

Capstone Final Results

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```
-setwd("C:/Users/Arasan/Documents/Arasan/School/Ryerson/CKME 136- Capstone/Fi
nal Results and Code")
getwd()

## [1] "C:/Users/Arasan/Documents/Arasan/School/Ryerson/CKME 136- Capstone/Fi
nal Results and Code"

#file.path('C:\Users\Arasan\AppData\Local\Temp\RtmpkNTN45\downloaded_packages
')
rm(list = ls())
library(factoextra)

## Warning: package 'factoextra' was built under R version 3.5.3

## Loading required package: ggplot2

## Warning: package 'ggplot2' was built under R version 3.5.3

## Welcome! Want to learn more? See two factoextra-related books at https://g
oo.gl/ve3WBa

GDPdata <- read.csv(file="GDP_Data_ProcessedNN.csv", header=TRUE, sep=",")
GDPdataCountry<-GDPdata
GDPdata <- na.omit(GDPdata)
#-----
#is.na(GDPdata)
#check=sum(is.na(GDPdata))
#str(GDPdata)
#class(GDPdata_x$GDPinUSDInMillions)
#-----
#Data normalization
normalize <- function(x) {
  return ((x - min(x)) / (max(x) - min(x)))
}
GDPdata_norm <-normalize(GDPdata[,3:57])
#-----
GDPdata_lm <-GDPdata_norm# Data for regression analysis
GDPdata_x <-GDPdata_norm #Data for PCA analysis
```

```

if (FALSE){
GDPdata_x <-GDPdata_norm[,2:55]# Data for PCA analysis, removing the dependent variable GDPUSDIInMillions
GDPdata_y <-GDPdata_norm[,1]
}
#GDPdata_x <-GDPdata[,3:57]# Data for PCA analysis
#-----

# Splitting the GDPdata dataset (GDPdata_x) into training and test set.
train_index <- sample(1:nrow(GDPdata_x), 0.7 * nrow(GDPdata_x))
GDPdata.train.set <-GDPdata_x[train_index,-1]
GDPdata.test.set <- GDPdata_x[-train_index,-1]
GDPdata_y_train.set<-GDPdata_x[train_index,1]# removing the dependent variable GDPUSDIInMillions
GDPdata_y_test.set <- GDPdata_x[-train_index,1]# removing the dependent variable GDPUSDIInMillions
GDPdataCountrytrainset=GDPdataCountry[train_index,]

#Apply normalization (scaling and centering) to the data.
#Calculate PCA with normalized data.
GDPdataTrainSet.pca.normdata <- prcomp(GDPdata.train.set, scale = TRUE, center= TRUE)
GDPdataTrainSet.pca.normdata

