<pre>\$ Daniels.Final.Y</pre>	:
int 0 0 0 0 0 0 0 0 0	
\$ Harvey.App.N	:
int 1 1 1 1 1 1 1 1 1	
\$ Harvey.App.Y	:
int 0 0 0 0 0 0 0 0 0	
\$ Harvey.Final.N	:
int 1 1 1 1 1 1 1 1 1	
<pre>\$ Harvey.Final.Y</pre>	:
int 0 0 0 0 0 0 0 0	
\$ FC.App.N	:
int 1 1 1 1 1 1 1 1 1	
\$ FC.App.Y	:
int 0 0 0 0 0 0 0 0	
\$ Thorson.App.N	:
int 1 1 1 1 1 1 1 1 1	
\$ Thorson.App.Y	:
int 0 0 0 0 0 0 0 0 0	
\$ Thorson.Admit.N	:
int 1 1 1 1 1 1 1 1 1	
\$ Thorson.Admit.Y	:
int 0 0 0 0 0 0 0 0	
\$ Summet.Participant.N	:
int 1 1 1 1 1 1 1 1 1	
\$ Summet.Participant.Y	:
int 0 0 0 0 0 0 0 0	
\$ Mines.Medal.N	:
int 1 1 1 1 1 1 1 1 1	
\$ Mines.Medal.Y	:
int 0 0 0 0 0 0 0 0 0	
\$ SPS.N	:
int 1 1 1 1 1 1 1 1 1	
\$ SPS.Y	:
int 0 0 0 0 0 0 0 0	
\$ Veteran.N	:
int 1 1 1 1 1 1 1 1 1	
\$ Veteran.Y	:

```
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Legacy.N
int 1 1 1 1 1 1 1 1 1 1 ...
 $ Legacy.Y
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Athlete.N
int 1 1 1 1 1 1 1 1 1 1 ...
 $ Athlete.Y
int 0 0 0 0 0 0 0 0 0 0 ...
 $ State.CO
int 1 0 0 1 0 1 0 0 0 0 ...
 $ State.Other
int 0 1 1 0 1 0 1 1 1 1 ...
 $ Citizenship.Foreign National/International
int 0 0 0 0 0 0 1 0 0 0 ...
 $ Citizenship.International
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Citizenship.Missing
int 0000000000...
 $ Citizenship.U.S. Citizen
int 1 1 1 1 1 1 0 1 1 1 ...
 $ Citizenship.U.S. Permanent Resident/Green Card Holder
int 0000000000...
 $ Citizenship.Undocumented/DACA
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.American Indian or Alaska Native
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.Asian
int 1 0 0 0 0 0 1 0 0 0 ...
 $ Ethnicity.Black or African American
int 0 0 0 0 1 0 0 0 0 0 ...
 $ Ethnicity. Hispanic or Latino
int 0 0 0 0 0 0 0 1 0 0 ...
 $ Ethnicity.Missing
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.Multiracial
    0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.Native Hawaiian or Other Pacific Islander
    0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.NotDeclared
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.Unknown
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.White
int 0 1 1 1 0 1 0 0 1 1 ...
 $ Major.App.Applied Mathematics & Statistics - Computational & Applied Mathematics:
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Applied Mathematics & Statistics - Statistics
                                                                                  :
int 0000000000...
 $ Major.App.Chemical Engineering
```

```
int 0 0 0 0 0 0 0 1 0 0 ...
 $ Major.App.Chemical Engineering - Biological Engineering Specialty
int 0 0 0 0 0 0 0 1 0 ...
 $ Major.App.Chemistry
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemistry - Biochemistry Specialty
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemistry - Environmental Chemistry Specialty
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Civil Engineering
int 1 0 0 0 0 0 0 0 1 ...
 $ Major.App.Computer Science
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Economics
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Electrical Engineering
int 0 0 0 0 0 0 1 0 0 0 ...
 $ Major.App.Engineering Physics
                                                                                    :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Environmental Engineering
                                                                                    :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Geological Engineering
                                                                                    :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Geophysical Engineering
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Mechanical Engineering
                                                                                    :
int 0 1 1 1 1 0 0 0 0 0 ...
 $ Major.App.Metallurgical & Materials Engineering
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Mining Engineering
                                                                                    :
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Missing
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Petroleum Engineering
int 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Undecided
    0 0 0 0 0 1 0 0 0 0 ...
 $ First Contact.ACT
                                                                                    :
int 1 1 0 0 0 0 0 0 0 0 ...
 $ First Contact.Application
   0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Athlete Form
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Campus Visit
int 0 0 0 1 0 1 0 0 1 1 ...
 $ First Contact.College Fair
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.FUF
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Girls Lead the Way
```

```
0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.GPA Form
    0 0 1 0 0 0 0 0 0 0 ...
 $ First Contact.Inquiry Form
    0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Mailing
    0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Materials
    0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.MEP
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Phone
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Preview Mines
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Contact.Royall Search
    0 0 0 0 1 0 0 1 0 0 ...
 $ First Contact.SAT
    0 0 0 0 0 0 1 0 0 0 ...
 $ First Contact.TOEFL
int 0 0 0 0 0 0 0 0 0 0 ...
 $ First Visit.Campus Tour
    0 1 0 0 0 0 0 0 0 0 ...
 $ First Visit.Campus Visit
int 0 0 0 1 0 1 0 0 1 1 ...
 $ First Visit.Class Shadow
    0 0 0 0 0 0 0 0 0 0 ...
 $ First Visit.Discover Mines
    0 0 0 0 0 0 0 0 0 0 ...
 $ First Visit.Discovery Mines in Your City
    0 0 0 0 0 0 0 0 0 0 ...
  [list output truncated]
```

Normalize Function

```
Hide
```

```
Hide
```

```
normalize <- function(x) {
   return ((x - min(x)) / (max(x) - min(x)))
}</pre>
```

Hide

Hide

```
dfNormData <- as.data.frame(lapply(dfNumAndDummies, normalize))
str(dfNormData)</pre>
```