## Standard deviations (1, ..., p=54):
## [1] 5.39103622 2.11885096 2.00233066 1.66606918 1.35194434 1.24835800
## [7] 1.07283015 1.02113059 0.93983212 0.87450993 0.82759021 0.75935873
## [13] 0.68428070 0.66621643 0.64472499 0.59363713 0.58473635 0.56078241
## [19] 0.52856213 0.51584534 0.48051591 0.44487235 0.42751129 0.41234470
## [25] 0.39599768 0.36777081 0.35826567 0.34108253 0.31369502 0.30361910
## [31] 0.29377105 0.27272400 0.26336194 0.25612041 0.24004477 0.23060747
## [37] 0.22146954 0.20875118 0.19809573 0.19150147 0.18487584 0.16700610
## [43] 0.15845476 0.14993811 0.14446424 0.13331155 0.11750949 0.11294562
## [49] 0.09905609 0.09356811 0.08600389 0.05447357 0.04899815 0.02283867
##
## Rotation (n x k) = (54 x 54):
##
##          PC1          PC2          PC3          PC4
## MealInexpensive 0.16129485 0.131439310 -0.097449538 0.098067275
## MealFor2        0.16974396 0.096653111 -0.008732676 0.140311935
## McMealMcDonalds 0.15692693 0.136291904 0.008695408 0.164603186
## DomesticBeer    0.15656357 -0.064088066 0.092619426 0.207671145
## ImportedBeer    0.15095548 -0.147636257 0.087924868 0.181757182
## CokeOrPepsi     0.14697262 0.233630177 -0.045288505 0.048889105
## Water1Litre     0.14711468 0.208575518 -0.084450776 0.045306962
## Milk1Litre      0.08962375 -0.113482240 0.248504107 -0.131161985
## LoafofBread     0.16734952 -0.028820403 -0.092048120 -0.007123153
## Eggs           0.15674918 0.101595579 0.048379691 0.060761199
## LocalCheese     0.13000863 -0.026126058 0.123870874 -0.231295369
## Water2Litre     0.14952559 -0.062136250 -0.152992668 0.008119030
## BottleofWine    0.09714495 -0.288992344 0.166927736 0.100190346

```

## Domestic1LitreBeer	0.09772663	-0.246829519	0.123087345	0.286824154
## Imported1LitreBeer	0.07157934	-0.274802478	0.142982357	0.283013582
## Cigarettes20Pack	0.13955641	-0.000192280	-0.104306346	0.095247248
## OnewayTicket	0.15823541	0.126555400	-0.090518849	0.094341355
## ChickenBreasts	0.16677886	0.071000352	-0.059197002	0.034213561
## MonthlyPass	0.15424734	0.016406173	-0.086827677	0.016252847
## Gasoline1Litre	0.04861856	0.311166334	0.183160227	-0.117944994
## VWGolf	0.06454859	-0.035075907	0.322197940	-0.127322319
## Apartment1BD	0.16555516	-0.065946946	-0.037464754	-0.095363829
## Apartment1BD0OC	0.16593329	-0.041431492	-0.065139351	-0.067910991
## Apartment3BDICC	0.16083960	-0.094831655	0.001924849	-0.148077694
## Apartment3BD0OC	0.16555802	-0.063295666	-0.033643685	-0.092753376
## BasicUtilities	0.09939399	0.215020688	0.006609223	-0.110940980
## PrepaidMobile1MIn	0.08450776	0.045822763	-0.099931235	0.073187445
## Internet	0.12833704	-0.142298877	-0.142346030	0.174980749
## GymFees	0.11518932	-0.165771927	0.225812292	-0.014430538
## TennisCourtFeesPerHour	0.09608928	0.077668261	0.107240490	0.230762288
## CinemaPerPerson	0.17376705	0.044432434	-0.048303798	0.038148710
## PairofJeans	0.08353097	0.308405043	0.240947505	0.062836881
## SummerDress	0.04965052	-0.098329723	0.201194756	0.250268529
## NikeRunningShoes	0.08161500	0.121024732	0.245550830	0.123967412
## LeatherShoes	0.13993672	0.171150660	0.114379432	-0.032681723
## AptPricePerSquareM	0.12398159	-0.032683387	0.182961877	-0.299388219
## AptPricePerSqMOOC	0.13080389	-0.005364819	0.165011352	-0.264334577
## AvgMnthlyNetSalary	0.16532970	-0.077750523	-0.132897981	-0.006480517
## MortgageInterest	-0.09522553	-0.097373803	0.017318535	0.052175566
## TaxiStartingFare	0.14275140	0.181173611	0.053344740	0.088829482
## Taxi1KM	0.13488791	0.065373870	-0.147332699	-0.007555507
## Taxi1HRWaiting	0.15681662	0.155010241	-0.059193157	0.100759025
## Apples1KG	0.13330979	-0.206196094	-0.082076173	-0.144657802
## Oranges1KG	0.14508126	-0.130033829	-0.084859897	-0.172757225
## Potato1KG	0.15775094	-0.117332574	-0.085247461	-0.143578181
## Lettuce1Head	0.15282023	-0.018601443	-0.019945376	0.046998826
## CappucinoReg	0.15847468	-0.097471159	0.033108350	0.080624336
## WhiteRice	0.14534146	-0.095850558	-0.170191067	-0.065435258
## Tomato1KG	0.16121374	-0.019165210	-0.112594208	-0.111445866
## Banana1KG	0.11911303	0.023201220	0.152984365	-0.090936492
## Onion1KG	0.15185067	-0.116112767	-0.102868982	-0.171943500
## BeefRound1KG	0.14832905	0.038216154	0.122929022	-0.083829354
## ToyotaCorolla	0.04522050	-0.027734791	0.330983512	-0.090837769
## PreschoolperMonth	0.14368983	-0.066729004	-0.138137998	-0.076296181
##	PC5	PC6	PC7	PC
8				
## MealInexpensive	-0.050866908	0.0807728468	0.04366504	-0.054058359
9				
## MealFor2	-0.001284243	0.0894550666	0.01299348	0.048678247
0				
## McMealMcDonalds	0.006628627	0.0282130045	0.07946622	0.004586222
0				
## DomesticBeer	-0.121140181	-0.0467425008	-0.01047789	0.130525119

0					
## ImportedBeer	8	-0.112504698	-0.0499001457	0.03991282	0.152792358
9					
## CokeOrPepsi	8	-0.018287169	-0.0370273263	0.11939970	0.059767022
8					
## Water1Litre	5	-0.039105356	0.0114955248	0.13046602	0.047324697
5					
## Milk1Litre	6	0.124779792	-0.2228449669	-0.18383050	0.017754428
6					
## LoafofBread	8	0.083804450	0.0574637898	0.12840732	0.079586370
8					
## Eggs	7	0.026557642	-0.1141785794	-0.07041589	0.010557232
7					
## LocalCheese	8	0.085888279	-0.0042464143	0.01657762	0.115314365
8					
## Water2Litre	7	0.062425050	0.0237745324	0.10249317	-0.071724714
7					
## BottleofWine	9	-0.003739422	-0.0795800725	0.08705888	0.129795417
9					
## Domestic1LitreBeer	2	-0.137875743	-0.1682317325	-0.05017518	-0.019927385
2					
## Imported1LitreBeer	8	-0.101277895	-0.1976765866	-0.02639254	-0.004729357
8					
## Cigarettes20Pack	5	-0.240009880	-0.1300116054	-0.02624238	-0.232425755
5					
## OnewayTicket	5	-0.098607168	-0.0481170729	0.10688148	-0.041764975
5					
## ChickenBreasts	0	0.042637128	0.0263991852	0.05180241	0.079075724
0					
## MonthlyPass	8	-0.166278971	-0.0091329312	-0.03028172	-0.242845098
8					
## Gasoline1Litre	1	-0.161432040	-0.2363582258	-0.02047900	0.071853222
1					
## VWGolf	0	-0.093514860	0.0368180586	0.43985052	-0.233537428
0					
## Apartment1BD	2	-0.188328121	0.1933800477	-0.07446875	0.017078772
2					
## Apartment1BD0OC	4	-0.187127708	0.1978806465	-0.06792769	0.017339534
4					
## Apartment3BDICC	4	-0.170124057	0.1630899992	-0.11529893	0.037879573
4					
## Apartment3BD0OC	2	-0.174410251	0.1880585135	-0.10321317	0.049096940
2					
## BasicUtilities	1	-0.023351115	-0.0411355034	-0.13584266	0.117777040
1					
## PrepaidMobile1MIn	0	0.003837996	-0.4039543807	-0.21239943	-0.497254890
0					
## Internet	9	0.016005894	0.0042886665	-0.01543578	-0.029524431
9					
## GymFees		0.013473644	-0.0020577346	-0.23751223	0.036357636

4					
##	TennisCourtFeesPerHour	0.246498291	0.0635222722	-0.07493970	0.166674466
6					
##	CinemaPerPerson	-0.044181813	-0.0063236676	-0.05438254	0.014607210
6					
##	PairOfJeans	0.032955926	0.0421087946	-0.12396572	-0.000854134
5					
##	SummerDress	0.215690306	0.3568411039	-0.16472303	-0.129458387
2					
##	NikeRunningShoes	0.183862104	0.3071177519	-0.08940377	-0.266369131
3					
##	LeatherShoes	0.206030875	0.1576456223	-0.12158530	-0.022724919
3					
##	AptPricePerSquareM	-0.154281403	-0.0096749405	-0.16068829	0.014962603
2					
##	AptPricePerSqMOOC	-0.163069862	0.0041149394	-0.20746397	0.021292924
9					
##	AvgMnthlyNetSalary	-0.100098427	0.1338088393	0.04730733	0.051040466
1					
##	MortgageInterest	0.098820422	0.2512302195	0.00746212	-0.380137872
9					
##	TaxiStartingFare	0.017803285	-0.0749510625	0.07677888	0.042394533
2					
##	Taxi1KM	0.053493525	-0.0627519302	-0.02836553	-0.119799424
6					
##	Taxi1HRWaiting	-0.019771893	-0.0105582544	0.13891871	-0.035231478
0					
##	Apples1KG	0.200615887	-0.0476467654	0.14045827	0.009405806
1					
##	Oranges1KG	0.223719656	-0.0367064999	0.05869990	-0.003295534
2					
##	Potato1KG	0.155906354	-0.0623089280	0.03087516	-0.113950142
3					
##	Lettuce1Head	0.165991475	-0.1287779240	0.07481916	0.090556781
6					
##	CappucinoReg	0.021309577	-0.0006878552	0.01330612	0.213479321
8					
##	WhiteRice	0.164999787	0.0414504712	0.09624321	0.010116093
7					
##	Tomato1KG	0.199325469	0.0078363478	-0.01763858	0.002251798
2					
##	Banana1KG	0.170280963	-0.1851219268	-0.05883164	-0.239044660
3					
##	Onion1KG	0.141676353	-0.0674724536	0.07054741	-0.065170290
1					
##	BeefRound1KG	0.227202984	-0.1067664671	0.06947581	0.047697744
0					
##	ToyotaCorolla	-0.181659289	0.0859420782	0.51563402	-0.159622421
4					
##	PreschoolperMonth	-0.195688191	0.1759223667	-0.16812881	-0.141611944

3					
##		PC9	PC10	PC11	PC
12					
## MealInexpensive	46	0.006949559	-0.0001871233	0.010421624	-0.02516381
## MealFor2	61	0.070842999	-0.0432963829	-0.078253506	0.04278753
## McMealMcDonalds	27	0.055695792	-0.0516856287	-0.068456220	-0.00688109
## DomesticBeer	04	0.015407198	0.0839698710	-0.053304798	-0.14124265
## ImportedBeer	09	0.018856664	0.0812309667	-0.041512480	-0.10738861
## CokeOrPepsi	93	-0.012461240	0.0426586949	0.064927131	-0.14943738
## Water1Litre	76	0.039765894	0.0141193425	0.176710093	-0.09295454
## Milk1Litre	01	0.310801171	-0.2884826190	0.055995848	0.04116279
## LoafofBread	81	0.163461503	-0.0716033835	-0.041424171	-0.05282036
## Eggs	60	0.147241580	-0.1360798695	-0.082555051	-0.23880948
## LocalCheese	58	0.094915351	-0.1332366045	0.007865879	0.03758349
## Water2Litre	56	0.219014506	-0.1513757449	0.056367920	-0.05256037
## BottleofWine	63	0.035638562	-0.1796620709	0.057105442	0.05385192
## Domestic1LitreBeer	05	-0.063806588	0.1376545480	0.092795149	-0.07867462
## Imported1LitreBeer	57	-0.054764516	0.1419432538	0.060279167	0.04895519
## Cigarettes20Pack	91	0.121987645	0.0237418709	0.378823089	0.05986333
## OnewayTicket	25	0.060210980	0.0291535352	0.111607789	0.12783717
## ChickenBreasts	94	0.215622001	-0.0720517678	0.022940264	-0.03606281
## MonthlyPass	49	-0.033180652	0.0392490025	0.116478103	0.27974116
## Gasoline1Litre	91	0.044146484	0.0979160392	-0.183433931	0.01355991
## VWGolf	21	-0.190592779	-0.1824848820	-0.059583471	-0.06906458
## Apartment1BD	29	-0.024729505	-0.0146201837	-0.074181579	-0.00816440
## Apartment1BD0OC	20	-0.005117369	-0.0259664618	-0.083242925	-0.03625566
## Apartment3BDICC		-0.019478234	-0.0028066759	-0.084786503	-0.00067769

35					
## Apartment3BD0OC	0.004260919	-0.0254518412	-0.107784612	-0.04293930	
69					
## BasicUtilities	-0.478248422	-0.0310000342	0.216206459	-0.33007796	
58					
## PrepaidMobile1MIn	-0.099368596	-0.2242327089	-0.127173808	0.02305472	
44					
## Internet	-0.084385002	-0.2965414687	-0.257072201	-0.20500892	
90					
## GymFees	-0.215690858	-0.1079144806	-0.130480046	-0.05021911	
22					
## TennisCourtFeesPerHour	-0.163643049	0.0691906988	-0.316785247	0.35700015	
62					
## CinemaPerPerson	-0.060975367	0.0826649380	-0.063382021	0.08536108	
87					
## PairofJeans	-0.072537974	-0.0324611978	0.049768127	-0.01250691	
22					
## SummerDress	-0.048400820	0.1494891818	0.270620437	0.16949390	
58					
## NikeRunningShoes	0.048916777	-0.2414835299	0.142095015	-0.01356682	
93					
## LeatherShoes	-0.015854328	-0.1443914397	0.055372991	-0.03117101	
65					
## AptPricePerSquareM	0.163242141	0.1810367905	0.005872004	0.11823936	
93					
## AptPricePerSqMOOC	0.212890334	0.1407593546	-0.004010940	0.06516592	
65					
## AvgMnthlyNetSalary	-0.082217685	0.0555842556	0.044381192	-0.11267349	
15					
## MortgageInterest	0.335877183	0.3328180455	-0.284548453	-0.36658312	
77					
## TaxiStartingFare	0.042713507	0.1573819991	-0.123201128	0.04110808	
14					
## Taxi1KM	-0.063723019	0.0083238048	-0.376438141	0.31794224	
84					
## Taxi1HRWaiting	0.084254037	0.1285183191	-0.048288609	0.14079138	
99					
## Apples1KG	-0.087690840	0.1258395057	0.037132827	0.15790382	
34					
## Oranges1KG	-0.135047961	0.0927830033	0.149709389	0.05827562	
20					
## Potato1KG	-0.034096415	-0.0243281276	-0.012889377	-0.04060075	
86					
## Lettuce1Head	0.175042916	0.0056063175	0.185193389	-0.00883750	
38					
## CappucinoReg	-0.002444364	0.0071722606	-0.080159481	-0.12308573	
41					
## WhiteRice	-0.117367786	0.0556141224	-0.053251969	-0.07812360	
47					
## Tomato1KG	-0.088028702	0.1134998402	0.089799307	0.03190431	

57					
## Banana1KG	-0.140960478	0.3814396932	-0.056317069	-0.27202587	
00					
## Onion1KG	-0.015922723	-0.0778654727	-0.029940357	-0.02646599	
11					
## BeefRound1KG	0.064340450	0.2041669981	0.059054594	-0.01758975	
21					
## ToyotaCorolla	-0.117183398	-0.0324423170	-0.055386258	0.11226596	
62					
## PreschoolperMonth	-0.137876713	-0.0100181605	0.048926212	0.05953687	
37					
##	PC13	PC14	PC15	PC1	
6					
## MealInexpensive	0.063337798	-0.078790062	0.021005111	-0.127639484	
9					
## MealFor2	-0.021714138	-0.078339142	-0.030198078	0.049507888	
4					
## McMealMcDonalds	0.065303788	0.179456015	0.039231427	0.006176619	
6					
## DomesticBeer	0.067368098	-0.086717378	-0.059928495	-0.066854500	
3					
## ImportedBeer	0.064307249	-0.036826632	-0.055357672	-0.057586028	
5					
## CokeOrPepsi	0.067653222	0.123141318	0.089895483	0.102514992	
7					
## Water1Litre	-0.045107088	0.051495246	0.167743355	0.183963675	
6					
## Milk1Litre	-0.125631623	-0.291932483	-0.003345691	-0.167708791	
0					
## LoafofBread	0.013586084	0.012733875	0.058264509	-0.002401556	
8					
## Eggs	0.015791767	0.192075035	0.166865616	-0.088553667	
0					
## LocalCheese	0.475828538	0.225235045	0.018462332	-0.221531357	
1					
## Water2Litre	-0.271464800	-0.062585190	0.309570059	0.142017746	
9					
## BottleofWine	0.060564859	0.028941934	-0.044885644	-0.061070963	
6					
## Domestic1LitreBeer	-0.009204659	0.087917881	0.027744252	0.028236790	
5					
## Imported1LitreBeer	-0.063739674	0.187063259	0.126399562	0.006360581	
2					
## Cigarettes20Pack	0.048437046	-0.012566700	0.024023355	0.164950480	
1					
## OnewayTicket	0.065905804	-0.123590169	-0.091254738	-0.072808261	
7					
## ChickenBreasts	0.016418423	0.185733566	0.094889568	-0.047977874	
1					
## MonthlyPass	0.002308145	-0.144618953	0.096648347	-0.059274380	

9					
## Gasoline1Litre	5	-0.194233596	0.230339825	0.258003301	-0.022678519
## VWGolf	1	0.060125721	-0.174820637	0.016996922	-0.026072838
## Apartment1BD	4	0.049406933	-0.002438621	-0.060771979	0.079094228
## Apartment1BD0OC	5	0.062866792	0.014286184	-0.018947984	0.073092139
## Apartment3BDICC	3	0.021766902	0.027414766	-0.094770234	0.060749157
## Apartment3BD0OC	2	0.046416451	0.048083049	-0.043804328	0.044287694
## BasicUtilities	4	-0.163311761	-0.161926207	0.248040325	-0.273372229
## PrepaidMobile1MIn	0	0.195477486	-0.022540237	0.016391864	-0.192454672
## Internet	4	-0.121008610	0.046403433	-0.142720411	0.099589942
## GymFees	6	-0.110659082	0.047410800	0.028809447	0.437899452
## TennisCourtFeesPerHour	1	0.338011090	-0.282616687	0.400009295	0.123903306
## CinemaPerPerson	3	-0.052831442	-0.090621492	-0.045742281	-0.153762817
## PairofJeans	3	-0.057232072	-0.028614836	-0.058780597	0.154542410
## SummerDress	4	-0.216222700	0.191879162	0.133532547	-0.237552728
## NikeRunningShoes	9	-0.017230905	0.123444347	-0.212454533	0.001063545
## LeatherShoes	2	-0.022692975	-0.031096965	-0.110562584	0.058173549
## AptPricePerSquareM	9	-0.103840300	-0.059821778	0.005845261	-0.004547719
## AptPricePerSqMOOC	2	-0.082000758	-0.029506020	0.071214210	-0.031376120
## AvgMnthlyNetSalary	3	0.040962481	0.003392056	-0.083039063	-0.055036053
## MortgageInterest	4	0.033525206	-0.189915251	0.236537978	-0.081803050
## TaxiStartingFare	2	-0.118152475	-0.142777778	-0.367774183	-0.092544236
## Taxi1KM	2	-0.342269896	0.160614031	-0.064593877	-0.039641000
## Taxi1HRWaiting	7	-0.034995036	0.002995050	-0.246347256	-0.022085231
## Apples1KG	9	-0.089890161	0.186306332	0.048554578	-0.017078997
## Oranges1KG		-0.047850785	-0.127012279	-0.096912238	-0.010950039

8				
## Potato1KG	-0.072379232	0.112742940	0.027892670	0.020243816
2				
## Lettuce1Head	0.010781730	-0.310104749	0.018923607	0.306256834
2				
## CappucinoReg	-0.152489102	-0.235956593	-0.058012935	-0.328304863
3				
## WhiteRice	-0.096491333	0.060329466	0.052295972	-0.187372021
0				
## Tomato1KG	0.022597958	-0.117776280	0.036090775	0.091823456
7				
## Banana1KG	0.100839721	-0.001140093	-0.213754731	0.201170384
6				
## Onion1KG	-0.004862221	0.041094026	0.085206853	0.114264602
5				
## BeefRound1KG	0.232199975	0.235599941	-0.079899376	-0.058869278
0				
## ToyotaCorolla	-0.096585574	-0.010655904	0.117001922	-0.000701279
9				
## PreschoolperMonth	0.244883370	-0.023337141	0.117770868	-0.045884081
6				
##	PC17	PC18	PC19	PC20
## MealInexpensive	0.035179223	0.063901020	-0.171389409	0.022206497
## MealFor2	-0.049844673	0.033416475	0.038791697	0.106460094
## McMealMcDonalds	0.104208960	0.176144674	-0.216460122	-0.014843481
## DomesticBeer	-0.057146004	0.057685748	-0.055739101	0.156733633
## ImportedBeer	-0.069957965	-0.003462511	-0.151083820	0.068964991
## CokeOrPepsi	0.014823027	0.068810066	-0.028751704	-0.199133405
## Water1Litre	0.026532305	0.159112531	0.019257403	-0.221921718
## Milk1Litre	-0.042812417	0.230524971	-0.080681556	0.041820513
## LoafofBread	-0.113456865	-0.121737449	0.063324090	-0.182945892
## Eggs	-0.175015307	0.125435177	0.295971390	-0.041452683
## LocalCheese	0.352914042	0.103326278	-0.138173078	-0.034632525
## Water2Litre	-0.123609434	0.001372733	-0.031165641	-0.067730654
## BottleofWine	0.124072371	-0.197941849	0.475810065	-0.049827480
## Domestic1LitreBeer	0.077073607	-0.088573957	0.108934185	0.096545581
## Imported1LitreBeer	0.198178436	-0.101578216	0.050919558	-0.184296433
## Cigarettes20Pack	-0.059700047	0.124442769	-0.013457176	0.012689040
## OnewayTicket	0.144490695	-0.040216074	0.076891304	0.090890810
## ChickenBreasts	0.001411996	0.006064748	-0.068463885	0.265124517
## MonthlyPass	0.112734507	0.138659773	0.232002840	0.172022511
## Gasoline1Litre	-0.085298957	-0.296645003	0.005641645	0.233728108
## VWGolf	-0.034388733	0.102161606	0.029286959	0.072387544
## Apartment1BD	-0.033141492	-0.080400792	-0.005025633	-0.023484130
## Apartment1BDOOC	-0.068677678	-0.079632866	-0.004042951	0.031138514
## Apartment3BDICC	-0.015557833	-0.140850809	0.013008082	-0.114669003
## Apartment3BDOOC	-0.066006478	-0.102195683	-0.004928420	-0.046071284
## BasicUtilities	0.303024999	0.063278794	0.045300376	-0.020523580
## PrepaidMobile1MIn	-0.134536395	-0.312774185	-0.240630088	-0.091329294
## Internet	0.143298264	0.130361165	-0.194158380	-0.063304139

## GymFees	0.157730351	0.129955116	-0.139845959	0.237004128
## TennisCourtFeesPerHour	-0.155165336	0.036218862	0.030926967	-0.113540588
## CinemaPerPerson	-0.021955448	0.014652477	-0.013946392	-0.031106779
## PairOfJeans	0.120985851	-0.228094499	0.054591090	-0.184994752
## SummerDress	-0.129593614	-0.019299968	-0.275859342	-0.036909342
## NikeRunningShoes	-0.029765162	0.019174160	0.166484488	-0.006684213
## LeatherShoes	0.011531855	-0.231814405	0.128324680	0.133585842
## AptPricePerSquareM	0.009914883	0.021206118	-0.050224743	-0.064838730
## AptPricePerSqMOOC	-0.022996935	0.046988446	-0.072236934	-0.119037313
## AvgMnthlyNetSalary	-0.093591601	-0.049678388	-0.064677583	0.050632168
## MortgageInterest	0.377678241	-0.074689626	0.078722968	0.018092045
## TaxiStartingFare	0.188353268	-0.185968596	-0.207537921	-0.095502062
## Taxi1KM	0.223241265	0.316090524	0.192633307	0.054164621
## Taxi1HRWaiting	0.030290650	-0.021119694	0.143614756	-0.059988197
## Apples1KG	0.066226984	-0.021381840	-0.127153373	-0.176942478
## Oranges1KG	0.067838266	0.035465694	-0.007511716	-0.026518263
## Potato1KG	-0.066012650	-0.069015923	-0.018861492	-0.124482988
## Lettuce1Head	0.149575448	-0.116103250	-0.181314881	0.196537874
## CappucinoReg	-0.208262342	0.086392775	0.086725952	-0.224416452
## WhiteRice	-0.187709983	-0.121519093	0.022125543	0.466609211
## Tomato1KG	0.024765053	-0.201213331	0.111209367	0.078983517
## Banana1KG	-0.310282469	0.260830086	0.107511776	-0.072726146
## Onion1KG	0.083645926	-0.185691200	0.050682014	-0.160904432
## BeefRound1KG	0.001164197	0.108074135	0.024425500	0.173488340
## ToyotaCorolla	-0.074492744	-0.053112878	-0.146294168	-0.013936426
## PreschoolperMonth	-0.013028309	0.108116515	0.062123933	0.033826513
##	PC21	PC22	PC23	PC
24				
## MealInexpensive	0.034634120	0.0939173254	-0.276981606	0.15070715
54				
## MealFor2	0.032476526	0.0439322843	0.028621331	-0.15635823
99				
## McMealMcDonalds	0.004829947	0.0529303586	-0.261709377	-0.11307957
32				
## DomesticBeer	0.058657253	0.0907248183	0.219835444	0.12618460
12				
## ImportedBeer	0.022113244	0.0637525089	0.081735494	0.12154316
80				
## CokeOrPepsi	0.208955936	-0.0449912320	0.034406434	0.15666463
86				
## Water1Litre	0.201222912	-0.1238319714	0.078642637	0.11604706
40				
## Milk1Litre	0.076608821	-0.0187693447	-0.226447115	0.08731633
94				
## LoafOfBread	0.022554103	-0.0017317246	-0.133192468	-0.12131853
39				
## Eggs	-0.042061012	0.2286635021	-0.143014909	-0.05584277
92				
## LocalCheese	0.092259446	-0.2060346471	0.214148789	-0.32972523
98				

## Water2Litre 37	-0.203608482	-0.2630742573	0.008598669	-0.19446637
## BottleofWine 91	-0.017949700	0.3113971723	-0.034669241	-0.12456813
## Domestic1LitreBeer 91	0.076329567	-0.1749403523	0.082447285	0.14517873
## Imported1LitreBeer 19	0.087115229	-0.3414999853	-0.175282310	0.08862265
## Cigarettes20Pack 71	-0.051754114	0.0889468063	-0.088401070	-0.10694575
## OnewayTicket 62	-0.193896357	-0.0656697894	0.056242606	-0.13114823
## ChickenBreasts 25	-0.088859628	0.0031791974	0.123554985	0.18591439
## MonthlyPass 57	-0.312759995	0.0479728739	0.112412210	-0.05654973
## Gasoline1Litre 34	-0.119408351	-0.0474382484	0.042864503	-0.14363240
## VWGolf 10	0.065993035	-0.1588539429	0.079837745	-0.06384338
## Apartment1BD 33	0.031423348	0.0443263887	-0.043191475	-0.00309660
## Apartment1BD0OC 28	-0.007262661	0.1117231497	0.005214384	-0.01035409
## Apartment3BDICC 88	0.008499105	0.0509363504	-0.025238689	-0.00205489
## Apartment3BD0OC 81	-0.009795657	0.1066264090	0.018100065	-0.02539651
## BasicUtilities 81	-0.071842759	0.1599239467	0.051017876	0.07318489
## PrepaidMobile1MIn 07	0.165433432	0.0827100723	0.076249278	0.00369966
## Internet 44	-0.381254687	-0.0088347236	0.338871727	0.01572174
## GymFees 80	0.029410217	-0.0240019600	-0.229543787	-0.16337317
## TennisCourtFeesPerHour 03	-0.121945535	-0.0334057589	0.040312564	0.15285913
## CinemaPerPerson 16	0.052473978	-0.2530752618	0.051134278	-0.18908234
## PairofJeans 28	-0.090753205	-0.0013096737	-0.049315116	-0.20966470
## SummerDress 05	0.058259576	0.2530757180	0.169528614	-0.19900842
## NikeRunningShoes 69	-0.119516543	-0.2326428702	0.058158359	0.33306793
## LeatherShoes 41	0.252415750	-0.1240734756	-0.019710632	-0.00022928
## AptPricePerSquareM 84	-0.022521544	-0.0778492278	0.095410425	0.14677077

## AptPricePerSqMOOC 62	-0.016224034	-0.0314370006	0.213097527	0.17106000
## AvgMnthlyNetSalary 16	0.144750801	-0.0220716744	-0.040645779	-0.02949975
## MortgageInterest 37	0.038468376	0.0423939421	-0.053063967	-0.04752666
## TaxiStartingFare 64	-0.255049708	-0.0320620228	-0.317059855	0.09057251
## Taxi1KM 84	0.354482721	0.1406098455	0.049308527	0.06301244
## Taxi1HRWaiting 75	0.153993150	-0.0095250792	0.155828760	-0.05978448
## Apples1KG 10	-0.142556138	0.0237157133	-0.071298545	-0.09332898
## Oranges1KG 48	0.005866207	-0.0065731468	-0.042776967	0.01391550
## Potato1KG 24	-0.001285302	0.1047659994	-0.045267448	0.08506714
## Lettuce1Head 77	0.242123662	0.2196565092	0.146217455	-0.06422780
## CappucinoReg 55	0.031350011	-0.0878672746	-0.006589424	-0.13947748
## WhiteRice 62	0.051079605	-0.2658654072	-0.090498687	0.01824607
## Tomato1KG 77	0.003260612	-0.0335273647	0.042125128	0.04097484
## Banana1KG 39	-0.056066588	0.0006862367	0.088385737	-0.21518732
## Onion1KG 26	-0.063216729	0.0729085029	0.110302351	0.27921383
## BeefRound1KG 81	-0.237587146	0.1565400859	-0.131168398	0.17765971
## ToyotaCorolla 75	0.035160751	0.1977811624	-0.055631363	0.09153193
## PreschoolperMonth 52	0.030662706	-0.0868724534	-0.292473294	0.03857151
##	PC25	PC26	PC27	PC28
## MealInexpensive	0.166303094	-0.219564379	-0.160747112	-0.140141454
## MealFor2	0.026260603	-0.038975324	-0.129918826	0.006711220
## McMealMcDonalds	-0.176062179	0.041321826	-0.277819790	-0.336926163
## DomesticBeer	-0.032542008	-0.082028171	-0.088984383	0.074189289
## ImportedBeer	-0.107516313	0.009659717	-0.104245023	0.145955883
## CokeOrPepsi	0.219180621	0.191844306	-0.075299946	0.119725774
## Water1Litre	0.199573954	0.180678781	0.061317687	-0.088617390
## Milk1Litre	0.257496051	0.041228254	0.202564243	-0.169050767
## LoafofBread	-0.167631317	0.191652420	0.226019828	-0.036980580
## Eggs	-0.012848933	-0.134714835	0.199548800	0.335921972
## LocalCheese	-0.067634945	-0.152932943	-0.002975556	0.073908406
## Water2Litre	-0.215042112	-0.158501869	-0.132781916	0.027233946
## BottleofWine	0.013419595	0.262942506	-0.343854905	-0.191717696

## Domestic1LitreBeer	0.084511261	-0.125279184	0.148964433	-0.107040031
## Imported1LitreBeer	-0.043814213	-0.207128201	0.113858245	-0.035351935
## Cigarettes20Pack	-0.164758380	0.051810636	0.001078488	0.093479294
## OnewayTicket	0.171174606	0.295566019	0.207278955	-0.021267468
## ChickenBreasts	0.183357657	-0.033393747	-0.057774315	0.205575000
## MonthlyPass	0.162482293	-0.100081262	0.002770762	0.060074702
## Gasoline1Litre	0.036442947	-0.072350006	-0.021859300	-0.318010658
## VWGolf	-0.037247485	-0.006178150	0.248624311	-0.069535433
## Apartment1BD	-0.033981402	-0.082179069	0.121556327	-0.060636284
## Apartment1BD0OC	-0.042706824	-0.097099017	0.165900732	-0.089497521
## Apartment3BDICC	0.011005405	-0.001226869	0.071719151	-0.043417696
## Apartment3BD0OC	-0.026719852	-0.061337141	0.149562605	-0.046876678
## BasicUtilities	-0.256823864	0.087892931	0.030293105	-0.050603185
## PrepaidMobile1MIn	-0.057320271	0.111580587	-0.070130467	0.150085503
## Internet	0.178633943	-0.048425069	0.005805862	-0.145206497
## GymFees	0.079915226	0.332173628	-0.042628243	0.301981876
## TennisCourtFeesPerHour	-0.038099108	0.060440998	0.058130395	-0.030817331
## CinemaPerPerson	0.006855607	0.279095225	0.035523089	-0.108955897
## PairofJeans	0.163143367	-0.236248718	-0.023710855	0.239066816
## SummerDress	0.129557443	0.065720774	0.124377114	-0.082709638
## NikeRunningShoes	-0.370695520	0.065543662	-0.062291060	-0.008185126
## LeatherShoes	0.203046478	-0.124796505	-0.094691989	-0.084714384
## AptPricePerSquareM	-0.065205645	0.099989898	-0.168247698	0.050188854
## AptPricePerSqMOOC	-0.084081737	0.108960522	-0.120410482	0.037368448
## AvgMnthlyNetSalary	0.046008286	0.100185204	0.167700847	0.012849956
## MortgageInterest	0.068941683	0.093551965	-0.016822303	0.044262728
## TaxiStartingFare	-0.102443239	0.033119778	0.091617927	0.063220907
## Taxi1KM	-0.178936729	-0.118386100	0.109365977	0.012975830
## Taxi1HRWaiting	0.018320432	0.073937342	-0.080007255	0.088060616
## Apples1KG	-0.042528381	0.052784406	-0.040916209	0.179225295
## Oranges1KG	0.219301010	-0.243423530	-0.168035064	0.034484717
## Potato1KG	0.088031682	-0.005509736	0.151760805	-0.180571884
## Lettuce1Head	-0.298807804	-0.144413233	0.057004566	-0.117117654
## CappucinoReg	-0.015331036	-0.124663204	-0.136218311	0.153500301
## WhiteRice	-0.032538691	0.160949430	-0.135242773	0.077774575
## Tomato1KG	-0.070921124	-0.104040399	0.144973021	0.114613193
## Banana1KG	0.006396967	-0.053691532	-0.114650930	-0.202258559
## Onion1KG	0.105590753	0.054421187	-0.131308668	-0.090682820
## BeefRound1KG	-0.054678421	0.025462918	0.187380848	-0.032823420
## ToyotaCorolla	0.048334643	-0.066778955	-0.115574381	0.157933750
## PreschoolperMonth	0.025340848	-0.106198636	-0.195999446	-0.075057801
##	PC29	PC30	PC31	PC32
## MealInexpensive	0.21283265	0.141511951	0.123788697	-0.112635608
## MealFor2	0.10533475	-0.009152441	0.120378607	-0.185963301
## McMealMcDonalds	0.11034018	0.022134054	-0.199016774	-0.193836597
## DomesticBeer	-0.06756192	-0.016334758	-0.068960052	0.056297549
## ImportedBeer	-0.12510596	0.136728136	-0.053053964	0.168346568
## CokeOrPepsi	-0.01045915	0.103279782	0.015293365	0.198343395
## Water1Litre	-0.10501459	0.002826941	-0.138333530	0.090246308
## Milk1Litre	-0.02904283	-0.048252887	-0.002010343	0.010186069

## LoafofBread	0.20491150	0.224614304	-0.130141666	0.166515359
## Eggs	0.16255686	-0.112376738	0.056666672	0.050888227
## LocalCheese	-0.12379095	-0.034761827	0.133414936	-0.018019599
## Water2Litre	-0.26036351	0.141574218	-0.051047905	0.029142376
## BottleofWine	-0.17178358	0.044090636	-0.047679079	0.025849200
## Domestic1LitreBeer	-0.05556083	0.007741198	0.006802694	-0.058077422
## Imported1LitreBeer	0.17220975	0.065298643	0.035359302	-0.066892349
## Cigarettes20Pack	-0.31592687	-0.222583935	0.259675908	-0.133440746
## OnewayTicket	0.09129070	0.032260374	0.263871882	-0.041526356
## ChickenBreasts	-0.12609045	-0.204942614	-0.069071949	0.003382719
## MonthlyPass	0.12833867	0.314288353	-0.194348226	0.179360356
## Gasoline1Litre	0.06984504	-0.195059711	0.192698001	0.227032317
## VWGolf	-0.08300842	-0.037961056	-0.261462595	-0.060399966
## Apartment1BD	0.01754071	-0.058308600	-0.056399903	0.063359082
## Apartment1BD0OC	-0.03172772	-0.033648644	-0.058344203	-0.084098522
## Apartment3BDICC	0.04303481	0.030566770	0.079553441	0.157228380
## Apartment3BD0OC	-0.06569374	0.043259470	0.044606311	-0.012458394
## BasicUtilities	-0.03422107	0.053109025	0.094738475	-0.065180667
## PrepaidMobile1MIn	0.03804020	0.097301883	-0.072040492	0.051376283
## Internet	0.07817496	0.027567325	0.058946908	-0.006870934
## GymFees	0.09730094	-0.059679928	0.046039114	-0.033984223
## TennisCourtFeesPerHour	-0.13200384	0.003985777	0.176602538	-0.042650703
## CinemaPerPerson	0.15750489	-0.299514311	-0.120715535	0.111572287
## PairofJeans	0.01193976	0.087462349	-0.322312836	-0.201860121
## SummerDress	-0.06971133	-0.100712086	-0.134439849	0.042169809
## NikeRunningShoes	0.19769063	-0.094866528	0.208645396	0.152409525
## LeatherShoes	-0.27006105	0.274911092	0.169500399	0.097770690
## AptPricePerSquareM	0.13959917	0.119379499	-0.037337085	-0.052869807
## AptPricePerSqMOOC	-0.02093875	0.168946803	-0.031534321	-0.225389188
## AvgMnthlyNetSalary	-0.04010222	0.118838102	0.140363679	0.043746736
## MortgageInterest	-0.01799618	-0.042332187	0.078313922	0.025288312
## TaxiStartingFare	-0.39119798	-0.098896799	-0.060193108	0.128978833
## Taxi1KM	-0.19405374	0.024163792	-0.030238564	0.087980636
## Taxi1HRWaiting	0.17419415	-0.101883693	0.042593174	-0.301417303
## Apples1KG	0.05009582	0.110318551	0.132704934	0.184241925
## Oranges1KG	0.13276578	-0.120664004	0.134998593	0.224756079
## Potato1KG	-0.07605235	0.087831685	0.237500361	-0.413484109
## Lettuce1Head	0.24454830	-0.011765371	-0.019330990	0.154443400
## CappucinoReg	0.06294036	-0.158915686	0.054945311	-0.045256096
## WhiteRice	-0.02116965	0.144454907	-0.099886878	-0.183557060
## Tomato1KG	0.04887614	-0.224359412	-0.104934932	-0.195996817
## Banana1KG	-0.07721317	0.038880431	0.038697511	0.078484324
## Onion1KG	-0.01090999	-0.365903988	-0.216704836	-0.033558879
## BeefRound1KG	0.03251801	0.113016788	-0.188465338	-0.031890949
## ToyotaCorolla	0.06377494	-0.033402524	0.211208614	0.002547043
## PreschoolperMonth	-0.04026918	-0.223969857	-0.141354533	0.149632121
##	PC33	PC34	PC35	PC3

6

## MealInexpensive	-0.064962401	-0.008804325	-0.1031045252	-0.05230281
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8

## MealFor2 0	0.065006246	-0.007520308	-0.3322349162	0.02804673
## McMealMcDonalds 8	-0.069699063	-0.283755824	0.0398559934	-0.00465500
## DomesticBeer 7	0.211580437	-0.030159226	-0.0359912047	-0.08311171
## ImportedBeer 5	0.327272753	-0.093213894	-0.1724415893	-0.22760911
## CokeOrPepsi 1	-0.055144946	0.036467204	0.0713269402	-0.10103821
## Water1Litre 3	0.012661085	-0.181085572	-0.0300275664	0.06420635
## Milk1Litre 3	0.093752250	0.112015515	0.1065387745	-0.31225324
## LoafofBread 2	0.031567533	0.324661656	-0.1333684849	0.10810344
## Eggs 7	-0.052177871	0.033648523	-0.1824412839	0.10746719
## LocalCheese 1	-0.062748713	0.034490631	-0.0786941555	-0.03000795
## Water2Litre 6	-0.116230758	-0.018922784	-0.1282031389	-0.03200577
## BottleofWine 0	-0.134045523	-0.002263568	0.0177348161	0.00391276
## Domestic1LitreBeer 3	-0.089222397	-0.124854321	0.0619406327	0.23251631
## Imported1LitreBeer 0	-0.106787051	0.194802726	-0.0669706184	-0.17959121
## Cigarettes20Pack 9	0.290666713	0.045755872	-0.0525692930	-0.00716284
## OnewayTicket 1	-0.088399659	-0.089200486	-0.0156687216	0.06080712
## ChickenBreasts 6	-0.384432118	0.038615674	0.2477270880	-0.10604879
## MonthlyPass 1	-0.070239735	-0.116783046	0.0886235767	-0.09172906
## Gasoline1Litre 9	0.186736181	-0.034885590	0.0530572164	0.05159759
## VWGolf 2	0.097348352	-0.088883206	-0.0571153505	0.09608020
## Apartment1BD 2	-0.049454801	-0.083977581	-0.0465287759	-0.12806628
## Apartment1BD0OC 9	-0.094444347	-0.069709300	0.0626731962	-0.17688535
## Apartment3BDICC 3	-0.001253546	-0.111232940	-0.0653177754	-0.18281352
## Apartment3BD0OC 3	-0.089201119	-0.058434225	0.0630003654	-0.17189304
## BasicUtilities 3	-0.048697309	0.134312636	-0.0236444010	-0.12955590

## PrepaidMobile1MIn 2	-0.102805541	-0.106487259	-0.0232991883	0.05585434
## Internet 2	0.117501114	0.282040864	0.0224841645	0.17605506
## GymFees 3	-0.080583663	-0.068736026	-0.0267022999	0.08200983
## TennisCourtFeesPerHour 3	0.003612576	0.022571826	0.0138707559	-0.01235033
## CinemaPerPerson 4	0.046412016	-0.072174644	-0.0392207260	-0.11597487
## PairofJeans 8	0.254634907	-0.036565608	0.1836932005	-0.06762044
## SummerDress 1	-0.058352356	0.108424731	-0.1170003374	0.05674012
## NikeRunningShoes 3	0.023111923	-0.145273463	0.0952717815	-0.07046969
## LeatherShoes 7	0.102988846	0.100283231	-0.0184172716	0.14338725
## AptPricePerSquareM 6	-0.006817559	0.045483804	-0.1697975416	0.24760087
## AptPricePerSqMOOC 4	-0.090281305	0.048436907	0.0311698197	0.14557613
## AvgMnthlyNetSalary 0	-0.001271912	-0.044011171	0.1321206478	0.23873145
## MortgageInterest 7	0.112934813	-0.068845627	0.0415371232	-0.02613996
## TaxiStartingFare 7	-0.214734557	0.091007538	-0.0798837676	0.09906013
## Taxi1KM 4	0.023870812	-0.024315277	-0.0004946969	0.04565117
## Taxi1HRWaiting 0	0.109348301	0.334329016	0.0697678069	-0.16488426
## Apples1KG 1	0.263760121	-0.087018624	0.3652264936	-0.14875139
## Oranges1KG 8	-0.004475613	-0.181144267	-0.3704191164	0.06175048
## Potato1KG 6	0.101487539	-0.167434786	0.1161395465	0.04853309
## Lettuce1Head 0	-0.070260227	0.073381991	0.2578143485	0.10931612
## CappucinoReg 3	-0.023925624	-0.245584812	0.3180246851	0.27243224
## WhiteRice 0	0.058805039	0.111759460	0.0007774745	-0.14980650
## Tomato1KG 5	-0.126448547	-0.046809543	-0.0757809775	-0.02807151
## Banana1KG 4	-0.256000375	0.150656170	0.0614070004	-0.17822378
## Onion1KG 2	0.122461085	0.022114949	-0.1325764459	-0.03886432

## BeefRound1KG 9	0.184138396	-0.038233681	-0.0288132804	0.20391954