'data.frame': 6235 obs. of	138 variables:
\$ Sex.F	:
num 0 0 0 0 0 0 1 0 1 1	
\$ Sex.M	:
num 1 1 1 1 1 1 0 1 0 0	
\$ Expel.N	:
num 1 1 1 1 1 1 0 1 1 1	
\$ Expel.Y	:
num 0 0 0 0 0 0 1 0 0 0	
\$ First.Gen.N	:
num 1 1 1 1 1 1 0 1 1 1	
\$ First.Gen.Y	:
num 0 0 0 0 0 0 1 0 0 0	
\$ Challenge.Tag.N	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Challenge.Tag.Y</pre>	:
num 0 0 0 0 0 0 0 0 0 0	
\$ Boettcher.Semi.N	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Boettcher.Semi.Y</pre>	:
num 0 0 0 0 0 0 0 0 0 0	
\$ Boettcher.Final.N	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Boettcher.Final.Y</pre>	:
num 0 0 0 0 0 0 0 0 0 0	
<pre>\$ Daniels.Semi.N</pre>	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Daniels.Semi.Y</pre>	:
num 0 0 0 0 0 0 0 0 0 0	
<pre>\$ Daniels.Final.N</pre>	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Daniels.Final.Y</pre>	:
num 0 0 0 0 0 0 0 0 0 0	
<pre>\$ Harvey.App.N</pre>	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Harvey.App.Y</pre>	:
num 0 0 0 0 0 0 0 0 0 0	
<pre>\$ Harvey.Final.N</pre>	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Harvey.Final.Y</pre>	:
num 0 0 0 0 0 0 0 0 0 0	
\$ FC.App.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ FC.App.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ Thorson.App.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ Thorson.App.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ Thorson.Admit.N	:

num 1 1 1 1 1 1 1 1 1 1	
\$ Thorson.Admit.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ Summet.Participant.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ Summet.Participant.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ Mines.Medal.N	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Mines.Medal.Y</pre>	:
num 0 0 0 0 0 0 0 0 0	
\$ SPS.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ SPS.Y	:
num 0 0 0 0 0 0 0 0 0	
<pre>\$ Veteran.N</pre>	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Veteran.Y</pre>	:
num 0 0 0 0 0 0 0 0 0	
\$ Legacy.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ Legacy.Y	:
num 0 0 0 0 0 0 0 0	
\$ Athlete.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ Athlete.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ State.CO	:
num 1 0 0 1 0 1 0 0 0 0	
\$ State.Other	:
num 0 1 1 0 1 0 1 1 1 1	
\$ Citizenship.Foreign.National.International	:
num 0 0 0 0 0 1 0 0 0	
\$ Citizenship.International	:
num 0 0 0 0 0 0 0 0 0	
\$ Citizenship.Missing	:
num 0 0 0 0 0 0 0 0 0	
\$ Citizenship.U.SCitizen	:
num 1 1 1 1 1 1 0 1 1 1	
\$ Citizenship.U.SPermanent.Resident.Green.Card.Holder	:
num 0 0 0 0 0 0 0 0 0	
\$ Citizenship.Undocumented.DACA	:
num 0 0 0 0 0 0 0 0 0	
\$ Ethnicity.American.Indian.or.Alaska.Native	:
num 0 0 0 0 0 0 0 0 0	
\$ Ethnicity.Asian	:
num 1 0 0 0 0 1 0 0 0	
\$ Ethnicity.Black.or.African.American	:
num 0 0 0 0 1 0 0 0 0 0	
\$ Ethnicity.Hispanic.or.Latino	:

```
0 0 0 0 0 0 0 1 0 0 ...
 $ Ethnicity.Missing
    0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.Multiracial
    0 0 0 0 0 0 0 0 0 0 ...
num
 $ Ethnicity.Native.Hawaiian.or.Other.Pacific.Islander
    0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.NotDeclared
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.Unknown
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.White
num 0 1 1 1 0 1 0 0 1 1 ...
 $ Major.App.Applied.Mathematics...Statistics...Computational...Applied.Mathematics:
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Applied.Mathematics...Statistics...Statistics
                                                                                    :
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemical.Engineering
                                                                                    :
num 0 0 0 0 0 0 0 1 0 0 ...
 $ Major.App.Chemical.Engineering...Biological.Engineering.Specialty
                                                                                    :
num 0 0 0 0 0 0 0 1 0 ...
 $ Major.App.Chemistry
                                                                                    :
    0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemistry...Biochemistry.Specialty
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemistry...Environmental.Chemistry.Specialty
                                                                                    :
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Civil.Engineering
    1 0 0 0 0 0 0 0 0 1 ...
 $ Major.App.Computer.Science
    0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Economics
    0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Electrical.Engineering
    0 0 0 0 0 0 1 0 0 0 ...
 $ Major.App.Engineering.Physics
    0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Environmental.Engineering
                                                                                    :
    0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Geological.Engineering
    0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Geophysical.Engineering
num 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Mechanical.Engineering
num 0 1 1 1 1 0 0 0 0 0 ...
 $ Major.App.Metallurgical...Materials.Engineering
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Mining.Engineering
    0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Missing
```

```
0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Petroleum.Engineering
    0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Undecided
    0 0 0 0 0 1 0 0 0 0 ...
 $ First.Contact.ACT
    1 1 0 0 0 0 0 0 0 0 ...
num
 $ First.Contact.Application
num 0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.Athlete.Form
    0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.Campus.Visit
num 0 0 0 1 0 1 0 0 1 1 ...
 $ First.Contact.College.Fair
    0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.FUF
num 0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.Girls.Lead.the.Way
    0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.GPA.Form
    0 0 1 0 0 0 0 0 0 0 ...
 $ First.Contact.Inquiry.Form
    0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.Mailing
num 0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.Materials
    0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.MEP
num 0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.Phone
num 0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.Preview.Mines
num 0 0 0 0 0 0 0 0 0 0 ...
 $ First.Contact.Royall.Search
    0 0 0 0 1 0 0 1 0 0 ...
 $ First.Contact.SAT
    0 0 0 0 0 0 1 0 0 0 ...
 $ First.Contact.TOEFL
    0 0 0 0 0 0 0 0 0 0 ...
 $ First.Visit.Campus.Tour
    0 1 0 0 0 0 0 0 0 0 ...
 $ First.Visit.Campus.Visit
    0 0 0 1 0 1 0 0 1 1 ...
 $ First.Visit.Class.Shadow
    0 0 0 0 0 0 0 0 0 0 ...
 $ First.Visit.Discover.Mines
    0 0 0 0 0 0 0 0 0 0 ...
 $ First.Visit.Discovery.Mines.in.Your.City
    0 0 0 0 0 0 0 0 0 0 ...
  [list output truncated]
```

summary(dfNormData)

Sex.F	Sex.M	Expel.N	Expel.Y	First.Gen.N
First.Gen.Y	Challenge.Tag.N			
Min. :0.0000	Min. :0.0000	Min. :0.0000	Min. :0.00000	Min. :0.0000
Min. :0.00000	Min. :0.0000			
1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:1.0000	1st Qu.:0.00000	1st Qu.:1.0000
1st Qu.:0.00000	1st Qu.:1.0000			
Median :0.0000	Median :1.0000	Median :1.0000	Median :0.00000	Median :1.0000
Median :0.00000	Median :1.0000			
Mean :0.3281	Mean :0.6719	Mean :0.9877	Mean :0.01235	Mean :0.9105
Mean :0.08949	Mean :0.9798			
3rd Qu.:1.0000	3rd Qu.:1.0000	3rd Qu.:1.0000	3rd Qu.:0.00000	3rd Qu.:1.0000
3rd Qu.:0.00000	3rd Qu.:1.0000			
Max. :1.0000	Max. :1.0000	Max. :1.0000	Max. :1.00000	Max. :1.0000
Max. :1.00000	Max. :1.0000			
Challenge.Tag.Y	Boettcher.Semi.	N Boettcher.Semi.	Y Boettcher.Final	l.N Boettcher.Fin
al.Y Daniels.Sem	i.N Daniels.Semi	. • Y		
Min. :0.00000	Min. :0.0000	Min. :0.00000	Min. :0.000	Min. :0.000
00 Min. :0.0	000 Min. :0.00	000		
1st Qu.:0.00000	1st Qu.:1.0000	1st Qu.:0.00000	1st Qu.:1.000	1st Qu.:0.000
00 1st Qu.:1.0	000 1st Qu.:0.00	000		
Median :0.00000	Median :1.0000	Median :0.00000	Median :1.000	Median :0.000
00 Median :1.0	000 Median :0.00	000		
Mean :0.02021	Mean :0.9843	Mean :0.01572	Mean :0.996	Mean :0.004
01 Mean :0.9				
3rd Qu.:0.00000		3rd Qu.:0.00000	3rd Qu.:1.000	3rd Qu.:0.000
	000 3rd Qu.:0.00			
Max. :1.00000		Max. :1.00000	Max. :1.000	Max. :1.000
00 Max. :1.0				
	Daniels.Final.Y	Harvey.App.N	Harvey.App.Y	Harvey.Final.N
Harvey.Final.Y	FC.App.N			
Min. :0.000	Min. :0.00000	Min. :0.0000	Min. :0.00000	Min. :0.0000
Min. :0.000000				
1st Qu.:1.000		1st Qu.:1.0000	1st Qu.:0.00000	1st Qu.:1.0000
	1st Qu.:1.000			
Median :1.000	Median :0.00000	Median :1.0000	Median :0.00000	Median :1.0000
Median :0.000000				
Mean :0.996	Mean :0.00401	Mean :0.9102	Mean :0.08982	Mean :0.9925
Mean :0.007538		0 1 0 1		• • • • • • • • • • • • • • • • • • • •
3rd Qu.:1.000	3rd Qu.:0.00000	3rd Qu.:1.0000	3rd Qu.:0.00000	3rd Qu.:1.0000
3rd Qu.:0.000000	_			
Max. :1.000	Max. :1.00000	Max. :1.0000	Max. :1.00000	Max. :1.0000
Max. :1.000000		ml	ml 1 1 -	T. ml
FC.App.Y	Thorson.App.N	Thorson.App.Y	Thorson.Admit.N	N Thorson.Admit.
Y Summet.Parti	cipant.N Summet.Pa	rtıcıpant.Y		