## ToyotaCorolla 9	-0.144509479	0.171287397	0.0397384327	-0.01324970
## PreschoolperMonth 8	0.145214653	0.375908833	0.2274329291	0.26818687
## 40	PC37	PC38	PC39	PC
## MealInexpensive 06	-0.0595440933	-0.098654997	0.308243690	0.19665674
## MealFor2 95	-0.0009676442	0.092594871	-0.089366510	0.08801706
## McMealMcDonalds 19	0.0117877150	-0.070611569	-0.301706320	-0.03752096
## DomesticBeer 82	-0.0645025647	-0.033461748	-0.141635285	0.21705814
## ImportedBeer 23	0.1049101696	0.011859871	-0.032853599	0.11762192
## CokeOrPepsi 70	0.0962953737	0.269626379	-0.023274139	-0.08336279
## Water1Litre 17	0.1050357338	0.152832519	0.198526789	-0.02609367
## Milk1Litre 91	0.1454606088	0.052635230	-0.087948896	0.05901742
## LoafofBread 33	0.0127883036	-0.121557645	-0.398557298	-0.09129276
## Eggs 46	-0.1329894739	0.062680435	0.131536001	0.10761211
## LocalCheese 56	-0.0306690346	0.097471729	0.040277514	0.00628711
## Water2Litre 62	-0.0340124585	-0.006925366	0.096435207	0.24128424
## BottleofWine 23	0.1790430564	0.097743436	0.160981005	-0.00975997
## Domestic1LitreBeer 41	-0.0850370160	0.046417936	-0.231634702	0.16470930
## Imported1LitreBeer 81	0.0214343846	-0.115956805	0.138517415	-0.17616118
## Cigarettes20Pack 41	0.0087151353	-0.105019595	0.016882825	-0.34501973
## OnewayTicket 22	0.2111855997	-0.372115788	-0.047406870	0.20466726
## ChickenBreasts 33	-0.0430399466	-0.225875678	-0.233753718	-0.16251009
## MonthlyPass 06	-0.2704257115	0.220545720	-0.058152334	-0.09206372
## Gasoline1Litre 08	0.0921155225	0.148393616	-0.055773107	-0.01445031
## VWGolf 99	-0.0715390462	0.031586717	-0.051037548	-0.01910046

## Apartment1BD 74	0.0150178423	-0.024442498	-0.064796329	-0.15025200
## Apartment1BD0OC 72	0.1578510141	-0.012693128	0.110428556	0.03105673
## Apartment3BDICC 67	-0.1990978446	-0.010983921	-0.031355708	-0.19655258
## Apartment3BD0OC 21	0.0267469714	0.060366629	0.093670579	-0.00816074
## BasicUtilities 64	-0.0645413630	-0.062064093	-0.105599175	-0.01447104
## PrepaidMobile1MIn 71	0.0749119540	0.008361991	0.008867038	-0.02247896
## Internet 26	0.1803936250	0.068363455	0.131353925	-0.14920477
## GymFees 40	-0.1376385634	0.060508027	-0.008753786	0.06135770
## TennisCourtFeesPerHour 43	0.0006416143	-0.016899181	-0.022754906	-0.13027764
## CinemaPerPerson 68	-0.1957033938	-0.104866333	0.336457583	0.04622273
## PairofJeans 75	0.2401470851	-0.176282281	-0.006809289	-0.09534365
## SummerDress 12	-0.0099171874	0.065085006	0.014183381	0.00060015
## NikeRunningShoes 14	0.0968365086	0.081850201	-0.010434412	0.02398793
## LeatherShoes 44	-0.2736201907	-0.213121538	0.037196682	0.03863291
## AptPricePerSquareM 96	0.0588311801	-0.041522872	-0.017650314	-0.06442662
## AptPricePerSqMOOC 01	0.0561784101	-0.014488819	0.057337197	0.05802894
## AvgMnthlyNetSalary 14	0.1263352850	-0.107747759	-0.007466480	0.07503196
## MortgageInterest 34	0.0454033092	0.016055770	-0.011435336	-0.07625274
## TaxiStartingFare 77	-0.1191111332	0.252453919	0.014826223	0.00965761
## Taxi1KM 68	0.1688537780	-0.164459743	0.017245611	-0.01526788
## Taxi1HRWaiting 51	-0.2043479117	0.234312626	-0.123841629	0.06242210
## Apples1KG 45	-0.0283003268	-0.040900557	-0.036465220	0.28040783
## Oranges1KG 23	0.2001519693	0.055125096	-0.209223756	-0.23153649
## Potato1KG 80	-0.1894034939	0.275531448	-0.101181427	-0.01613758
## Lettuce1Head 89	-0.0869096166	0.054118316	0.182221565	-0.10652085

## CappucinoReg	82	-0.0673223694	-0.044398497	0.036439048	-0.21582973
## WhiteRice	53	0.1122233483	0.075224597	0.137229376	-0.29327056
## Tomato1KG	65	0.3589861020	0.193769170	-0.020923550	0.26726075
## Banana1KG	23	0.0372600785	-0.142787902	-0.026067086	0.05662426
## Onion1KG	74	-0.2891247107	-0.316547223	-0.005468723	0.08379113
## BeefRound1KG	28	-0.0080048786	-0.076076184	0.272031973	-0.11079586
## ToyotaCorolla	06	0.0718451382	-0.079073823	0.082841408	0.00247770
## PreschoolperMonth	00	0.1003143416	0.121206390	-0.067195006	0.18570593
##		PC41	PC42	PC43	PC44
## MealInexpensive		0.191134005	-0.285743907	-0.362197870	-0.139009821
## MealFor2		0.077900305	0.107839871	0.173184356	0.155323049
## McMealMcDonalds		-0.250672892	0.147577399	0.084525128	0.030184893
## DomesticBeer		-0.046400879	0.036600465	0.091452693	-0.129881204
## ImportedBeer		0.093186037	0.169024352	-0.201644870	0.040940601
## CokeOrPepsi		0.079320539	0.056752702	-0.123839519	-0.008058045
## Water1Litre		0.041337709	0.002609029	0.149970974	0.083280851
## Milk1Litre		-0.012366245	-0.063636164	0.086767079	0.138334167
## LoafofBread		0.045539690	-0.063853342	-0.178924382	0.152448511
## Eggs		-0.237275486	0.217406996	0.032148861	-0.149542110
## LocalCheese		0.123570438	0.023535674	-0.078146175	0.175712526
## Water2Litre		0.091781761	-0.251707636	0.125683524	-0.049643292
## BottleofWine		-0.033061678	-0.113245718	-0.068717093	-0.123198553
## Domestic1LitreBeer		-0.120394556	-0.226399482	-0.031463709	0.254072568
## Imported1LitreBeer		0.059450268	0.182596257	0.115987294	-0.147275884
## Cigarettes20Pack		-0.080155114	-0.072372725	-0.145244157	0.052158668
## OnewayTicket		0.226221032	0.263626447	0.061044918	-0.167581957
## ChickenBreasts		-0.105113001	-0.124749182	-0.133316351	-0.206828994
## MonthlyPass		0.037639776	0.131814446	-0.036803713	0.217485351
## Gasoline1Litre		0.154722125	-0.063343957	-0.019517314	-0.034239308
## VWGolf		0.027301535	-0.038294115	-0.080522169	-0.425666785
## Apartment1BD		0.067123081	-0.177549921	0.017691299	0.070285857
## Apartment1BD0OC		-0.011374513	0.032176897	0.197852943	0.125341496
## Apartment3BDICC		0.063050567	-0.097506839	-0.076299145	-0.155484870
## Apartment3BD0OC		-0.048858915	0.059218859	0.144942336	-0.067338047
## BasicUtilities		-0.026183541	-0.104023747	0.074796736	0.026971564
## PrepaidMobile1MIn		0.022114777	-0.114000684	0.126117295	-0.003798013
## Internet		-0.152693559	-0.011187852	-0.066437459	0.020057883
## GymFees		0.196618317	-0.096540720	0.003377736	0.010193120
## TennisCourtFeesPerHour		-0.062551162	-0.072735771	0.017662024	-0.057237760
## CinemaPerPerson		-0.462192357	-0.033774799	-0.129929784	0.089368114
## PairofJeans		-0.021562833	-0.014846054	-0.056095345	-0.001358553
## SummerDress		0.134527154	0.038490209	-0.031009236	-0.074676703

## NikeRunningShoes	0.081700264	0.001592781	-0.004581583	0.033661531
## LeatherShoes	-0.230605553	0.097404288	0.019336566	0.058049953
## AptPricePerSquareM	-0.127526462	-0.039879508	-0.301510664	-0.041706219
## AptPricePerSqMOOC	-0.055474540	0.123283771	0.231452761	-0.143295260
## AvgMnthlyNetSalary	-0.056652823	-0.150713577	0.141717919	0.048533150
## MortgageInterest	-0.035571941	-0.044104316	0.031788872	0.019152567
## TaxiStartingFare	0.009903370	0.127439421	0.024625593	-0.008838686
## Taxi1KM	0.093115935	-0.003943657	-0.096408098	0.013814157
## Taxi1HRWaiting	0.053213523	-0.339150057	0.227901794	-0.108636050
## Apples1KG	-0.170599163	-0.054538880	0.046481420	-0.120302906
## Oranges1KG	-0.149471605	-0.079374392	0.262843680	-0.196176231
## Potato1KG	-0.002344646	0.228547687	-0.203649209	-0.083663886
## Lettuce1Head	0.024203777	0.154719891	0.012206320	-0.097924678
## CappucinoReg	0.295156126	0.016803969	-0.031232130	0.145508603
## WhiteRice	0.050177200	0.173592979	0.033006683	0.025169452
## Tomato1KG	-0.114282558	-0.008908647	-0.300525036	0.137795751
## Banana1KG	0.073961185	0.058088715	-0.074831327	0.042375898
## Onion1KG	0.283237189	0.163685823	0.065494885	0.185016962
## BeefRound1KG	0.079159584	-0.282208320	0.217001568	0.106081258
## ToyotaCorolla	-0.152816601	0.061045810	0.073381221	0.384446262
## PreschoolperMonth	0.063831478	0.152512305	0.058536912	-0.113615207
##	PC45	PC46	PC47	P
C48				
## MealInexpensive	-1.429668e-01	-1.146787e-01	0.0818318544	0.149703
067				
## MealFor2	1.847032e-01	-5.331235e-01	-0.4357268485	-0.032694
881				
## McMealMcDonalds	-7.253750e-02	2.864139e-01	-0.0444397416	-0.055310
870				
## DomesticBeer	-1.381634e-01	-1.979791e-01	0.2498209356	-0.117969
608				
## ImportedBeer	3.047286e-01	2.594953e-01	0.0823107985	0.077702
785				
## CokeOrPepsi	-6.544329e-03	6.926395e-02	-0.3694542704	-0.165866
383				
## Water1Litre	-8.967449e-02	-1.395050e-01	0.2908131703	0.011193
173				
## Milk1Litre	-4.568276e-02	4.987569e-02	-0.0809318698	0.021036
748				
## LoafofBread	1.268201e-02	-2.083317e-01	0.2607901474	0.021252
643				
## Eggs	-2.043820e-01	1.753505e-01	-0.0532863661	0.127301
987				
## LocalCheese	-9.248091e-02	-6.729444e-03	0.0792883177	0.111948
302				
## Water2Litre	7.537334e-02	1.353482e-01	0.0230387965	-0.089419
625				
## BottleofWine	2.380197e-02	-5.695463e-02	-0.0027919955	0.068469
140				
## Domestic1LitreBeer	-3.483248e-01	-7.961510e-02	-0.0441517384	0.008953

299					
## Imported1LitreBeer	2.409277e-01	1.026461e-03	-0.0664908560	-0.037192	
393					
## Cigarettes20Pack	-8.753131e-02	-2.427664e-02	-0.0329938359	0.010539	
139					
## OnewayTicket	-1.135494e-01	1.317134e-01	0.0546624332	-0.204747	
056					
## ChickenBreasts	2.641471e-01	-1.785054e-01	0.0097622508	0.014012	
344					
## MonthlyPass	9.240178e-02	6.712351e-02	0.0158611726	0.130819	
279					
## Gasoline1Litre	5.208334e-02	3.374286e-02	0.0320638273	0.074659	
365					
## VWGolf	1.411303e-02	-3.716108e-02	-0.1821186240	0.004661	
322					
## Apartment1BD	-7.517083e-02	7.155024e-02	-0.1591958561	-0.051553	
566					
## Apartment1BD0OC	4.597294e-02	-2.520605e-02	-0.0877831615	-0.055142	
616					
## Apartment3BDICC	-1.519706e-01	5.662121e-02	0.0317530573	-0.198847	
930					
## Apartment3BD0OC	-8.356771e-02	-7.475656e-02	0.0984445354	-0.072193	
983					
## BasicUtilities	5.205591e-02	-2.647275e-02	-0.0353199292	-0.037013	
314					
## PrepaidMobile1MIn	4.336874e-02	-4.402541e-02	0.0028696401	-0.092793	
686					
## Internet	-4.488988e-02	7.653944e-02	-0.0343506521	-0.058515	
303					
## GymFees	6.728238e-02	3.027905e-02	0.1476173960	-0.006728	
702					
## TennisCourtFeesPerHour	-7.738301e-02	5.841847e-02	-0.0171592197	0.097776	
041					
## CinemaPerPerson	1.879879e-01	-1.308768e-01	0.0971946062	0.020855	
095					
## PairofJeans	-5.751747e-02	-1.005706e-01	0.0773236199	0.187476	
314					
## SummerDress	-5.857864e-02	7.397800e-02	-0.0389359959	-0.014016	
100					
## NikeRunningShoes	-7.163429e-05	-5.986325e-02	0.0492356522	0.114890	
431					
## LeatherShoes	8.215639e-02	1.573585e-01	-0.0314252303	-0.238108	
972					
## AptPricePerSquareM	-7.433921e-02	8.030562e-02	-0.2314526159	-0.062206	
918					
## AptPricePerSqMOOC	-1.601228e-02	-7.344371e-02	0.1192236249	0.131001	
465					
## AvgMnthlyNetSalary	2.258327e-01	1.933657e-01	-0.1826131859	0.597879	
619					
## MortgageInterest	3.055757e-02	-4.316197e-03	0.0008473215	-0.016302	

560					
## TaxiStartingFare	-8.970245e-02	-6.635214e-02	-0.0246259753	0.109152	
623					
## Taxi1KM	-8.451783e-03	-3.626644e-02	0.0298265863	0.009792	
380					
## Taxi1HRWaiting	1.640110e-02	3.000014e-01	0.0721381247	-0.003794	
897					
## Apples1KG	-1.753952e-01	-1.969933e-01	-0.2359862691	-0.044300	
698					
## Oranges1KG	2.154877e-02	9.489208e-03	0.1800137720	0.079658	
965					
## Potato1KG	2.583715e-01	-1.062674e-01	0.2113284880	0.025178	
914					
## Lettuce1Head	-5.637855e-02	-1.019112e-02	-0.0403438221	0.049275	
304					
## CappucinoReg	4.590310e-02	5.433460e-02	-0.0039108570	-0.196229	
749					
## WhiteRice	-3.795551e-01	-1.950438e-02	0.0124396300	0.086982	
471					
## Tomato1KG	8.098213e-02	1.679991e-01	0.0014605959	-0.203462	
151					
## Banana1KG	-1.184182e-02	-3.956731e-02	0.0022417074	0.073646	
156					
## Onion1KG	-1.001809e-01	9.325795e-02	-0.1287731034	0.206885	
019					
## BeefRound1KG	1.972654e-01	4.626566e-05	-0.0134731341	-0.280195	
753					
## ToyotaCorolla	2.401470e-03	2.697386e-02	0.1714530900	-0.091844	
461					
## PreschoolperMonth	8.540241e-02	-4.628790e-02	0.0694682184	-0.114999	
954					
##	PC49	PC50	PC51	PC	
52					
## MealInexpensive	0.0487376849	0.163110867	0.059338770	-0.07993896	
42					
## MealFor2	0.0257545018	-0.184216303	0.066689584	0.00798829	
85					
## McMealMcDonalds	0.1015572899	0.005235678	-0.031263539	0.00316691	
35					
## DomesticBeer	0.2845146882	0.037320810	-0.487336696	0.04939088	
10					
## ImportedBeer	-0.2058817273	-0.066458403	0.370486566	-0.02381642	
92					
## CokeOrPepsi	-0.2527845579	0.239450437	-0.348731636	-0.12220063	
06					
## Water1Litre	0.2909146213	-0.235650972	0.321093479	0.14321453	
45					
## Milk1Litre	0.0203897997	-0.066469335	-0.046646558	0.03689426	
38					
## LoafofBread	0.0352053633	0.199793941	0.025972640	-0.05030685	

78					
## Eggs	-0.0180896449	-0.071189469	0.084200513	-0.02931334	
41					
## LocalCheese	-0.0014945957	-0.012121654	-0.031337036	0.01924048	
40					
## Water2Litre	-0.1976893621	-0.089626060	-0.184232371	0.05246053	
72					
## BottleofWine	0.0215527146	-0.004048836	-0.018392183	-0.02231527	
68					
## Domestic1LitreBeer	-0.3285727499	-0.008120029	0.125138294	-0.02436391	
03					
## Imported1LitreBeer	0.2118835687	0.014068218	-0.053046313	0.02903860	
86					
## Cigarettes20Pack	0.1123058835	0.173095430	-0.021616629	-0.05432583	
76					
## OnewayTicket	-0.1484687766	-0.082804559	-0.002501281	0.00727155	
04					
## ChickenBreasts	0.0083349797	-0.078647020	0.146648242	0.04958553	
83					
## MonthlyPass	0.1456894191	0.076057148	-0.046778200	-0.00401108	
66					
## Gasoline1Litre	0.0977060648	0.088655537	0.014958356	-0.02647060	
02					
## VWGolf	0.0566261553	0.125021755	0.089577640	-0.03112994	
04					
## Apartment1BD	0.0241793934	-0.203182408	0.091764405	-0.38664726	
16					
## Apartment1BD0OC	-0.0892595148	0.379609771	0.195103515	0.06606307	
45					
## Apartment3BDICC	0.0388557340	-0.458336524	-0.141805599	-0.07211867	
61					
## Apartment3BD0OC	-0.0635302840	0.272467011	-0.033450534	0.45605153	
35					
## BasicUtilities	-0.0341967088	-0.052758684	0.063121081	0.04599154	
59					
## PrepaidMobile1MIn	0.0466422089	-0.040310411	0.053169478	0.04665341	
32					
## Internet	0.0829375344	-0.012440376	0.032730018	-0.05779989	
08					
## GymFees	0.0434368258	0.133682434	0.005670819	-0.00440623	
87					
## TennisCourtFeesPerHour	-0.0130261502	-0.011382301	0.015368268	0.02933389	
57					
## CinemaPerPerson	-0.2278623147	0.023822869	-0.109803041	-0.07850849	
29					
## PairofJeans	-0.1964906613	-0.118777260	-0.106033637	0.03614368	
04					
## SummerDress	-0.0003586595	0.012152113	-0.011795326	0.00284755	
71					
## NikeRunningShoes	-0.0199689181	0.011630644	-0.028623177	0.02318949	

31					
##	LeatherShoes	0.1619016522	0.134232798	0.122286930	-0.06574189
88					
##	AptPricePerSquareM	0.0255144271	-0.078524045	0.041452700	0.48613318
73					
##	AptPricePerSqMOOC	-0.0084253220	0.145183732	0.035062445	-0.52592005
82					
##	AvgMnthlyNetSalary	0.1732525568	-0.126048243	-0.254641240	0.08431864
43					
##	MortgageInterest	0.0162586009	0.005256925	0.012114110	0.00746531
44					
##	TaxiStartingFare	0.0461595366	0.001006755	0.021418919	0.00036280
45					
##	Taxi1KM	-0.0755842134	-0.011004018	-0.065997164	-0.00838010
15					
##	Taxi1HRWaiting	-0.0155781601	0.005690173	0.143625578	0.08846479
52					
##	Apples1KG	0.1613125337	0.031880113	0.206551323	-0.03604124
85					
##	Oranges1KG	-0.1687607193	0.154369316	0.008434803	-0.00391742
48					
##	Potato1KG	-0.1981097366	-0.124848445	-0.108460916	0.02743925
11					
##	Lettuce1Head	-0.1275476197	-0.083216523	0.021575342	0.01047739
55					
##	CappucinoReg	0.0953315531	0.117769808	0.051032396	-0.00408427
03					
##	WhiteRice	-0.04444400743	-0.068718993	0.005003077	0.00280970
94					
##	Tomato1KG	0.3412597018	0.016318424	-0.070758157	-0.12663223
16					
##	Banana1KG	0.0266651867	-0.064334579	0.048791091	0.01715363
66					
##	Onion1KG	0.0135499498	0.091069584	-0.064295848	0.05472575
87					
##	BeefRound1KG	-0.0779074203	-0.037897099	-0.099324431	0.00015460
36					
##	ToyotaCorolla	-0.0532103708	-0.134164006	-0.085022511	-0.00676844
97					
##	PreschoolperMonth	-0.1474773713	-0.154834204	0.028739823	0.02612435
72					
##		PC53	PC54		
##	MealInexpensive	-0.040926658	-0.0021474407		
##	MealFor2	-0.149240105	-0.0206055389		
##	McMealMcDonalds	-0.081806224	-0.0037375392		
##	DomesticBeer	0.279333705	0.0366014921		
##	ImportedBeer	-0.111878366	-0.0389141748		
##	CokeOrPepsi	-0.016209489	-0.0012196268		
##	Water1Litre	0.057056628	0.0087740033		
##	Milk1Litre	-0.040042368	0.0012611924		

## LoafofBread	-0.020797659	0.0252725453
## Eggs	0.054913401	0.0134162581
## LocalCheese	0.042963351	0.0277526774
## Water2Litre	0.053364291	0.0081428538
## BottleofWine	0.051747043	0.0001994061
## Domestic1LitreBeer	-0.122439373	0.0215815288
## Imported1LitreBeer	0.042775598	-0.0152382316
## Cigarettes20Pack	-0.072972317	0.0078518385
## OnewayTicket	0.073718276	-0.0378267292
## ChickenBreasts	-0.022629711	0.0048752715
## MonthlyPass	-0.012669617	-0.0068084683
## Gasoline1Litre	-0.015636303	-0.0022688660
## VWGolf	-0.075626756	0.0065703304
## Apartment1BD	0.491646180	-0.4825009654
## Apartment1BD0OC	0.299796026	0.5820337230
## Apartment3BDICC	-0.377648948	0.3930530284
## Apartment3BD0OC	-0.357980190	-0.5081737176
## BasicUtilities	0.003340740	-0.0042706840
## PrepaidMobile1MIn	0.018473048	-0.0016413591
## Internet	-0.038388968	0.0023535455
## GymFees	0.026125079	0.0032998560
## TennisCourtFeesPerHour	0.021314865	0.0173861707
## CinemaPerPerson	0.016682347	-0.0262752857
## PairofJeans	0.009170703	0.0110123701
## SummerDress	0.011318553	0.0083825410
## NikeRunningShoes	0.023830675	0.0045413523
## LeatherShoes	0.017910131	-0.0237164093
## AptPricePerSquareM	0.260267572	0.0273604923
## AptPricePerSqMOOC	-0.217891827	-0.0202651116
## AvgMnthlyNetSalary	-0.060017710	0.0404046876
## MortgageInterest	-0.003168412	-0.0031590041
## TaxiStartingFare	0.047251084	0.0323642396
## Taxi1KM	-0.035688948	0.0103333867
## Taxi1HRWaiting	0.018575339	0.0082170383
## Apples1KG	0.027336814	-0.0064044135
## Oranges1KG	0.022652712	0.0190805483
## Potato1KG	0.226280209	-0.0054119788
## Lettuce1Head	0.007574130	-0.0084231517
## CappucinoReg	-0.037291981	-0.0043590933
## WhiteRice	0.017867987	0.0118756342
## Tomato1KG	-0.196107974	-0.0176161846
## Banana1KG	0.001177722	-0.0028967086
## Onion1KG	-0.056410869	-0.0248139173
## BeefRound1KG	-0.056128592	-0.0283601292
## ToyotaCorolla	-0.007273613	-0.0108357173
## PreschoolperMonth	-0.014084245	0.0026938504

#ALL the variabiles in PCA 1 are negative. hence all contribute to GDP