Min. :0.00000	Min. :0.0000	Min.	0.00000	Min.	:0.0000	Min.	:0.0000
0 Min. :0.000	0 Min. :0	0.00000					
1st Qu.:0.00000	1st Qu.:1.0000	1st Qu.:	0.00000	1st Qu	a.:1.0000	1st Qu	.:0.0000
0 1st Qu.:1.000	0 1st Qu.:(0.00000					
Median :0.00000	Median :1.0000	Median :	0.00000	Mediar	n :1.0000	Median	:0.0000
0 Median :1.000							
Mean :0.01395			0.04218	Mean	:0.9751	Mean	:0.0248
6 Mean :0.996							
3rd Qu.:0.00000			0.00000	3rd Qu	a.:1.0000	3rd Qu	.:0.0000
0 3rd Qu.:1.000							
Max. :1.00000			1.00000	Max.	:1.0000	Max.	:1.0000
0 Max. :1.000			NG 17	,	3DG 11		
Mines.Medal.N		SF	25.N	ì	SPS.Y	V	eteran.N
Veteran.Y Min. :0.0000	-	NO Min	•0 0000	Min	•0 000	nno Min	•0 0
000 Min. :0.0			:0.0000	MT11•	:0.0000	JOO MIN	. :0.0
1st Qu.:1.0000			1 0000	1c+ (• O OOO	000 1c+	011 • 1 0
000 1st Qu.:0.0			1.1.0000	ISC (2 u • • 0 • 0 000	J00 15C	Quiiiv
Median :1.0000			•1 0000	Media	an •0 0000) വെ	ian :1.0
000 Median :0.0			1 •1•0000	HCCI	an •0•000	JOU FICA	11411 • 1 • 0
Mean :0.9995			•0.9933	Mean	•0.006	736 Mea	n :0.9
315 Mean :0.0			.0.3300	110411		700 1100	
3rd Qu.:1.0000			1.:1.0000	3rd (Ou.:0.000	000 3rd	Ou.:1.0
000 3rd Qu.:0.0					•		2000
Max. :1.0000			:1.0000	Max.	:1.0000	000 Max	:1.0
000 Max. :1.0		.0000					
Legacy.Y	Athlete.N	Athlete	e.Y	Stat	te.CO	State.	Other
Legacy.Y Citizenship.Forei	Athlete.N	Athlete	e.Y	Stat	te.CO	State.	Other
_	Athlete.N	Athlete rnational	e.Y	Stat	te.CO	State.	Other:
Citizenship.Forei	Athlete.N gn.National.Inter	Athlete rnational					
Citizenship.Forei Min. :0.0000	Athlete.N gn.National.Inter	Athlete rnational	0.00000	Min.		Min.	
Citizenship.Forei Min. :0.00000 Min. :0.00000	Athlete.N gn.National.Inter Min. :0.0000	Athleternational Min.:0	0.00000	Min.	:0.0000	Min.	:0.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.0000	Athlete.N gn.National.Inter Min. :0.0000	Athleternational Min.:0	0.00000	Min. 1st Qu	:0.0000	Min. 1st Qu.	:0.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 Addian :0.00000 Median :0.00000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000	Athlete national Min. :0 1st Qu.:0 Median :0	0.00000	Min. 1st Qua	:0.0000 ::0.0000	Min. 1st Qu. Median	:0.0000 :0.0000 :1.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000	Athlete national Min. :0 1st Qu.:0 Median :0	0.00000	Min. 1st Qu	:0.0000	Min. 1st Qu.	:0.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733 Mean :0.03368	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0	0.00000 0.00000 0.00000 0.02614	Min. 1st Qua Median Mean	:0.0000 :0.0000 :0.0000 :0.3026	Min. 1st Qu. Median Mean	:0.0000 :0.0000 :1.0000 :0.6974
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.00000 Mean :0.0733 Mean :0.03368 3rd Qu.:0.0000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000	Athlete national Min. :0 1st Qu.:0 Median :0	0.00000 0.00000 0.00000 0.02614	Min. 1st Qua Median Mean	:0.0000 ::0.0000	Min. 1st Qu. Median Mean	:0.0000 :0.0000 :1.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.00000 Mean :0.0733 Mean :0.03368 3rd Qu.:0.00000 3rd Qu.:0.00000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 3rd Qu.:0	0.00000 0.00000 0.00000 0.02614	Min. 1st Qua Median Mean 3rd Qua	:0.0000 ::0.0000 :0.0000 :0.3026	Min. 1st Qu. Median Mean 3rd Qu.	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.00000 Mean :0.0733 Mean :0.03368 3rd Qu.:0.00000 3rd Qu.:0.00000 Max. :1.0000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 3rd Qu.:0	0.00000 0.00000 0.00000 0.02614	Min. 1st Qua Median Mean	:0.0000 :0.0000 :0.0000 :0.3026	Min. 1st Qu. Median Mean	:0.0000 :0.0000 :1.0000 :0.6974
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733 Mean :0.03368 3rd Qu.:0.00000 3rd Qu.:0.00000 Max. :1.00000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000 Max. :1.0000	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 3rd Qu.:0 Max. :1	0.00000 0.00000 0.00000 0.02614 0.00000	Min. 1st Qua Median Mean 3rd Qua Max.	:0.0000 :0.0000 :0.0000 :0.3026 :1.0000	Min. 1st Qu. Median Mean 3rd Qu. Max.	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733 Mean :0.03368 3rd Qu.:0.00000 3rd Qu.:0.00000 Max. :1.00000 Citizenship.Inte	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000 Max. :1.0000 rnational Citizer	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 3rd Qu.:0 Max. :1	0.00000 0.00000 0.00000 0.02614 0.00000	Min. 1st Qua Median Mean 3rd Qua Max.	:0.0000 :0.0000 :0.0000 :0.3026 :1.0000	Min. 1st Qu. Median Mean 3rd Qu. Max.	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733 Mean :0.03368 3rd Qu.:0.00000 3rd Qu.:0.00000 Max. :1.00000 Citizenship.Inte .SPermanent.Res	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000 Max. :1.0000 rnational Citizer ident.Green.Card.	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 3rd Qu.:0 Max. :1 nship.Missi	0.00000 0.00000 0.00000 0.02614 0.00000 1.00000	Min. 1st Quanded Median Mean 3rd Quanded Max. enship.	:0.0000 ::0.0000 :0.0000 :0.3026 ::1.0000 :1.0000	Min. 1st Qu. Median Mean 3rd Qu. Max. zen Citiz	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000 :1.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.00000 Mean :0.0733 Mean :0.03368 3rd Qu.:0.00000 3rd Qu.:0.00000 Max. :1.00000 Citizenship.Inte .SPermanent.Res Min. :0.0000000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000 Max. :1.0000 rnational Citizer ident.Green.Card.	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 3rd Qu.:0 Max. :1	0.00000 0.00000 0.00000 0.02614 0.00000	Min. 1st Qua Median Mean 3rd Qua Max.	:0.0000 ::0.0000 :0.0000 :0.3026 ::1.0000 :1.0000	Min. 1st Qu. Median Mean 3rd Qu. Max.	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733 Mean :0.03368 3rd Qu.:0.00000 3rd Qu.:0.00000 Max. :1.00000 Citizenship.Inte .SPermanent.Res Min. :0.000000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000 Max. :1.0000 rnational Citizer ident.Green.Card. Min.	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 Max. :1 nship.Missi Holder :0.000000	0.00000 0.00000 0.00000 0.02614 0.00000 1.00000 Ing Citize	Min. 1st Quanded Median Mean 3rd Quanded Max. enship.u	:0.0000 ::0.0000 :0.0000 :0.3026 ::1.0000 :1.0000	Min. 1st Qu. Median Mean 3rd Qu. Max. zen Citiz Min.	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000 :1.0000 enship.U :0.000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733 Mean :0.03368 3rd Qu.:0.00000 3rd Qu.:0.00000 Max. :1.00000 Citizenship.Inte .SPermanent.Res Min. :0.0000000 00 1st Qu.:0.000000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000 Max. :1.0000 rnational Citizer ident.Green.Card. Min.	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 3rd Qu.:0 Max. :1 nship.Missi	0.00000 0.00000 0.00000 0.02614 0.00000 1.00000 Ing Citize	Min. 1st Quanded Median Mean 3rd Quanded Max. enship.	:0.0000 ::0.0000 :0.0000 :0.3026 ::1.0000 :1.0000	Min. 1st Qu. Median Mean 3rd Qu. Max. zen Citiz Min.	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000 :1.0000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733 Mean :0.03368 3rd Qu.:0.00000 3rd Qu.:0.00000 Max. :1.00000 Citizenship.Inte .SPermanent.Res Min. :0.0000000 00 1st Qu.:0.000000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000 Max. :1.0000 rnational Citizer ident.Green.Card. Min. 1st Qu.	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 3rd Qu.:0 Max. :1 ship.Missi Holder :0.000000	0.00000 0.00000 0.00000 0.02614 0.00000 1.00000 Ing Citize Min. 1st Qu	Min. 1st Quantum Median Mean 3rd Quantum Max. enship.u	:0.0000 ::0.0000 :0.0000 :0.3026 ::1.0000 :1.0000 :J.SCitiz	Min. 1st Qu. Median Mean 3rd Qu. Max. zen Citiz Min. 1st Q	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000 :1.0000 enship.U :0.000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733 Mean :0.03368 3rd Qu.:0.00000 3rd Qu.:0.00000 Max. :1.00000 Citizenship.Inte .SPermanent.Res Min. :0.0000000 00 1st Qu.:0.000000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000 Max. :1.0000 rnational Citizer ident.Green.Card. Min. 1st Qu.	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 Max. :1 nship.Missi Holder :0.000000	0.00000 0.00000 0.00000 0.02614 0.00000 1.00000 Ing Citize Min. 1st Qu	Min. 1st Quanded Median Mean 3rd Quanded Max. enship.u	:0.0000 ::0.0000 :0.0000 :0.3026 ::1.0000 :1.0000 :J.SCitiz	Min. 1st Qu. Median Mean 3rd Qu. Max. zen Citiz Min. 1st Q	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000 :1.0000 enship.U :0.000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733 Mean :0.03368 3rd Qu.:0.00000 Max. :1.0000 Max. :1.0000 Citizenship.Inte .SPermanent.Res Min. :0.000000 00 1st Qu.:0.000000 00 Median :0.000000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000 Max. :1.0000 rnational Citizer ident.Green.Card. Min. 1st Qu. Median	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 3rd Qu.:0 Max. :1 ship.Missi Holder :0.000000	0.00000 0.00000 0.00000 0.02614 0.00000 1.00000 Ing Citize Min. 1st Qu	Min. 1st Quantum Median Mean 3rd Quantum Max. enship.u	:0.0000 ::0.0000 :0.0000 :0.3026 ::1.0000 :1.0000 :0Citiz	Min. 1st Qu. Median Mean 3rd Qu. Max. zen Citiz Min. 1st Q	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000 :1.0000 enship.U :0.000
Citizenship.Forei Min. :0.00000 Min. :0.00000 1st Qu.:0.00000 1st Qu.:0.00000 Median :0.00000 Median :0.0733 Mean :0.03368 3rd Qu.:0.00000 Max. :1.00000 Max. :1.00000 Citizenship.Inte .SPermanent.Res Min. :0.0000000 00 1st Qu.:0.000000 00 Median :0.0000000 00 Median :0.0000000	Athlete.N gn.National.Inter Min. :0.0000 1st Qu.:1.0000 Median :1.0000 Mean :0.9739 3rd Qu.:1.0000 Max. :1.0000 rnational Citizer ident.Green.Card. Min. 1st Qu. Median	Athlete cnational Min. :0 1st Qu.:0 Median :0 Mean :0 Max. :1 Aship.Missi Holder :0.000000 :0.000000	0.00000 0.00000 0.00000 0.02614 0.00000 1.00000 Ing Citize Min. 1st Qu	Min. 1st Quantum Median Mean 3rd Quantum Max. enship.u :0.000 u.:1.000	:0.0000 ::0.0000 :0.0000 :0.3026 ::1.0000 :1.0000 :0Citiz	Min. 1st Qu. Median Mean 3rd Qu. Max. zen Citiz Min. 1st Q Media	:0.0000 :0.0000 :1.0000 :0.6974 :1.0000 :1.0000 enship.U :0.000 :0.000