#In PCA 2 DomesticBeer, ImportedBeer, Milk1Liter, LoafofBread, Water2Litre, BottleofWine, Domestic1LitreBeer, Imported1LitreBeer, abd Cigarettes20Pack hav

e positive values

#Whereas MealInexpensive, MealFor2, McMealMcDonalds, CokeOrPepsi, Water1Litre, Eggs, LocalCheese, OnewayTicket, and ChickenBreasts have negative values

#Negative values are important than positive values

#That is GDF is significantly influenced by if only buy negative valued variables

#In the case of 3rd PCA MealFor2, McMealMcDonalds, DomesticBeer, ImportedBeer, milk1Litre, Eggs, LocalCheese, BottleofWine, and Domestic1LitreBeer have negative values

#whereas MealInexpensive, CokeOrPepsi, Water1Litre, Water2Litre, Cigarettes20Pack OnewayTicket and ChickenBreasts have positive values

#MealInexpensive, CokeOrPepsi, Water1Litre, etc positively influence GDP

GDPdataTrainSet.pca.normdata\$rotation # eigen vector / rotation matrix / transformation matrix

##	PC1	PC2	PC3	PC4
## MealInexpensive	0.16129485	0.131439310	-0.097449538	0.098067275
## MealFor2	0.16974396	0.096653111	-0.008732676	0.140311935
## McMealMcDonalds	0.15692693	0.136291904	0.008695408	0.164603186
## DomesticBeer	0.15656357	-0.064088066	0.092619426	0.207671145
## ImportedBeer	0.15095548	-0.147636257	0.087924868	0.181757182
## CokeOrPepsi	0.14697262	0.233630177	-0.045288505	0.048889105
## Water1Litre	0.14711468	0.208575518	-0.084450776	0.045306962
## Milk1Litre	0.08962375	-0.113482240	0.248504107	-0.131161985
## LoafofBread	0.16734952	-0.028820403	-0.092048120	-0.007123153
## Eggs	0.15674918	0.101595579	0.048379691	0.060761199
## LocalCheese	0.13000863	-0.026126058	0.123870874	-0.231295369
## Water2Litre	0.14952559	-0.062136250	-0.152992668	0.008119030
## BottleofWine	0.09714495	-0.288992344	0.166927736	0.100190346
## Domestic1LitreBeer	0.09772663	-0.246829519	0.123087345	0.286824154
## Imported1LitreBeer	0.07157934	-0.274802478	0.142982357	0.283013582
## Cigarettes20Pack	0.13955641	-0.000192280	-0.104306346	0.095247248
## OnewayTicket	0.15823541	0.126555400	-0.090518849	0.094341355
## ChickenBreasts	0.16677886	0.071000352	-0.059197002	0.034213561
## MonthlyPass	0.15424734	0.016406173	-0.086827677	0.016252847
## Gasoline1Litre	0.04861856	0.311166334	0.183160227	-0.117944994
## VWGolf	0.06454859	-0.035075907	0.322197940	-0.127322319
## Apartment1BD	0.16555516	-0.065946946	-0.037464754	-0.095363829

## Apartment1BDOOC	0.16593329	-0.041431492	-0.065139351	-0.067910991
## Apartment3BDICC	0.16083960	-0.094831655	0.001924849	-0.148077694
## Apartment3BDOOC	0.16555802	-0.063295666	-0.033643685	-0.092753376
## BasicUtilities	0.09939399	0.215020688	0.006609223	-0.110940980
## PrepaidMobile1MIn	0.08450776	0.045822763	-0.099931235	0.073187445
## Internet	0.12833704	-0.142298877	-0.142346030	0.174980749
## GymFees	0.11518932	-0.165771927	0.225812292	-0.014430538
## TennisCourtFeesPerHour	0.09608928	0.077668261	0.107240490	0.230762288
## CinemaPerPerson	0.17376705	0.044432434	-0.048303798	0.038148710
## PairOfJeans	0.08353097	0.308405043	0.240947505	0.062836881
## SummerDress	0.04965052	-0.098329723	0.201194756	0.250268529
## NikeRunningShoes	0.08161500	0.121024732	0.245550830	0.123967412
## LeatherShoes	0.13993672	0.171150660	0.114379432	-0.032681723
## AptPricePerSquareM	0.12398159	-0.032683387	0.182961877	-0.299388219
## AptPricePerSqMOOC	0.13080389	-0.005364819	0.165011352	-0.264334577
## AvgMnthlyNetSalary	0.16532970	-0.077750523	-0.132897981	-0.006480517
## MortgageInterest	-0.09522553	-0.097373803	0.017318535	0.052175566
## TaxiStartingFare	0.14275140	0.181173611	0.053344740	0.088829482
## Taxi1KM	0.13488791	0.065373870	-0.147332699	-0.007555507
## Taxi1HRWaiting	0.15681662	0.155010241	-0.059193157	0.100759025
## Apples1KG	0.13330979	-0.206196094	-0.082076173	-0.144657802
## Oranges1KG	0.14508126	-0.130033829	-0.084859897	-0.172757225
## Potato1KG	0.15775094	-0.117332574	-0.085247461	-0.143578181
## Lettuce1Head	0.15282023	-0.018601443	-0.019945376	0.046998826
## CappucinoReg	0.15847468	-0.097471159	0.033108350	0.080624336
## WhiteRice	0.14534146	-0.095850558	-0.170191067	-0.065435258
## Tomato1KG	0.16121374	-0.019165210	-0.112594208	-0.111445866
## Banana1KG	0.11911303	0.023201220	0.152984365	-0.090936492
## Onion1KG	0.15185067	-0.116112767	-0.102868982	-0.171943500
## BeefRound1KG	0.14832905	0.038216154	0.122929022	-0.083829354
## ToyotaCorolla	0.04522050	-0.027734791	0.330983512	-0.090837769
## PreschoolperMonth	0.14368983	-0.066729004	-0.138137998	-0.076296181
##	PC5	PC6	PC7	PC
8				
## MealInexpensive	-0.050866908	0.0807728468	0.04366504	-0.054058359
9				
## MealFor2	-0.001284243	0.0894550666	0.01299348	0.048678247
0				
## McMealMcDonalds	0.006628627	0.0282130045	0.07946622	0.004586222
0				
## DomesticBeer	-0.121140181	-0.0467425008	-0.01047789	0.130525119
0				
## ImportedBeer	-0.112504698	-0.0499001457	0.03991282	0.152792358
9				
## CokeOrPepsi	-0.018287169	-0.0370273263	0.11939970	0.059767022
8				
## Water1Litre	-0.039105356	0.0114955248	0.13046602	0.047324697
5				
## Milk1Litre	0.124779792	-0.2228449669	-0.18383050	0.017754428
6				

## LoafofBread 8	0.083804450	0.0574637898	0.12840732	0.079586370
## Eggs 7	0.026557642	-0.1141785794	-0.07041589	0.010557232
## LocalCheese 8	0.085888279	-0.0042464143	0.01657762	0.115314365
## Water2Litre 7	0.062425050	0.0237745324	0.10249317	-0.071724714
## BottleofWine 9	-0.003739422	-0.0795800725	0.08705888	0.129795417
## Domestic1LitreBeer 2	-0.137875743	-0.1682317325	-0.05017518	-0.019927385
## Imported1LitreBeer 8	-0.101277895	-0.1976765866	-0.02639254	-0.004729357
## Cigarettes20Pack 5	-0.240009880	-0.1300116054	-0.02624238	-0.232425755
## OnewayTicket 5	-0.098607168	-0.0481170729	0.10688148	-0.041764975
## ChickenBreasts 0	0.042637128	0.0263991852	0.05180241	0.079075724
## MonthlyPass 8	-0.166278971	-0.0091329312	-0.03028172	-0.242845098
## Gasoline1Litre 1	-0.161432040	-0.2363582258	-0.02047900	0.071853222
## VWGolf 0	-0.093514860	0.0368180586	0.43985052	-0.233537428
## Apartment1BD 2	-0.188328121	0.1933800477	-0.07446875	0.017078772
## Apartment1BD0OC 4	-0.187127708	0.1978806465	-0.06792769	0.017339534
## Apartment3BDICC 4	-0.170124057	0.1630899992	-0.11529893	0.037879573
## Apartment3BD0OC 2	-0.174410251	0.1880585135	-0.10321317	0.049096940
## BasicUtilities 1	-0.023351115	-0.0411355034	-0.13584266	0.117777040
## PrepaidMobile1MIn 0	0.003837996	-0.4039543807	-0.21239943	-0.497254890
## Internet 9	0.016005894	0.0042886665	-0.01543578	-0.029524431
## GymFees 4	0.013473644	-0.0020577346	-0.23751223	0.036357636
## TennisCourtFeesPerHour 6	0.246498291	0.0635222722	-0.07493970	0.166674466
## CinemaPerPerson 6	-0.044181813	-0.0063236676	-0.05438254	0.014607210
## PairofJeans 5	0.032955926	0.0421087946	-0.12396572	-0.000854134
## SummerDress 2	0.215690306	0.3568411039	-0.16472303	-0.129458387

## NikeRunningShoes 3	0.183862104	0.3071177519	-0.08940377	-0.266369131
## LeatherShoes 3	0.206030875	0.1576456223	-0.12158530	-0.022724919
## AptPricePerSquareM 2	-0.154281403	-0.0096749405	-0.16068829	0.014962603
## AptPricePerSqMOOC 9	-0.163069862	0.0041149394	-0.20746397	0.021292924
## AvgMnthlyNetSalary 1	-0.100098427	0.1338088393	0.04730733	0.051040466
## MortgageInterest 9	0.098820422	0.2512302195	0.00746212	-0.380137872
## TaxiStartingFare 2	0.017803285	-0.0749510625	0.07677888	0.042394533
## Taxi1KM 6	0.053493525	-0.0627519302	-0.02836553	-0.119799424
## Taxi1HRWaiting 0	-0.019771893	-0.0105582544	0.13891871	-0.035231478
## Apples1KG 1	0.200615887	-0.0476467654	0.14045827	0.009405806
## Oranges1KG 2	0.223719656	-0.0367064999	0.05869990	-0.003295534
## Potato1KG 3	0.155906354	-0.0623089280	0.03087516	-0.113950142
## Lettuce1Head 6	0.165991475	-0.1287779240	0.07481916	0.090556781
## CappucinoReg 8	0.021309577	-0.0006878552	0.01330612	0.213479321
## WhiteRice 7	0.164999787	0.0414504712	0.09624321	0.010116093
## Tomato1KG 2	0.199325469	0.0078363478	-0.01763858	0.002251798
## Banana1KG 3	0.170280963	-0.1851219268	-0.05883164	-0.239044660
## Onion1KG 1	0.141676353	-0.0674724536	0.07054741	-0.065170290
## BeefRound1KG 0	0.227202984	-0.1067664671	0.06947581	0.047697744
## ToyotaCorolla 4	-0.181659289	0.0859420782	0.51563402	-0.159622421
## PreschoolperMonth 3	-0.195688191	0.1759223667	-0.16812881	-0.141611944
##	PC9	PC10	PC11	PC
##				
## MealInexpensive 46	0.006949559	-0.0001871233	0.010421624	-0.02516381
## MealFor2 61	0.070842999	-0.0432963829	-0.078253506	0.04278753
## McMealMcDonalds 27	0.055695792	-0.0516856287	-0.068456220	-0.00688109

## DomesticBeer 04	0.015407198	0.0839698710	-0.053304798	-0.14124265
## ImportedBeer 09	0.018856664	0.0812309667	-0.041512480	-0.10738861
## CokeOrPepsi 93	-0.012461240	0.0426586949	0.064927131	-0.14943738
## Water1Litre 76	0.039765894	0.0141193425	0.176710093	-0.09295454
## Milk1Litre 01	0.310801171	-0.2884826190	0.055995848	0.04116279
## LoafofBread 81	0.163461503	-0.0716033835	-0.041424171	-0.05282036
## Eggs 60	0.147241580	-0.1360798695	-0.082555051	-0.23880948
## LocalCheese 58	0.094915351	-0.1332366045	0.007865879	0.03758349
## Water2Litre 56	0.219014506	-0.1513757449	0.056367920	-0.05256037
## BottleofWine 63	0.035638562	-0.1796620709	0.057105442	0.05385192
## Domestic1LitreBeer 05	-0.063806588	0.1376545480	0.092795149	-0.07867462
## Imported1LitreBeer 57	-0.054764516	0.1419432538	0.060279167	0.04895519
## Cigarettes20Pack 91	0.121987645	0.0237418709	0.378823089	0.05986333
## OnewayTicket 25	0.060210980	0.0291535352	0.111607789	0.12783717
## ChickenBreasts 94	0.215622001	-0.0720517678	0.022940264	-0.03606281
## MonthlyPass 49	-0.033180652	0.0392490025	0.116478103	0.27974116
## Gasoline1Litre 91	0.044146484	0.0979160392	-0.183433931	0.01355991
## VWGolf 21	-0.190592779	-0.1824848820	-0.059583471	-0.06906458
## Apartment1BD 29	-0.024729505	-0.0146201837	-0.074181579	-0.00816440
## Apartment1BD0OC 20	-0.005117369	-0.0259664618	-0.083242925	-0.03625566
## Apartment3BDICC 35	-0.019478234	-0.0028066759	-0.084786503	-0.00067769
## Apartment3BD0OC 69	0.004260919	-0.0254518412	-0.107784612	-0.04293930
## BasicUtilities 58	-0.478248422	-0.0310000342	0.216206459	-0.33007796
## PrepaidMobile1MIn 44	-0.099368596	-0.2242327089	-0.127173808	0.02305472
## Internet 90	-0.084385002	-0.2965414687	-0.257072201	-0.20500892

## GymFees	-0.215690858	-0.1079144806	-0.130480046	-0.05021911
22				
## TennisCourtFeesPerHour	-0.163643049	0.0691906988	-0.316785247	0.35700015
62				
## CinemaPerPerson	-0.060975367	0.0826649380	-0.063382021	0.08536108
87				
## PairofJeans	-0.072537974	-0.0324611978	0.049768127	-0.01250691
22				
## SummerDress	-0.048400820	0.1494891818	0.270620437	0.16949390
58				
## NikeRunningShoes	0.048916777	-0.2414835299	0.142095015	-0.01356682
93				
## LeatherShoes	-0.015854328	-0.1443914397	0.055372991	-0.03117101
65				
## AptPricePerSquareM	0.163242141	0.1810367905	0.005872004	0.11823936
93				
## AptPricePerSqMOOC	0.212890334	0.1407593546	-0.004010940	0.06516592
65				
## AvgMnthlyNetSalary	-0.082217685	0.0555842556	0.044381192	-0.11267349
15				
## MortgageInterest	0.335877183	0.3328180455	-0.284548453	-0.36658312
77				
## TaxiStartingFare	0.042713507	0.1573819991	-0.123201128	0.04110808
14				
## Taxi1KM	-0.063723019	0.0083238048	-0.376438141	0.31794224
84				
## Taxi1HRWaiting	0.084254037	0.1285183191	-0.048288609	0.14079138
99				
## Apples1KG	-0.087690840	0.1258395057	0.037132827	0.15790382
34				
## Oranges1KG	-0.135047961	0.0927830033	0.149709389	0.05827562
20				
## Potato1KG	-0.034096415	-0.0243281276	-0.012889377	-0.04060075
86				
## Lettuce1Head	0.175042916	0.0056063175	0.185193389	-0.00883750
38				
## CappucinoReg	-0.002444364	0.0071722606	-0.080159481	-0.12308573
41				
## WhiteRice	-0.117367786	0.0556141224	-0.053251969	-0.07812360
47				
## Tomato1KG	-0.088028702	0.1134998402	0.089799307	0.03190431
57				
## Banana1KG	-0.140960478	0.3814396932	-0.056317069	-0.27202587
00				
## Onion1KG	-0.015922723	-0.0778654727	-0.029940357	-0.02646599
11				
## BeefRound1KG	0.064340450	0.2041669981	0.059054594	-0.01758975
21				
## ToyotaCorolla	-0.117183398	-0.0324423170	-0.055386258	0.11226596
62				

## PreschoolperMonth 37	-0.137876713	-0.0100181605	0.048926212	0.05953687
##	PC13	PC14	PC15	PC1
6				
## MealInexpensive 9	0.063337798	-0.078790062	0.021005111	-0.127639484
## MealFor2 4	-0.021714138	-0.078339142	-0.030198078	0.049507888
## McMealMcDonalds 6	0.065303788	0.179456015	0.039231427	0.006176619
## DomesticBeer 3	0.067368098	-0.086717378	-0.059928495	-0.066854500
## ImportedBeer 5	0.064307249	-0.036826632	-0.055357672	-0.057586028
## CokeOrPepsi 7	0.067653222	0.123141318	0.089895483	0.102514992
## Water1Litre 6	-0.045107088	0.051495246	0.167743355	0.183963675
## Milk1Litre 0	-0.125631623	-0.291932483	-0.003345691	-0.167708791
## LoafofBread 8	0.013586084	0.012733875	0.058264509	-0.002401556
## Eggs 0	0.015791767	0.192075035	0.166865616	-0.088553667
## LocalCheese 1	0.475828538	0.225235045	0.018462332	-0.221531357
## Water2Litre 9	-0.271464800	-0.062585190	0.309570059	0.142017746
## BottleofWine 6	0.060564859	0.028941934	-0.044885644	-0.061070963
## Domestic1LitreBeer 5	-0.009204659	0.087917881	0.027744252	0.028236790
## Imported1LitreBeer 2	-0.063739674	0.187063259	0.126399562	0.006360581
## Cigarettes20Pack 1	0.048437046	-0.012566700	0.024023355	0.164950480
## OnewayTicket 7	0.065905804	-0.123590169	-0.091254738	-0.072808261
## ChickenBreasts 1	0.016418423	0.185733566	0.094889568	-0.047977874
## MonthlyPass 9	0.002308145	-0.144618953	0.096648347	-0.059274380
## Gasoline1Litre 5	-0.194233596	0.230339825	0.258003301	-0.022678519
## VWGolf 1	0.060125721	-0.174820637	0.016996922	-0.026072838
## Apartment1BD 4	0.049406933	-0.002438621	-0.060771979	0.079094228
## Apartment1BD0OC 5	0.062866792	0.014286184	-0.018947984	0.073092139

## Apartment3BDICC 3	0.021766902	0.027414766	-0.094770234	0.060749157
## Apartment3BD0OC 2	0.046416451	0.048083049	-0.043804328	0.044287694
## BasicUtilities 4	-0.163311761	-0.161926207	0.248040325	-0.273372229
## PrepaidMobile1MIn 0	0.195477486	-0.022540237	0.016391864	-0.192454672
## Internet 4	-0.121008610	0.046403433	-0.142720411	0.099589942
## GymFees 6	-0.110659082	0.047410800	0.028809447	0.437899452
## TennisCourtFeesPerHour 1	0.338011090	-0.282616687	0.400009295	0.123903306
## CinemaPerPerson 3	-0.052831442	-0.090621492	-0.045742281	-0.153762817
## PairofJeans 3	-0.057232072	-0.028614836	-0.058780597	0.154542410
## SummerDress 4	-0.216222700	0.191879162	0.133532547	-0.237552728
## NikeRunningShoes 9	-0.017230905	0.123444347	-0.212454533	0.001063545
## LeatherShoes 2	-0.022692975	-0.031096965	-0.110562584	0.058173549
## AptPricePerSquareM 9	-0.103840300	-0.059821778	0.005845261	-0.004547719
## AptPricePerSqMOOC 2	-0.082000758	-0.029506020	0.071214210	-0.031376120
## AvgMnthlyNetSalary 3	0.040962481	0.003392056	-0.083039063	-0.055036053
## MortgageInterest 4	0.033525206	-0.189915251	0.236537978	-0.081803050
## TaxiStartingFare 2	-0.118152475	-0.142777778	-0.367774183	-0.092544236
## Taxi1KM 2	-0.342269896	0.160614031	-0.064593877	-0.039641000
## Taxi1HRWaiting 7	-0.034995036	0.002995050	-0.246347256	-0.022085231
## Apples1KG 9	-0.089890161	0.186306332	0.048554578	-0.017078997
## Oranges1KG 8	-0.047850785	-0.127012279	-0.096912238	-0.010950039
## Potato1KG 2	-0.072379232	0.112742940	0.027892670	0.020243816
## Lettuce1Head 2	0.010781730	-0.310104749	0.018923607	0.306256834
## CappucinoReg 3	-0.152489102	-0.235956593	-0.058012935	-0.328304863
## WhiteRice 0	-0.096491333	0.060329466	0.052295972	-0.187372021

## Tomato1KG 7	0.022597958	-0.117776280	0.036090775	0.091823456
## Banana1KG 6	0.100839721	-0.001140093	-0.213754731	0.201170384
## Onion1KG 5	-0.004862221	0.041094026	0.085206853	0.114264602
## BeefRound1KG 0	0.232199975	0.235599941	-0.079899376	-0.058869278
## ToyotaCorolla 9	-0.096585574	-0.010655904	0.117001922	-0.000701279
## PreschoolperMonth 6	0.244883370	-0.023337141	0.117770868	-0.045884081
##	PC17	PC18	PC19	PC20
## MealInexpensive	0.035179223	0.063901020	-0.171389409	0.022206497
## MealFor2	-0.049844673	0.033416475	0.038791697	0.106460094
## McMealMcDonalds	0.104208960	0.176144674	-0.216460122	-0.014843481
## DomesticBeer	-0.057146004	0.057685748	-0.055739101	0.156733633
## ImportedBeer	-0.069957965	-0.003462511	-0.151083820	0.068964991
## CokeOrPepsi	0.014823027	0.068810066	-0.028751704	-0.199133405
## Water1Litre	0.026532305	0.159112531	0.019257403	-0.221921718
## Milk1Litre	-0.042812417	0.230524971	