3rd Qu.:0.000000	3rd Qu.:0	.000000	3rd Qu.:	1.0000	3rd Qu.:0.000
00					
Max. :1.000000	Max. :1	.000000	Max. :	1.0000	Max. :1.000
00					
Citizenship.Undocument		_	can.India	n.or.Alaska.Nat	ive Ethnicity.A
sian Ethnicity.Black.					
Min. :0.000000	Min.	:0.00000			Min. :0.0
0000 Min. :0.00000					
1st Qu.:0.000000	1st Q	u.:0.00000			1st Qu.:0.0
0000 1st Qu.:0.00000					
Median :0.000000	Media	n :0.00000			Median :0.0
0000 Median :0.00000					
Mean :0.002085	Mean	:0.01299			Mean :0.0
9992 Mean :0.01716					
3rd Qu.:0.000000	3rd Q	u.:0.00000			3rd Qu.:0.0
0000 3rd Qu.:0.00000					
Max. :1.000000	Max.	:1.00000			Max. :1.0
0000 Max. :1.00000					
Ethnicity.Hispanic.or.	Latino Ethnic	ity.Missinq	g Ethnic:	ity.Multiracial	Ethnicity.Nati
ve.Hawaiian.or.Other.Pa	cific.Islande	r			
Min. :0.00000	Min.	:0.000000	Min.	:0.0000000	Min. :0.0000
00					
1st Qu.:0.00000	1st Qu	.:0.000000	1st Qu	.:0.0000000	1st Qu.:0.0000
00					
Median :0.00000	Median	:0.000000	Median	:0.0000000	Median :0.0000
00					
Mean :0.05164	Mean	:0.003368	Mean	:0.0001604	Mean :0.0036
89					
3rd Qu.:0.00000	3rd Qu	.:0.000000	3rd Qu	.:0.000000	3rd Qu.:0.0000
00					
Max. :1.00000	Max.	:1.000000	Max.	:1.0000000	Max. :1.0000
00					
Ethnicity.NotDeclared	-		nicity.Wh		
	Min. :0.000				
	1st Qu.:0.000		Qu.:1.000		
	Median :0.000		ian :1.000		
	Mean :0.000				
3rd Qu.:0.00000	_		Qu.:1.000		
	Max. :1.000				
Major.App.Applied.Math	ematicsSta	tistics(Computation	onalApplied.	Mathematics
Min. :0.0000					
1st Qu.:0.0000					
Median :0.0000					
Mean :0.0247					
3rd Qu.:0.0000					
Max. :1.0000					
Major.App.Applied.Math	ematicsSta	tisticss	Statistics	s Major.App.Che	mical.Engineeri
ng					
Min. :0.000000				Min. :0.000	00
1st Qu.:0.000000				1st Qu.:0.000	00

```
Median :0.000000
                                                            Median :0.00000
 Mean
        :0.007698
                                                            Mean
                                                                   :0.08677
 3rd Qu.:0.000000
                                                            3rd Qu.:0.00000
                                                                   :1.00000
 Max.
        :1.000000
                                                            Max.
Major.App.Chemical.Engineering...Biological.Engineering.Specialty Major.App.Chemistr
У
Min.
        :0.00000
                                                                      Min.
                                                                              :0.00000
 1st Qu.:0.00000
                                                                      1st Qu.:0.00000
 Median :0.00000
                                                                      Median :0.00000
 Mean
        :0.08051
                                                                      Mean
                                                                              :0.01235
 3rd Ou.:0.00000
                                                                      3rd Ou.:0.00000
        :1.00000
 Max.
                                                                      Max.
                                                                              :1.00000
 Major.App.Chemistry...Biochemistry.Specialty Major.App.Chemistry...Environmental.Che
mistry.Specialty Major.App.Civil.Engineering
Min.
        :0.0000
                                                Min.
                                                        :0.000000
Min.
       :0.00000
 1st Qu.:0.0000
                                                1st Qu.:0.000000
1st Qu.:0.00000
Median :0.0000
                                                Median :0.000000
Median :0.00000
Mean
        :0.0255
                                                Mean
                                                        :0.003368
       :0.06287
Mean
                                                3rd Qu.:0.000000
 3rd Qu.:0.0000
3rd Qu.: 0.00000
Max.
        :1.0000
                                                Max.
                                                        :1.000000
Max.
       :1.00000
 Major.App.Computer.Science Major.App.Economics Major.App.Electrical.Engineering Majo
r.App.Engineering.Physics
        :0.0000
                             Min.
                                     :0.00000
 Min.
                                                  Min.
                                                          :0.00000
                                                                                     Min.
:0.00000
                             1st Qu.:0.00000
 1st Qu.:0.0000
                                                  1st Qu.:0.00000
                                                                                     1st
Qu.:0.00000
Median :0.0000
                             Median :0.00000
                                                  Median :0.00000
                                                                                     Medi
an :0.00000
Mean
        :0.1007
                             Mean
                                     :0.01299
                                                  Mean
                                                          :0.06977
                                                                                     Mean
:0.04683
 3rd Qu.:0.0000
                             3rd Qu.:0.00000
                                                  3rd Qu.:0.00000
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Qu.:0.00000
Max.
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Major.App.Environmental.Engineering Major.App.Geological.Engineering Major.App.Geoph
ysical. Engineering
        :0.00000
Min.
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 1st Qu.:0.00000
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                                       Median :0.0000
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 Median :0.00000
0
Mean
        :0.05437
                                       Mean
                                              :0.0162
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                                                                                 :0.00545
3
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3rd Qu.:0.00000		3rd	Qu.:0.000	0		3rd Qu.	:0.00000
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Max. :1.00000		Max.	:1.000	0		Max.	:1.00000
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Major.App.Mechanic	Major.App.Mechanical.Engineering Major.App.MetallurgicalMaterials.Engineering Maj						
or.App.Mining.Engine	_			_		-	
Min. :0.0000		Min.	:0.00000				Min
. :0.000000	Min.	:0.00000	0				
1st Qu.:0.0000		1st Qu.	:0.00000				1st
Qu.:0.000000	1st Qu	.:0.00000					
Median :0.0000		Median	:0.00000				Med
ian :0.000000	Media	n :0.00000	0				
Mean :0.2388		Mean	:0.01973				Mea
n :0.009784	Mean	:0.00320	8				
3rd Qu.:0.0000		3rd Qu.	:0.00000				3rd
Qu.:0.000000	3rd Qu	.:0.000000					
Max. :1.0000		Max.	:1.00000				Max
. :1.000000	Max.	:1.00000	0				
Major.App.Petroleu	m.Engineerin	g Major.Ap	p.Undecid	ed First.	Contact.ACT	First.	Contact.
Application First.Co	ontact.Athle	te.Form					
Min. :0.00000		Min. :	0.00000	Min.	:0.00000	Min.	:0.0000
Min. :0.000000							
1st Qu.:0.00000		1st Qu.:	0.00000	1st Qu	.:0.00000	1st Qu	.:0.0000
1st Qu.:0.000000							
Median :0.00000		Median :	0.00000	Median	:0.00000	Median	:0.0000
Median :0.000000							
Mean :0.03801		Mean :	0.08035	Mean	:0.09447	Mean	:0.1524
Mean :0.006897							
3rd Qu.:0.00000		3rd Qu.:	0.00000	3rd Qu	.:0.00000	3rd Qu	.:0.0000
3rd Qu.:0.000000							
Max. :1.00000		Max. :	1.00000	Max.	:1.00000	Max.	:1.0000
Max. :1.000000							
First.Contact.Camp	us.Visit Fir	st.Contact	.College.	Fair First	c.Contact.F	'UF Firs	t.Contac
t.Girls.Lead.the.Way	y First.Cont	act.GPA.Fo	rm				
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1st Qu.:0.0000	1st	Qu.:0.000	000	1st (Qu.:0.0000	1st (Qu.:0.00
0000	1st Qu.:0.	000000					
Median :0.0000	Med	ian :0.000	000	Media	an :0.0000	Media	an :0.00
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Mean :0.1254	Mea	n :0.003	368	Mean	:0.1545	Mean	:0.00