-0.080681556	0.041820513
## LoafofBread	-0.113456865	-0.121737449	0.063324090	-0.182945892
## Eggs	-0.175015307	0.125435177	0.295971390	-0.041452683
## LocalCheese	0.352914042	0.103326278	-0.138173078	-0.034632525
## Water2Litre	-0.123609434	0.001372733	-0.031165641	-0.067730654
## BottleofWine	0.124072371	-0.197941849	0.475810065	-0.049827480
## Domestic1LitreBeer	0.077073607	-0.088573957	0.108934185	0.096545581
## Imported1LitreBeer	0.198178436	-0.101578216	0.050919558	-0.184296433
## Cigarettes20Pack	-0.059700047	0.124442769	-0.013457176	0.012689040
## OnewayTicket	0.144490695	-0.040216074	0.076891304	0.090890810
## ChickenBreasts	0.001411996	0.006064748	-0.068463885	0.265124517
## MonthlyPass	0.112734507	0.138659773	0.232002840	0.172022511
## Gasoline1Litre	-0.085298957	-0.296645003	0.005641645	0.233728108
## VWGolf	-0.034388733	0.102161606	0.029286959	0.072387544
## Apartment1BD	-0.033141492	-0.080400792	-0.005025633	-0.023484130
## Apartment1BD0OC	-0.068677678	-0.079632866	-0.004042951	0.031138514
## Apartment3BDICC	-0.015557833	-0.140850809	0.013008082	-0.114669003
## Apartment3BD0OC	-0.066006478	-0.102195683	-0.004928420	-0.046071284
## BasicUtilities	0.303024999	0.063278794	0.045300376	-0.020523580
## PrepaidMobile1MIn	-0.134536395	-0.312774185	-0.240630088	-0.091329294
## Internet	0.143298264	0.130361165	-0.194158380	-0.063304139
## GymFees	0.157730351	0.129955116	-0.139845959	0.237004128
## TennisCourtFeesPerHour	-0.155165336	0.036218862	0.030926967	-0.113540588
## CinemaPerPerson	-0.021955448	0.014652477	-0.013946392	-0.031106779
## PairofJeans	0.120985851	-0.228094499	0.054591090	-0.184994752
## SummerDress	-0.129593614	-0.019299968	-0.275859342	-0.036909342
## NikeRunningShoes	-0.029765162	0.019174160	0.166484488	-0.006684213
## LeatherShoes	0.011531855	-0.231814405	0.128324680	0.133585842
## AptPricePerSquareM	0.009914883	0.021206118	-0.050224743	-0.064838730
## AptPricePerSqMOOC	-0.022996935	0.046988446	-0.072236934	-0.119037313

## AvgMnthlyNetSalary	-0.093591601	-0.049678388	-0.064677583	0.050632168
## MortgageInterest	0.377678241	-0.074689626	0.078722968	0.018092045
## TaxiStartingFare	0.188353268	-0.185968596	-0.207537921	-0.095502062
## Taxi1KM	0.223241265	0.316090524	0.192633307	0.054164621
## Taxi1HRWaiting	0.030290650	-0.021119694	0.143614756	-0.059988197
## Apples1KG	0.066226984	-0.021381840	-0.127153373	-0.176942478
## Oranges1KG	0.067838266	0.035465694	-0.007511716	-0.026518263
## Potato1KG	-0.066012650	-0.069015923	-0.018861492	-0.124482988
## Lettuce1Head	0.149575448	-0.116103250	-0.181314881	0.196537874
## CappucinoReg	-0.208262342	0.086392775	0.086725952	-0.224416452
## WhiteRice	-0.187709983	-0.121519093	0.022125543	0.466609211
## Tomato1KG	0.024765053	-0.201213331	0.111209367	0.078983517
## Banana1KG	-0.310282469	0.260830086	0.107511776	-0.072726146
## Onion1KG	0.083645926	-0.185691200	0.050682014	-0.160904432
## BeefRound1KG	0.001164197	0.108074135	0.024425500	0.173488340
## ToyotaCorolla	-0.074492744	-0.053112878	-0.146294168	-0.013936426
## PreschoolperMonth	-0.013028309	0.108116515	0.062123933	0.033826513
##	PC21	PC22	PC23	PC
24				
## MealInexpensive	0.034634120	0.0939173254	-0.276981606	0.15070715
54				
## MealFor2	0.032476526	0.0439322843	0.028621331	-0.15635823
99				
## McMealMcDonalds	0.004829947	0.0529303586	-0.261709377	-0.11307957
32				
## DomesticBeer	0.058657253	0.0907248183	0.219835444	0.12618460
12				
## ImportedBeer	0.022113244	0.0637525089	0.081735494	0.12154316
80				
## CokeOrPepsi	0.208955936	-0.0449912320	0.034406434	0.15666463
86				
## Water1Litre	0.201222912	-0.1238319714	0.078642637	0.11604706
40				
## Milk1Litre	0.076608821	-0.0187693447	-0.226447115	0.08731633
94				
## LoafofBread	0.022554103	-0.0017317246	-0.133192468	-0.12131853
39				
## Eggs	-0.042061012	0.2286635021	-0.143014909	-0.05584277
92				
## LocalCheese	0.092259446	-0.2060346471	0.214148789	-0.32972523
98				
## Water2Litre	-0.203608482	-0.2630742573	0.008598669	-0.19446637
37				
## BottleofWine	-0.017949700	0.3113971723	-0.034669241	-0.12456813
91				
## Domestic1LitreBeer	0.076329567	-0.1749403523	0.082447285	0.14517873
91				
## Imported1LitreBeer	0.087115229	-0.3414999853	-0.175282310	0.08862265
19				
## Cigarettes20Pack	-0.051754114	0.0889468063	-0.088401070	-0.10694575

71					
##	OnewayTicket	-0.193896357	-0.0656697894	0.056242606	-0.13114823
62					
##	ChickenBreasts	-0.088859628	0.0031791974	0.123554985	0.18591439
25					
##	MonthlyPass	-0.312759995	0.0479728739	0.112412210	-0.05654973
57					
##	Gasoline1Litre	-0.119408351	-0.0474382484	0.042864503	-0.14363240
34					
##	VWGolf	0.065993035	-0.1588539429	0.079837745	-0.06384338
10					
##	Apartment1BD	0.031423348	0.0443263887	-0.043191475	-0.00309660
33					
##	Apartment1BD0OC	-0.007262661	0.1117231497	0.005214384	-0.01035409
28					
##	Apartment3BDICC	0.008499105	0.0509363504	-0.025238689	-0.00205489
88					
##	Apartment3BD0OC	-0.009795657	0.1066264090	0.018100065	-0.02539651
81					
##	BasicUtilities	-0.071842759	0.1599239467	0.051017876	0.07318489
81					
##	PrepaidMobile1MIn	0.165433432	0.0827100723	0.076249278	0.00369966
07					
##	Internet	-0.381254687	-0.0088347236	0.338871727	0.01572174
44					
##	GymFees	0.029410217	-0.0240019600	-0.229543787	-0.16337317
80					
##	TennisCourtFeesPerHour	-0.121945535	-0.0334057589	0.040312564	0.15285913
03					
##	CinemaPerPerson	0.052473978	-0.2530752618	0.051134278	-0.18908234
16					
##	PairofJeans	-0.090753205	-0.0013096737	-0.049315116	-0.20966470
28					
##	SummerDress	0.058259576	0.2530757180	0.169528614	-0.19900842
05					
##	NikeRunningShoes	-0.119516543	-0.2326428702	0.058158359	0.33306793
69					
##	LeatherShoes	0.252415750	-0.1240734756	-0.019710632	-0.00022928
41					
##	AptPricePerSquareM	-0.022521544	-0.0778492278	0.095410425	0.14677077
84					
##	AptPricePerSqMOOC	-0.016224034	-0.0314370006	0.213097527	0.17106000
62					
##	AvgMnthlyNetSalary	0.144750801	-0.0220716744	-0.040645779	-0.02949975
16					
##	MortgageInterest	0.038468376	0.0423939421	-0.053063967	-0.04752666
37					
##	TaxiStartingFare	-0.255049708	-0.0320620228	-0.317059855	0.09057251
64					
##	Taxi1KM	0.354482721	0.1406098455	0.049308527	0.06301244

84					
## Taxi1HRWaiting	0.153993150	-0.0095250792	0.155828760	-0.05978448	
75					
## Apples1KG	-0.142556138	0.0237157133	-0.071298545	-0.09332898	
10					
## Oranges1KG	0.005866207	-0.0065731468	-0.042776967	0.01391550	
48					
## Potato1KG	-0.001285302	0.1047659994	-0.045267448	0.08506714	
24					
## Lettuce1Head	0.242123662	0.2196565092	0.146217455	-0.06422780	
77					
## CappucinoReg	0.031350011	-0.0878672746	-0.006589424	-0.13947748	
55					
## WhiteRice	0.051079605	-0.2658654072	-0.090498687	0.01824607	
62					
## Tomato1KG	0.003260612	-0.0335273647	0.042125128	0.04097484	
77					
## Banana1KG	-0.056066588	0.0006862367	0.088385737	-0.21518732	
39					
## Onion1KG	-0.063216729	0.0729085029	0.110302351	0.27921383	
26					
## BeefRound1KG	-0.237587146	0.1565400859	-0.131168398	0.17765971	
81					
## ToyotaCorolla	0.035160751	0.1977811624	-0.055631363	0.09153193	
75					
## PreschoolperMonth	0.030662706	-0.0868724534	-0.292473294	0.03857151	
52					
##	PC25	PC26	PC27	PC28	
## MealInexpensive	0.166303094	-0.219564379	-0.160747112	-0.140141454	
## MealFor2	0.026260603	-0.038975324	-0.129918826	0.006711220	
## McMealMcDonalds	-0.176062179	0.041321826	-0.277819790	-0.336926163	
## DomesticBeer	-0.032542008	-0.082028171	-0.088984383	0.074189289	
## ImportedBeer	-0.107516313	0.009659717	-0.104245023	0.145955883	
## CokeOrPepsi	0.219180621	0.191844306	-0.075299946	0.119725774	
## Water1Litre	0.199573954	0.180678781	0.061317687	-0.088617390	
## Milk1Litre	0.257496051	0.041228254	0.202564243	-0.169050767	
## LoafofBread	-0.167631317	0.191652420	0.226019828	-0.036980580	
## Eggs	-0.012848933	-0.134714835	0.199548800	0.335921972	
## LocalCheese	-0.067634945	-0.152932943	-0.002975556	0.073908406	
## Water2Litre	-0.215042112	-0.158501869	-0.132781916	0.027233946	
## BottleofWine	0.013419595	0.262942506	-0.343854905	-0.191717696	
## Domestic1LitreBeer	0.084511261	-0.125279184	0.148964433	-0.107040031	
## Imported1LitreBeer	-0.043814213	-0.207128201	0.113858245	-0.035351935	
## Cigarettes20Pack	-0.164758380	0.051810636	0.001078488	0.093479294	
## OnewayTicket	0.171174606	0.295566019	0.207278955	-0.021267468	
## ChickenBreasts	0.183357657	-0.033393747	-0.057774315	0.205575000	
## MonthlyPass	0.162482293	-0.100081262	0.002770762	0.060074702	
## Gasoline1Litre	0.036442947	-0.072350006	-0.021859300	-0.318010658	
## VWGolf	-0.037247485	-0.006178150	0.248624311	-0.069535433	
## Apartment1BD	-0.033981402	-0.082179069	0.121556327	-0.060636284	

## Apartment1BDOOC	-0.042706824	-0.097099017	0.165900732	-0.089497521
## Apartment3BDICC	0.011005405	-0.001226869	0.071719151	-0.043417696
## Apartment3BDOOC	-0.026719852	-0.061337141	0.149562605	-0.046876678
## BasicUtilities	-0.256823864	0.087892931	0.030293105	-0.050603185
## PrepaidMobile1MIn	-0.057320271	0.111580587	-0.070130467	0.150085503
## Internet	0.178633943	-0.048425069	0.005805862	-0.145206497
## GymFees	0.079915226	0.332173628	-0.042628243	0.301981876
## TennisCourtFeesPerHour	-0.038099108	0.060440998	0.058130395	-0.030817331
## CinemaPerPerson	0.006855607	0.279095225	0.035523089	-0.108955897
## PairOfJeans	0.163143367	-0.236248718	-0.023710855	0.239066816
## SummerDress	0.129557443	0.065720774	0.124377114	-0.082709638
## NikeRunningShoes	-0.370695520	0.065543662	-0.062291060	-0.008185126
## LeatherShoes	0.203046478	-0.124796505	-0.094691989	-0.084714384
## AptPricePerSquareM	-0.065205645	0.099989898	-0.168247698	0.050188854
## AptPricePerSqMOOC	-0.084081737	0.108960522	-0.120410482	0.037368448
## AvgMnthlyNetSalary	0.046008286	0.100185204	0.167700847	0.012849956
## MortgageInterest	0.068941683	0.093551965	-0.016822303	0.044262728
## TaxiStartingFare	-0.102443239	0.033119778	0.091617927	0.063220907
## Taxi1KM	-0.178936729	-0.118386100	0.109365977	0.012975830
## Taxi1HRWaiting	0.018320432	0.073937342	-0.080007255	0.088060616
## Apples1KG	-0.042528381	0.052784406	-0.040916209	0.179225295
## Oranges1KG	0.219301010	-0.243423530	-0.168035064	0.034484717
## Potato1KG	0.088031682	-0.005509736	0.151760805	-0.180571884
## Lettuce1Head	-0.298807804	-0.144413233	0.057004566	-0.117117654
## CappucinoReg	-0.015331036	-0.124663204	-0.136218311	0.153500301
## WhiteRice	-0.032538691	0.160949430	-0.135242773	0.077774575
## Tomato1KG	-0.070921124	-0.104040399	0.144973021	0.114613193
## Banana1KG	0.006396967	-0.053691532	-0.114650930	-0.202258559
## Onion1KG	0.105590753	0.054421187	-0.131308668	-0.090682820
## BeefRound1KG	-0.054678421	0.025462918	0.187380848	-0.032823420
## ToyotaCorolla	0.048334643	-0.066778955	-0.115574381	0.157933750
## PreschoolperMonth	0.025340848	-0.106198636	-0.195999446	-0.075057801
##	PC29	PC30	PC31	PC32
## MealInexpensive	0.21283265	0.141511951	0.123788697	-0.112635608
## MealFor2	0.10533475	-0.009152441	0.120378607	-0.185963301
## McMealMcDonalds	0.11034018	0.022134054	-0.199016774	-0.193836597
## DomesticBeer	-0.06756192	-0.016334758	-0.068960052	0.056297549
## ImportedBeer	-0.12510596	0.136728136	-0.053053964	0.168346568
## CokeOrPepsi	-0.01045915	0.103279782	0.015293365	0.198343395
## Water1Litre	-0.10501459	0.002826941	-0.138333530	0.090246308
## Milk1Litre	-0.02904283	-0.048252887	-0.002010343	0.010186069
## LoafOfBread	0.20491150	0.224614304	-0.130141666	0.166515359
## Eggs	0.16255686	-0.112376738	0.056666672	0.050888227
## LocalCheese	-0.12379095	-0.034761827	0.133414936	-0.018019599
## Water2Litre	-0.26036351	0.141574218	-0.051047905	0.029142376
## BottleOfWine	-0.17178358	0.044090636	-0.047679079	0.025849200
## Domestic1LitreBeer	-0.05556083	0.007741198	0.006802694	-0.058077422
## Imported1LitreBeer	0.17220975	0.065298643	0.035359302	-0.066892349
## Cigarettes20Pack	-0.31592687	-0.222583935	0.259675908	-0.133440746
## OnewayTicket	0.09129070	0.032260374	0.263871882	-0.041526356

## ChickenBreasts	-0.12609045	-0.204942614	-0.069071949	0.003382719
## MonthlyPass	0.12833867	0.314288353	-0.194348226	0.179360356
## Gasoline1Litre	0.06984504	-0.195059711	0.192698001	0.227032317
## VWGolf	-0.08300842	-0.037961056	-0.261462595	-0.060399966
## Apartment1BD	0.01754071	-0.058308600	-0.056399903	0.063359082
## Apartment1BD0OC	-0.03172772	-0.033648644	-0.058344203	-0.084098522
## Apartment3BDICC	0.04303481	0.030566770	0.079553441	0.157228380
## Apartment3BD0OC	-0.06569374	0.043259470	0.044606311	-0.012458394
## BasicUtilities	-0.03422107	0.053109025	0.094738475	-0.065180667
## PrepaidMobile1MIn	0.03804020	0.097301883	-0.072040492	0.051376283
## Internet	0.07817496	0.027567325	0.058946908	-0.006870934
## GymFees	0.09730094	-0.059679928	0.046039114	-0.033984223
## TennisCourtFeesPerHour	-0.13200384	0.003985777	0.176602538	-0.042650703
## CinemaPerPerson	0.15750489	-0.299514311	-0.120715535	0.111572287
## PairofJeans	0.01193976	0.087462349	-0.322312836	-0.201860121
## SummerDress	-0.06971133	-0.100712086	-0.134439849	0.042169809
## NikeRunningShoes	0.19769063	-0.094866528	0.208645396	0.152409525
## LeatherShoes	-0.27006105	0.274911092	0.169500399	0.097770690
## AptPricePerSquareM	0.13959917	0.119379499	-0.037337085	-0.052869807
## AptPricePerSqMOOC	-0.02093875	0.168946803	-0.031534321	-0.225389188
## AvgMnthlyNetSalary	-0.04010222	0.118838102	0.140363679	0.043746736
## MortgageInterest	-0.01799618	-0.042332187	0.078313922	0.025288312
## TaxiStartingFare	-0.39119798	-0.098896799	-0.060193108	0.128978833
## Taxi1KM	-0.19405374	0.024163792	-0.030238564	0.087980636
## Taxi1HRWaiting	0.17419415	-0.101883693	0.042593174	-0.301417303
## Apples1KG	0.05009582	0.110318551	0.132704934	0.184241925
## Oranges1KG	0.13276578	-0.120664004	0.134998593	0.224756079
## Potato1KG	-0.07605235	0.087831685	0.237500361	-0.413484109
## Lettuce1Head	0.24454830	-0.011765371	-0.019330990	0.154443400
## CappucinoReg	0.06294036	-0.158915686	0.054945311	-0.045256096
## WhiteRice	-0.02116965	0.144454907	-0.099886878	-0.183557060
## Tomato1KG	0.04887614	-0.224359412	-0.104934932	-0.195996817
## Banana1KG	-0.07721317	0.038880431	0.038697511	0.078484324
## Onion1KG	-0.01090999	-0.365903988	-0.216704836	-0.033558879
## BeefRound1KG	0.03251801	0.113016788	-0.188465338	-0.031890949
## ToyotaCorolla	0.06377494	-0.033402524	0.211208614	0.002547043
## PreschoolperMonth	-0.04026918	-0.223969857	-0.141354533	0.149632121
##	PC33	PC34	PC35	PC3
6				
## MealInexpensive	-0.064962401	-0.008804325	-0.1031045252	-0.05230281
8				
## MealFor2	0.065006246	-0.007520308	-0.3322349162	0.02804673
0				
## McMealMcDonalds	-0.069699063	-0.283755824	0.0398559934	-0.00465500
8				
## DomesticBeer	0.211580437	-0.030159226	-0.0359912047	-0.08311171
7				
## ImportedBeer	0.327272753	-0.093213894	-0.1724415893	-0.22760911
5				
## CokeOrPepsi	-0.055144946	0.036467204	0.0713269402	-0.10103821

1					
##	Water1Litre	0.012661085	-0.181085572	-0.0300275664	0.06420635
3					
##	Milk1Litre	0.093752250	0.112015515	0.1065387745	-0.31225324
3					
##	LoafofBread	0.031567533	0.324661656	-0.1333684849	0.10810344
2					
##	Eggs	-0.052177871	0.033648523	-0.1824412839	0.10746719
7					
##	LocalCheese	-0.062748713	0.034490631	-0.0786941555	-0.03000795
1					
##	Water2Litre	-0.116230758	-0.018922784	-0.1282031389	-0.03200577
6					
##	BottleofWine	-0.134045523	-0.002263568	0.0177348161	0.00391276
0					
##	Domestic1LitreBeer	-0.089222397	-0.124854321	0.0619406327	0.23251631
3					
##	Imported1LitreBeer	-0.106787051	0.194802726	-0.0669706184	-0.17959121
0					
##	Cigarettes20Pack	0.290666713	0.045755872	-0.0525692930	-0.00716284
9					
##	OnewayTicket	-0.088399659	-0.089200486	-0.0156687216	0.06080712
1					
##	ChickenBreasts	-0.384432118	0.038615674	0.2477270880	-0.10604879
6					
##	MonthlyPass	-0.070239735	-0.116783046	0.0886235767	-0.09172906
1					
##	Gasoline1Litre	0.186736181	-0.034885590	0.0530572164	0.05159759
9					
##	VWGolf	0.097348352	-0.088883206	-0.0571153505	0.09608020
2					
##	Apartment1BD	-0.049454801	-0.083977581	-0.0465287759	-0.12806628
2					
##	Apartment1BD00C	-0.094444347	-0.069709300	0.0626731962	-0.17688535
9					
##	Apartment3BDICC	-0.001253546	-0.111232940	-0.0653177754	-0.18281352
3					
##	Apartment3BD00C	-0.089201119	-0.058434225	0.0630003654	-0.17189304
3					
##	BasicUtilities	-0.048697309	0.134312636	-0.0236444010	-0.12955590
3					
##	PrepaidMobile1MIn	-0.102805541	-0.106487259	-0.0232991883	0.05585434
2					
##	Internet	0.117501114	0.282040864	0.0224841645	0.17605506
2					
##	GymFees	-0.080583663	-0.068736026	-0.0267022999	0.08200983
3					
##	TennisCourtFeesPerHour	0.003612576	0.022571826	0.0138707559	-0.01235033
3					
##	CinemaPerPerson	0.046412016	-0.072174644	-0.0392207260	-0.11597487

4					
##	PairofJeans	0.254634907	-0.036565608	0.1836932005	-0.06762044
8					
##	SummerDress	-0.058352356	0.108424731	-0.1170003374	0.05674012
1					
##	NikeRunningShoes	0.023111923	-0.145273463	0.0952717815	-0.07046969
3					
##	LeatherShoes	0.102988846	0.100283231	-0.0184172716	0.14338725
7					
##	AptPricePerSquareM	-0.006817559	0.045483804	-0.1697975416	0.24760087
6					
##	AptPricePerSqMOOC	-0.090281305	0.048436907	0.0311698197	0.14557613
4					
##	AvgMnthlyNetSalary	-0.001271912	-0.044011171	0.1321206478	0.23873145
0					
##	MortgageInterest	0.112934813	-0.068845627	0.0415371232	-0.02613996
7					
##	TaxiStartingFare	-0.214734557	0.091007538	-0.0798837676	0.09906013
7					
##	Taxi1KM	0.023870812	-0.024315277	-0.0004946969	0.04565117
4					
##	Taxi1HRWaiting	0.109348301	0.334329016	0.0697678069	-0.16488426
0					
##	Apples1KG	0.263760121	-0.087018624	0.3652264936	-0.14875139
1					
##	Oranges1KG	-0.004475613	-0.181144267	-0.3704191164	0.06175048
8					
##	Potato1KG	0.101487539	-0.167434786	0.1161395465	0.04853309
6					
##	Lettuce1Head	-0.070260227	0.073381991	0.2578143485	0.10931612
0					
##	CappucinoReg	-0.023925624	-0.245584812	0.3180246851	0.27243224
3					
##	WhiteRice	0.058805039	0.111759460	0.0007774745	-0.14980650
0					
##	Tomato1KG	-0.126448547	-0.046809543	-0.0757809775	-0.02807151
5					
##	Banana1KG	-0.256000375	0.150656170	0.0614070004	-0.17822378
4					
##	Onion1KG	0.122461085	0.022114949	-0.1325764459	-0.03886432
2					
##	BeefRound1KG	0.184138396	-0.038233681	-0.0288132804	0.20391954
9					
##	ToyotaCorolla	-0.144509479	0.171287397	0.0397384327	-0.01324970
9					
##	PreschoolperMonth	0.145214653	0.375908833	0.2274329291	0.26818687
8					
##		PC37	PC38	PC39	PC
40					
##	MealInexpensive	-0.0595440933	-0.098654997	0.308243690	0.19665674

06					
## MealFor2	-0.0009676442	0.092594871	-0.089366510	0.08801706	
95					
## McMealMcDonalds	0.0117877150	-0.070611569	-0.301706320	-0.03752096	
19					
## DomesticBeer	-0.0645025647	-0.033461748	-0.141635285	0.21705814	
82					
## ImportedBeer	0.1049101696	0.011859871	-0.032853599	0.11762192	
23					
## CokeOrPepsi	0.0962953737	0.269626379	-0.023274139	-0.08336279	
70					
## Water1Litre	0.1050357338	0.152832519	0.198526789	-0.02609367	
17					
## Milk1Litre	0.1454606088	0.052635230	-0.087948896	0.05901742	
91					
## LoafofBread	0.0127883036	-0.121557645	-0.398557298	-0.09129276	
33					
## Eggs	-0.1329894739	0.062680435	0.131536001	0.10761211	
46					
## LocalCheese	-0.0306690346	0.097471729	0.040277514	0.00628711	
56					
## Water2Litre	-0.0340124585	-0.006925366	0.096435207	0.24128424	
62					
## BottleofWine	0.1790430564	0.097743436	0.160981005	-0.00975997	
23					
## Domestic1LitreBeer	-0.0850370160	0.046417936	-0.231634702	0.16470930	
41					
## Imported1LitreBeer	0.0214343846	-0.115956805	0.138517415	-0.17616118	
81					
## Cigarettes20Pack	0.0087151353	-0.105019595	0.016882825	-0.34501973	
41					
## OnewayTicket	0.2111855997	-0.372115788	-0.047406870	0.20466726	
22					
## ChickenBreasts	-0.0430399466	-0.225875678	-0.233753718	-0.16251009	
33					
## MonthlyPass	-0.2704257115	0.220545720	-0.058152334	-0.09206372	
06					
## Gasoline1Litre	0.0921155225	0.148393616	-0.055773107	-0.01445031	
08					
## VWGolf	-0.0715390462	0.031586717	-0.051037548	-0.01910046	
99					
## Apartment1BD	0.0150178423	-0.024442498	-0.064796329	-0.15025200	
74					
## Apartment1BD0OC	0.1578510141	-0.012693128	0.110428556	0.03105673	
72					
## Apartment3BDICC	-0.1990978446	-0.010983921	-0.031355708	-0.19655258	
67					
## Apartment3BD0OC	0.0267469714	0.060366629	0.093670579	-0.00816074	
21					
## BasicUtilities	-0.0645413630	-0.062064093	-0.105599175	-0.01447104	

64					
##	PrepaidMobile1MIn	0.0749119540	0.008361991	0.008867038	-0.02247896
71					
##	Internet	0.1803936250	0.068363455	0.131353925	-0.14920477
26					
##	GymFees	-0.1376385634	0.060508027	-0.008753786	0.06135770
40					
##	TennisCourtFeesPerHour	0.0006416143	-0.016899181	-0.022754906	-0.13027764
43					
##	CinemaPerPerson	-0.1957033938	-0.104866333	0.336457583	0.04622273
68					
##	PairOfJeans	0.2401470851	-0.176282281	-0.006809289	-0.09534365
75					
##	SummerDress	-0.0099171874	0.065085006	0.014183381	0.00060015
12					
##	NikeRunningShoes	0.0968365086	0.081850201	-0.010434412	0.02398793
14					
##	LeatherShoes	-0.2736201907	-0.213121538	0.037196682	0.03863291
44					
##	AptPricePerSquareM	0.0588311801	-0.041522872	-0.017650314	-0.06442662
96					
##	AptPricePerSqMOOC	0.0561784101	-0.014488819	0.057337197	0.05802894
01					
##	AvgMnthlyNetSalary	0.1263352850	-0.107747759	-0.007466480	0.07503196
14					
##	MortgageInterest	0.0454033092	0.016055770	-0.011435336	-0.07625274
34					
##	TaxiStartingFare	-0.1191111332	0.252453919	0.014826223	0.00965761
77					
##	Taxi1KM	0.1688537780	-0.164459743	0.017245611	-0.01526788
68					
##	Taxi1HRWaiting	-0.2043479117	0.234312626	-0.123841629	0.06242210
51					
##	Apples1KG	-0.0283003268	-0.040900557	-0.036465220	0.28040783
45					
##	Oranges1KG	0.2001519693	0.055125096	-0.209223756	-0.23153649
23					
##	Potato1KG	-0.1894034939	0.275531448	-0.101181427	-0.01613758
80					
##	Lettuce1Head	-0.0869096166	0.054118316	0.182221565	-0.10652085
89					
##	CappucinoReg	-0.0673223694	-0.044398497	0.036439048	-0.21582973
82					
##	WhiteRice	0.1122233483	0.075224597	0.137229376	-0.29327056
53					
##	Tomato1KG	0.3589861020	0.193769170	-0.020923550	0.26726075
65					
##	Banana1KG	0.0372600785	-0.142787902	-0.026067086	0.05662426
23					
##	Onion1KG	-0.2891247107	-0.316547223	-0.005468723	0.08379113

74				
## BeefRound1KG	-0.0080048786	-0.076076184	0.272031973	-0.11079586
28				
## ToyotaCorolla	0.0718451382	-0.079073823	0.082841408	0.00247770
06				
## PreschoolperMonth	0.1003143416	0.121206390	-0.067195006	0.18570593
00				
##	PC41	PC42	PC43	PC44
## MealInexpensive	0.191134005	-0.285743907	-0.362197870	-0.139009821
## MealFor2	0.077900305	0.107839871	0.173184356	0.155323049
## McMealMcDonalds	-0.250672892	0.147577399	0.084525128	0.030184893
## DomesticBeer	-0.046400879	0.036600465	0.091452693	-0.129881204
## ImportedBeer	0.093186037	0.169024352	-0.201644870	0.040940601
## CokeOrPepsi	0.079320539	0.056752702	-0.123839519	-0.008058045
## Water1Litre	0.041337709	0.002609029	0.149970974	0.083280851
## Milk1Litre	-0.012366245	-0.063636164	0.086767079	0.138334167
## LoafofBread	0.045539690	-0.063853342	-0.178924382	0.152448511
## Eggs	-0.237275486	0.217406996	0.032148861	-0.149542110
## LocalCheese	0.123570438	0.023535674	-0.078146175	0.175712526
## Water2Litre	0.091781761	-0.251707636	0.125683524	-0.049643292
## BottleofWine	-0.033061678	-0.113245718	-0.068717093	-0.123198553
## Domestic1LitreBeer	-0.120394556	-0.226399482	-0.031463709	0.254072568
## Imported1LitreBeer	0.059450268	0.182596257	0.115987294	-0.147275884
## Cigarettes20Pack	-0.080155114	-0.072372725	-0.145244157	0.052158668
## OnewayTicket	0.226221032	0.263626447	0.061044918	-0.167581957
## ChickenBreasts	-0.105113001	-0.124749182	-0.133316351	-0.206828994
## MonthlyPass	0.037639776	0.131814446	-0.036803713	0.217485351
## Gasoline1Litre	0.154722125	-0.063343957	-0.019517314	-0.034239308
## VWGolf	0.027301535	-0.038294115	-0.080522169	-0.425666785
## Apartment1BD	0.067123081	-0.177549921	0.017691299	0.070285857
## Apartment1BD0OC	-0.011374513	0.032176897	0.197852943	0.125341496
## Apartment3BDICC	0.063050567	-0.097506839	-0.076299145	-0.155484870
## Apartment3BD0OC	-0.048858915	0.059218859	0.144942336	-0.067338047
## BasicUtilities	-0.026183541	-0.104023747	0.074796736	0.026971564
## PrepaidMobile1MIn	0.022114777	-0.114000684	0.126117295	-0.003798013
## Internet	-0.152693559	-0.011187852	-0.066437459	0.020057883
## GymFees	0.196618317	-0.096540720	0.003377736	0.010193120
## TennisCourtFeesPerHour	-0.062551162	-0.072735771	0.017662024	-0.057237760
## CinemaPerPerson	-0.462192357	-0.033774799	-0.129929784	0.089368114
## PairofJeans	-0.021562833	-0.014846054	-0.056095345	-0.001358553
## SummerDress	0.134527154	0.038490209	-0.031009236	-0.074676703
## NikeRunningShoes	0.081700264	0.001592781	-0.004581583	0.033661531
## LeatherShoes	-0.230605553	0.097404288	0.019336566	0.058049953
## AptPricePerSquareM	-0.127526462	-0.039879508	-0.301510664	-0.041706219
## AptPricePerSqMOOC	-0.055474540	0.123283771	0.231452761	-0.143295260
## AvgMnthlyNetSalary	-0.056652823	-0.150713577	0.141717919	0.048533150
## MortgageInterest	-0.035571941	-0.044104316	0.031788872	0.019152567
## TaxiStartingFare	0.009903370	0.127439421	0.024625593	-0.008838686
## Taxi1KM	0.093115935	-0.003943657	-0.096408098	0.013814157
## Taxi1HRWaiting	0.053213523	-0.339150057	0.227901794	-0.108636050

## Apples1KG	-0.170599163	-0.054538880	0.046481420	-0.120302906
## Oranges1KG	-0.149471605	-0.079374392	0.262843680	-0.196176231
## Potato1KG	-0.002344646	0.228547687	-0.203649209	-0.083663886
## Lettuce1Head	0.024203777	0.154719891	0.012206320	-0.097924678
## CappucinoReg	0.295156126	0.016803969	-0.031232130	0.145508603
## WhiteRice	0.050177200	0.173592979	0.033006683	0.025169452
## Tomato1KG	-0.114282558	-0.008908647	-0.300525036	0.137795751
## Banana1KG	0.073961185	0.058088715	-0.074831327	0.042375898
## Onion1KG	0.283237189	0.163685823	0.065494885	0.185016962
## BeefRound1KG	0.079159584	-0.282208320	0.217001568	0.106081258
## ToyotaCorolla	-0.152816601	0.061045810	0.073381221	0.384446262
## PreschoolperMonth	0.063831478	0.152512305	0.058536912	-0.113615207
##	PC45	PC46	PC47	P
C48				
## MealInexpensive	-1.429668e-01	-1.146787e-01	0.0818318544	0.149703
067				
## MealFor2	1.847032e-01	-5.331235e-01	-0.4357268485	-0.032694
881				
## McMealMcDonalds	-7.253750e-02	2.864139e-01	-0.0444397416	-0.055310
870				
## DomesticBeer	-1.381634e-01	-1.979791e-01	0.2498209356	-0.117969
608				
## ImportedBeer	3.047286e-01	2.594953e-01	0.0823107985	0.077702
785				
## CokeOrPepsi	-6.544329e-03	6.926395e-02	-0.3694542704	-0.165866
383				
## Water1Litre	-8.967449e-02	-1.395050e-01	0.2908131703	0.011193
173				
## Milk1Litre	-4.568276e-02	4.987569e-02	-0.0809318698	0.021036
748				
## LoafofBread	1.268201e-02	-2.083317e-01	0.2607901474	0.021252
643				
## Eggs	-2.043820e-01	1.753505e-01	-0.0532863661	0.127301
987				
## LocalCheese	-9.248091e-02	-6.729444e-03	0.0792883177	0.111948
302				
## Water2Litre	7.537334e-02	1.353482e-01	0.0230387965	-0.089419
625				
## BottleofWine	2.380197e-02	-5.695463e-02	-0.0027919955	0.068469
140				
## Domestic1LitreBeer	-3.483248e-01	-7.961510e-02	-0.0441517384	0.008953
299				
## Imported1LitreBeer	2.409277e-01	1.026461e-03	-0.0664908560	-0.037192
393				
## Cigarettes20Pack	-8.753131e-02	-2.427664e-02	-0.0329938359	0.010539
139				
## OnewayTicket	-1.135494e-01	1.317134e-01	0.0546624332	-0.204747
056				
## ChickenBreasts	2.641471e-01	-1.785054e-01	0.0097622508	0.014012
344				

## MonthlyPass 279	9.240178e-02	6.712351e-02	0.0158611726	0.130819
## Gasoline1Litre 365	5.208334e-02	3.374286e-02	0.0320638273	0.074659
## VWGolf 322	1.411303e-02	-3.716108e-02	-0.1821186240	0.004661
## Apartment1BD 566	-7.517083e-02	7.155024e-02	-0.1591958561	-0.051553
## Apartment1BD0OC 616	4.597294e-02	-2.520605e-02	-0.0877831615	-0.055142
## Apartment3BDICC 930	-1.519706e-01	5.662121e-02	0.0317530573	-0.198847
## Apartment3BD0OC 983	-8.356771e-02	-7.475656e-02	0.0984445354	-0.072193
## BasicUtilities 314	5.205591e-02	-2.647275e-02	-0.0353199292	-0.037013
## PrepaidMobile1MIn 686	4.336874e-02	-4.402541e-02	0.0028696401	-0.092793
## Internet 303	-4.488988e-02	7.653944e-02	-0.0343506521	-0.058515
## GymFees 702	6.728238e-02	3.027905e-02	0.1476173960	-0.006728
## TennisCourtFeesPerHour 041	-7.738301e-02	5.841847e-02	-0.0171592197	0.097776
## CinemaPerPerson 095	1.879879e-01	-1.308768e-01	0.0971946062	0.020855
## PairofJeans 314	-5.751747e-02	-1.005706e-01	0.0773236199	0.187476
## SummerDress 100	-5.857864e-02	7.397800e-02	-0.0389359959	-0.014016
## NikeRunningShoes 431	-7.163429e-05	-5.986325e-02	0.0492356522	0.114890
## LeatherShoes 972	8.215639e-02	1.573585e-01	-0.0314252303	-0.238108
## AptPricePerSquareM 918	-7.433921e-02	8.030562e-02	-0.2314526159	-0.062206
## AptPricePerSqMOOC 465	-1.601228e-02	-7.344371e-02	0.1192236249	0.131001
## AvgMnthlyNetSalary 619	2.258327e-01	1.933657e-01	-0.1826131859	0.597879
## MortgageInterest 560	3.055757e-02	-4.316197e-03	0.0008473215	-0.016302
## TaxiStartingFare 623	-8.970245e-02	-6.635214e-02	-0.0246259753	0.109152
## Taxi1KM 380	-8.451783e-03	-3.626644e-02	0.0298265863	0.009792
## Taxi1HRWaiting 897	1.640110e-02	3.000014e-01	0.0721381247	-0.003794
## Apples1KG 698	-1.753952e-01	-1.969933e-01	-0.2359862691	-0.044300

## Oranges1KG 965	2.154877e-02	9.489208e-03	0.1800137720	0.079658
## Potato1KG 914	2.583715e-01	-1.062674e-01	0.2113284880	0.025178
## Lettuce1Head 304	-5.637855e-02	-1.019112e-02	-0.0403438221	0.049275
## CappucinoReg 749	4.590310e-02	5.433460e-02	-0.0039108570	-0.196229
## WhiteRice 471	-3.795551e-01	-1.950438e-02	0.0124396300	0.086982
## Tomato1KG 151	8.098213e-02	1.679991e-01	0.0014605959	-0.203462
## Banana1KG 156	-1.184182e-02	-3.956731e-02	0.0022417074	0.073646
## Onion1KG 019	-1.001809e-01	9.325795e-02	-0.1287731034	0.206885
## BeefRound1KG 753	1.972654e-01	4.626566e-05	-0.0134731341	-0.280195
## ToyotaCorolla 461	2.401470e-03	2.697386e-02	0.1714530900	-0.091844
## PreschoolperMonth 954	8.540241e-02	-4.628790e-02	0.0694682184	-0.114999
##	PC49	PC50	PC51	PC
##				
## MealInexpensive 42	0.0487376849	0.163110867	0.059338770	-0.07993896
## MealFor2 85	0.0257545018	-0.184216303	0.066689584	0.00798829
## McMealMcDonalds 35	0.1015572899	0.005235678	-0.031263539	0.00316691
## DomesticBeer 10	0.2845146882	0.037320810	-0.487336696	0.04939088
## ImportedBeer 92	-0.2058817273	-0.066458403	0.370486566	-0.02381642
## CokeOrPepsi 06	-0.2527845579	0.239450437	-0.348731636	-0.12220063
## Water1Litre 45	0.2909146213	-0.235650972	0.321093479	0.14321453
## Milk1Litre 38	0.0203897997	-0.066469335	-0.046646558	0.03689426
## LoafofBread 78	0.0352053633	0.199793941	0.025972640	-0.05030685
## Eggs 41	-0.0180896449	-0.071189469	0.084200513	-0.02931334
## LocalCheese 40	-0.0014945957	-0.012121654	-0.031337036	0.01924048
## Water2Litre 72	-0.1976893621	-0.089626060	-0.184232371	0.05246053
## BottleofWine 68	0.0215527146	-0.004048836	-0.018392183	-0.02231527

## Domestic1LitreBeer 03	-0.3285727499	-0.008120029	0.125138294	-0.02436391
## Imported1LitreBeer 86	0.2118835687	0.014068218	-0.053046313	0.02903860
## Cigarettes20Pack 76	0.1123058835	0.173095430	-0.021616629	-0.05432583
## OnewayTicket 04	-0.1484687766	-0.082804559	-0.002501281	0.00727155
## ChickenBreasts 83	0.0083349797	-0.078647020	0.146648242	0.04958553
## MonthlyPass 66	0.1456894191	0.076057148	-0.046778200	-0.00401108
## Gasoline1Litre 02	0.0977060648	0.088655537	0.014958356	-0.02647060
## VWGolf 04	0.0566261553	0.125021755	0.089577640	-0.03112994
## Apartment1BD 16	0.0241793934	-0.203182408	0.091764405	-0.38664726
## Apartment1BD0OC 45	-0.0892595148	0.379609771	0.195103515	0.06606307
## Apartment3BDICC 61	0.0388557340	-0.458336524	-0.141805599	-0.07211867
## Apartment3BD0OC 35	-0.0635302840	0.272467011	-0.033450534	0.45605153
## BasicUtilities 59	-0.0341967088	-0.052758684	0.063121081	0.04599154
## PrepaidMobile1MIn 32	0.0466422089	-0.040310411	0.053169478	0.04665341
## Internet 08	0.0829375344	-0.012440376	0.032730018	-0.05779989
## GymFees 87	0.0434368258	0.133682434	0.005670819	-0.00440623
## TennisCourtFeesPerHour 57	-0.0130261502	-0.011382301	0.015368268	0.02933389
## CinemaPerPerson 29	-0.2278623147	0.023822869	-0.109803041	-0.07850849
## PairofJeans 04	-0.1964906613	-0.118777260	-0.106033637	0.03614368
## SummerDress 71	-0.0003586595	0.012152113	-0.011795326	0.00284755
## NikeRunningShoes 31	-0.0199689181	0.011630644	-0.028623177	0.02318949
## LeatherShoes 88	0.1619016522	0.134232798	0.122286930	-0.06574189
## AptPricePerSquareM 73	0.0255144271	-0.078524045	0.041452700	0.48613318
## AptPricePerSqMOOC 82	-0.0084253220	0.145183732	0.035062445	-0.52592005
## AvgMnthlyNetSalary 43	0.1732525568	-0.126048243	-0.254641240	0.08431864

## MortgageInterest	0.0162586009	0.005256925	0.012114110	0.00746531
44				
## TaxiStartingFare	0.0461595366	0.001006755	0.021418919	0.00036280
45				
## Taxi1KM	-0.0755842134	-0.011004018	-0.065997164	-0.00838010
15				
## Taxi1HRWaiting	-0.0155781601	0.005690173	0.143625578	0.08846479
52				
## Apples1KG	0.1613125337	0.031880113	0.206551323	-0.03604124
85				
## Oranges1KG	-0.1687607193	0.154369316	0.008434803	-0.00391742
48				
## Potato1KG	-0.1981097366	-0.124848445	-0.108460916	0.02743925
11				
## Lettuce1Head	-0.1275476197	-0.083216523	0.021575342	0.01047739
55				
## CappucinoReg	0.0953315531	0.117769808	0.051032396	-0.00408427
03				
## WhiteRice	-0.0444400743	-0.068718993	0.005003077	0.00280970
94				
## Tomato1KG	0.3412597018	0.016318424	-0.070758157	-0.12663223
16				
## Banana1KG	0.0266651867	-0.064334579	0.048791091	0.01715363
66				
## Onion1KG	0.0135499498	0.091069584	-0.064295848	0.05472575
87				
## BeefRound1KG	-0.0779074203	-0.037897099	-0.099324431	0.00015460
36				
## ToyotaCorolla	-0.0532103708	-0.134164006	-0.085022511	-0.00676844
97				
## PreschoolperMonth	-0.1474773713	-0.154834204	0.028739823	0.02612435
72				
##	PC53	PC54		
## MealInexpensive	-0.040926658	-0.0021474407		
## MealFor2	-0.149240105	-0.0206055389		
## McMealMcDonalds	-0.081806224	-0.0037375392		
## DomesticBeer	0.279333705	0.0366014921		
## ImportedBeer	-0.111878366	-0.0389141748		
## CokeOrPepsi	-0.016209489	-0.0012196268		
## Water1Litre	0.057056628	0.0087740033		
## Milk1Litre	-0.040042368	0.0012611924		
## LoafofBread	-0.020797659	0.0252725453		
## Eggs	0.054913401	0.0134162581		
## LocalCheese	0.042963351	0.0277526774		
## Water2Litre	0.053364291	0.0081428538		
## BottleofWine	0.051747043	0.0001994061		
## Domestic1LitreBeer	-0.122439373	0.0215815288		
## Imported1LitreBeer	0.042775598	-0.0152382316		
## Cigarettes20Pack	-0.072972317	0.0078518385		
## OnewayTicket	0.073718276	-0.0378267292		