1443	Mean :0.	003368					
3rd Qu.:0.0000	3rd	Qu.:0.000	000	3rd (Qu.:0.0000	3rd (Qu.:0.00
0000	3rd Qu.:0.	000000					
Max. :1.0000	Max	. :1.000	000	Max.	:1.0000	Max.	:1.00
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First.Contact.Inqu	iry.Form Fir	st.Contact	.Mailing	First.Cont	cact.Materi	als Fir	st.Conta
ct.MEP First.Contac	ct.Phone						
Min. :0.00000	Min	. :0.000	0000	Min. :0	.000000	Min	. :0.0
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1st Qu.:0.00000	1st Qu.:0.0000000	1st Qu.:0.000000	1st Qu.:0.0
00000 1st Qu.:0.0000000			
Median :0.00000	Median :0.0000000	Median :0.000000	Median :0.0
00000 Median :0.0000000			
Mean :0.01588	Mean :0.0004812	Mean :0.003368	Mean :0.0
02727 Mean :0.0001604			
3rd Qu.:0.00000	3rd Qu.:0.0000000	3rd Qu.:0.000000	3rd Qu.:0.0
00000 3rd Qu.:0.0000000	~	_	_
Max. :1.00000	Max. :1.0000000	Max. :1.000000	Max. :1.0
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act.TOEFL First.Visit.Camp	_		
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:0.000000 1st Qu.:0.0000 :0.000000 Median :0.0000 :0.000000 Mean :0.1511 :0.005453	Median :0.000000 Mean :0.004972	1st Qu.:0.00000 Median :0.00000 Mean :0.03352	1st Qu. Median Mean
:0.000000 1st Qu.:0.0000 :0.000000 Median :0.0000 :0.000000 Mean :0.1511 :0.005453 3rd Qu.:0.0000	Median :0.000000	1st Qu.:0.00000 Median :0.00000	1st Qu. Median
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First.Visit.Preview.Mine	es First.Visit.Preview.Min	es.In.Your.City Sport.Men.s.Varsity			
.Baseball Sport.Men.s.Var	rsity.Basketball				
Min. :0.00000	Min. :0.00000	Min. :0.0000000			
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1st Qu.:0.00000	1st Qu.:0.00000	1st Qu.:0.0000000			
1st Qu.:0.000000	~	~			
Median :0.00000	Median :0.00000	Median :0.0000000			
Median :0.000000					
Mean :0.03111	Mean :0.03865	Mean :0.0009623			
Mean :0.001443					
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Max. :1.00000	Max. :1.00000	Max. :1.0000000			
Max. :1.000000	114111	114111			
	tball Sport Men.s.Varsity.	Golf Sport.Men.s.Varsity.Soccer Spo			
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Qu.:0.000000	1st Qu.:1.0000				
Median :0.00000	Median :0.0000000	Median :0.0000000 Med			
ian :0.000000	Median :1.0000				
Mean :0.01363	Mean :0.0004812	Mean :0.0009623 Mea			
n :0.002406	Mean :0.9739	110411			
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Max. :1.00000	Max. :1.0000000	Max. :1.0000000 Max			
:1.000000	Max. :1.0000				
		.Field Sport.Varsity.XCountry Sport			
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Min. :0.0000000	Min. :0.000000	Min. :0.000000 Min.			
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	occer Sport.Women.s.Varsit	v.Softball Sport.Women.s.Varsitv.Vo			
Sport.Women.s.Varsity.Soccer Sport.Women.s.Varsity.Softball Sport.Women.s.Varsity.Volleyball App.Created.Days Age					
	Min. :0.0000000	Min. :0.000000			
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1st Ou.:0.004872 1st Ou		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~			

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Median :0.0000000
                               Median :0.0000000
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Median :0.005385
                    Median :0.19231
Mean
        :0.0006415
                                Mean
                                       :0.0004812
                                                                 Mean
                                                                        :0.0008019
                           :0.18908
Mean
       :0.005386
                    Mean
 3rd Qu.:0.0000000
                                3rd Qu.:0.0000000
                                                                 3rd Qu.:0.0000000
3rd Qu.:0.006038
                    3rd Qu.: 0.26923
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        :1.0000000
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                                       :1.0000000
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Max.
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                           :1.00000
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                   SATR.Converted
                                     Review.OutsideActivity Review.Leadership Review.Wo
rkExp
        Review.WorkEthic Review.ExpDiversity
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        1st Qu.: 0.6667
                          1st Qu.: 0.6667
Median :0.9472
                   Median :0.7059
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                                                             Median :0.3333
                                                                                 Median :0
.3333
        Median :1.0000
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        :0.9208
                          :0.6974
Mean
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                                     Mean
                                            :0.7998
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                                                                     :0.4473
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.4332
        Mean
               :0.8087
                          Mean
                                 :0.7406
 3rd Ou.: 0.9914
                   3rd Qu.: 0.7941
                                     3rd Qu.:1.0000
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.6667
        3rd Ou.:1.0000
                          3rd Ou.:1.0000
        :1.0000
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Max.
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              :1.0000
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        Max.
                          Max.
Review.DesireAttend Review.Affinity Review.InnovEntrep Review.Teamwork
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allFit Logins.60Days
                            EventCount.All
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        :0.0000
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                            Min.
                                    :0.00000
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                      1st Qu.:0.3333
                                        1st Qu.:0.0000
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       1st Qu.:0.0000000
                             1st Qu.: 0.00000
Median : 0.6667
                      Median :0.6667
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       Median :0.0000000
        :0.5927
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                              :0.5322
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                                                :0.2156
                                                            Mean
                                                                    :0.6583
                                                                               Mean
732
              :0.0008096
                                    :0.08222
       Mean
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 3rd Qu.:1.0000
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000
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                            3rd Qu.: 0.16667
                                                :1.0000
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                                        Max.
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               :1.0000000
                            Max.
                                    :1.00000
       Max.
EventCount.Admitted EventCount.Campus
Min.
        :0.00000
                      Min.
                              :0.00000
 1st Qu.:0.00000
                      1st Qu.:0.00000
Median :0.00000
                      Median :0.00000
Mean
        :0.06796
                      Mean
                              :0.07549
 3rd Ou.:0.00000
                      3rd Qu.: 0.16667
Max.
        :1.00000
                      Max.
                              :1.00000
```

Hide

Hide

dfNormDatAndFactor <- cbind(dfDataSetKNN[1], dfNormData)
str(dfNormDatAndFactor)</pre>

'data.frame': 6235 obs. of 139 variables:	
\$ Enrolling	:
Factor w/ 2 levels "N", "Y": 1 1 1 1 1 1 1 1 2	
\$ Sex.F	:
num 0 0 0 0 0 1 1 1	
\$ Sex.M	:
num 1 1 1 1 1 1 0 1 0 0	
\$ Expel.N	:
num 1 1 1 1 1 1 0 1 1 1	
\$ Expel.Y	:
num 0 0 0 0 0 1 0 0 0	
\$ First.Gen.N	:
num 1 1 1 1 1 1 0 1 1 1	_
\$ First.Gen.Y	:
num 0 0 0 0 0 1 0 0 0	•
\$ Challenge.Tag.N	:
num 1 1 1 1 1 1 1 1 1	•
	_
\$ Challenge.Tag.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ Boettcher.Semi.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ Boettcher.Semi.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ Boettcher.Final.N	•
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Boettcher.Final.Y</pre>	:
num 0 0 0 0 0 0 0 0 0	
<pre>\$ Daniels.Semi.N</pre>	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Daniels.Semi.Y</pre>	:
num 0 0 0 0 0 0 0 0 0	
\$ Daniels.Final.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ Daniels.Final.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ Harvey.App.N	:
num 1 1 1 1 1 1 1 1 1	•
\$ Harvey.App.Y	:
num 0 0 0 0 0 0 0 0	•
	_
\$ Harvey.Final.N num 1 1 1 1 1 1 1 1	:
	_
\$ Harvey.Final.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ FC.App.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ FC.App.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ Thorson.App.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ Thorson.App.Y	:

num 0 0 0 0 0 0 0 0 0	
\$ Thorson.Admit.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ Thorson.Admit.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ Summet.Participant.N	:
num 1 1 1 1 1 1 1 1 1	
\$ Summet.Participant.Y	:
num 0 0 0 0 0 0 0 0	
<pre>\$ Mines.Medal.N</pre>	:
num 1 1 1 1 1 1 1 1 1	
<pre>\$ Mines.Medal.Y</pre>	:
num 0 0 0 0 0 0 0 0 0	
\$ SPS.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ SPS.Y	:
num 0 0 0 0 0 0 0 0 0	
<pre>\$ Veteran.N</pre>	:
num 1 1 1 1 1 1 1 1 1 1	
<pre>\$ Veteran.Y</pre>	:
num 0 0 0 0 0 0 0 0 0	
\$ Legacy.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ Legacy.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ Athlete.N	:
num 1 1 1 1 1 1 1 1 1 1	
\$ Athlete.Y	:
num 0 0 0 0 0 0 0 0 0	
\$ State.CO	:
num 1 0 0 1 0 1 0 0 0 0	
\$ State.Other	:
num 0 1 1 0 1 0 1 1 1 1	
\$ Citizenship.Foreign.National.International	:
num 0 0 0 0 0 1 0 0 0	
\$ Citizenship.International	:
num 0 0 0 0 0 0 0 0 0	_
\$ Citizenship.Missing	•
num 0 0 0 0 0 0 0 0 0	_
\$ Citizenship.U.SCitizen	:
num 1 1 1 1 1 1 0 1 1 1	_
\$ Citizenship.U.SPermanent.Resident.Green.Card.Holder	•
num 0 0 0 0 0 0 0 0 0	•
\$ Citizenship.Undocumented.DACA num 0 0 0 0 0 0 0 0 0	•
\$ Ethnicity.American.Indian.or.Alaska.Native	•
num 0 0 0 0 0 0 0 0	•
\$ Ethnicity.Asian	•
num 1 0 0 0 0 1 0 0 0	•
\$ Ethnicity.Black.or.African.American	•
T DOMITOTO I STROWN OF SHIFT TORIN SHIP CONTINUE TORIN	•

```
0 0 0 0 1 0 0 0 0 0 ...
 $ Ethnicity.Hispanic.or.Latino
    0 0 0 0 0 0 0 1 0 0 ...
 $ Ethnicity.Missing
    0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.Multiracial
    0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.Native.Hawaiian.or.Other.Pacific.Islander
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.NotDeclared
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.Unknown
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Ethnicity.White
num 0 1 1 1 0 1 0 0 1 1 ...
 $ Major.App.Applied.Mathematics...Statistics...Computational...Applied.Mathematics:
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Applied.Mathematics...Statistics...Statistics
                                                                                    :
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemical.Engineering
                                                                                    :
num 0 0 0 0 0 0 0 1 0 0 ...
 $ Major.App.Chemical.Engineering...Biological.Engineering.Specialty
num 0 0 0 0 0 0 0 1 0 ...
 $ Major.App.Chemistry
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemistry...Biochemistry.Specialty
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Chemistry...Environmental.Chemistry.Specialty
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Civil.Engineering
    1 0 0 0 0 0 0 0 0 1 ...
 $ Major.App.Computer.Science
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Economics
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 $ Major.App.Electrical.Engineering
    0 0 0 0 0 0 1 0 0 0 ...
 $ Major.App.Engineering.Physics
                                                                                    :
   0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Environmental.Engineering
    0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Geological.Engineering
num 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Geophysical.Engineering
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Mechanical.Engineering
num 0 1 1 1 1 0 0 0 0 0 ...
 $ Major.App.Metallurgical...Materials.Engineering
num 0 0 0 0 0 0 0 0 0 0 ...
 $ Major.App.Mining.Engineering
```

num 0 0 0 0 0 0 0 0 0	
\$ Major.App.Missing	:
num 0 0 0 0 0 0 0 0 0	
\$ Major.App.Petroleum.Engineering	:
num 0 0 0 0 0 0 0 0 0	
\$ Major.App.Undecided	:
num 0 0 0 0 1 0 0 0 0	
\$ First.Contact.ACT	:
num 1 1 0 0 0 0 0 0 0	
\$ First.Contact.Application	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.Athlete.Form	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.Campus.Visit	:
num 0 0 0 1 0 1 0 0 1 1	
\$ First.Contact.College.Fair	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.FUF	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.Girls.Lead.the.Way	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.GPA.Form	:
num 0 0 1 0 0 0 0 0 0 0	
\$ First.Contact.Inquiry.Form	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.Mailing	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.Materials	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.MEP	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.Phone	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.Preview.Mines	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Contact.Royall.Search	:
num 0 0 0 0 1 0 0 1 0 0	
\$ First.Contact.SAT	:
num 0 0 0 0 0 1 0 0 0	
\$ First.Contact.TOEFL	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Visit.Campus.Tour	:
num 0 1 0 0 0 0 0 0 0	
\$ First.Visit.Campus.Visit	:
num 0 0 0 1 0 1 0 0 1 1	
\$ First.Visit.Class.Shadow	:
num 0 0 0 0 0 0 0 0 0	
\$ First.Visit.Discover.Mines	:
num 0 0 0 0 0 0 0 0 0	
[list output truncated]	