```

## ChickenBreasts      -0.022629711  0.0048752715
## MonthlyPass         -0.012669617 -0.0068084683
## Gasoline1Litre      -0.015636303 -0.0022688660
## VWGolf              -0.075626756  0.0065703304
## Apartment1BD        0.491646180 -0.4825009654
## Apartment1BD0OC     0.299796026  0.5820337230
## Apartment3BDICC     -0.377648948  0.3930530284
## Apartment3BD0OC     -0.357980190 -0.5081737176
## BasicUtilities      0.003340740 -0.0042706840
## PrepaidMobile1MIn   0.018473048 -0.0016413591
## Internet            -0.038388968  0.0023535455
## GymFees             0.026125079  0.0032998560
## TennisCourtFeesPerHour 0.021314865  0.0173861707
## CinemaPerPerson     0.016682347 -0.0262752857
## PairOfJeans         0.009170703  0.0110123701
## SummerDress         0.011318553  0.0083825410
## NikeRunningShoes    0.023830675  0.0045413523
## LeatherShoes        0.017910131 -0.0237164093
## AptPricePerSquareM  0.260267572  0.0273604923
## AptPricePerSqMOOC   -0.217891827 -0.0202651116
## AvgMnthlyNetSalary  -0.060017710  0.0404046876
## MortgageInterest    -0.003168412 -0.0031590041
## TaxiStartingFare    0.047251084  0.0323642396
## Taxi1KM             -0.035688948  0.0103333867
## Taxi1HRWaiting      0.018575339  0.0082170383
## Apples1KG           0.027336814 -0.0064044135
## Oranges1KG          0.022652712  0.0190805483
## Potato1KG           0.226280209 -0.0054119788
## Lettuce1Head        0.007574130 -0.0084231517
## CappucinoReg        -0.037291981 -0.0043590933
## WhiteRice           0.017867987  0.0118756342
## Tomato1KG           -0.196107974 -0.0176161846
## Banana1KG           0.001177722 -0.0028967086
## Onion1KG            -0.056410869 -0.0248139173
## BeefRound1KG        -0.056128592 -0.0283601292
## ToyotaCorolla       -0.007273613 -0.0108357173
## PreschoolperMonth   -0.014084245  0.0026938504

```

```

head(GDPdataTrainSet.pca.normdata$x)      # Transformed data

```

```

##          PC1          PC2          PC3          PC4          PC5          PC6
## 61  -3.039865 -2.0859707 -1.8315668 -0.06937856  0.06623432 -1.2784415
## 64  -6.384648  0.3658036 -0.5420833 -0.13964974  0.59009946  0.6051857
## 133 -5.298737 -0.3362346 -0.2490153  0.61966623  0.94280609  2.1805977
## 9   -5.589605 -0.4956479  0.7318659  0.94858751  1.19345039  1.9612752
## 62   3.403006 -3.8100249  2.4338965  3.29248427  0.38989446  0.4529685
## 97  -2.325029  1.7114247  0.1024440  0.46254778 -0.03674554  0.4989894
##          PC7          PC8          PC9          PC10          PC11          PC12
## 61   0.1866662  0.3956465  0.8519720 -0.04475955 -2.0977228 -0.1249151
## 64  -1.5989538 -0.1983527  0.5431546 -0.10181693 -0.1926114 -0.2683056

```

## 133	-0.5300393	-2.9062132	2.7430591	2.06421034	-1.5802090	-2.4944185
## 9	-0.7881909	-0.4685455	-0.2190076	-0.05968880	0.3623404	0.7738729
## 62	-2.2913548	1.8993465	-1.1986855	-0.74466806	-1.2987751	-1.5310666
## 97	-0.4000785	0.9512749	-0.2972072	-0.24543437	0.6998274	0.5293423
##	PC13	PC14	PC15	PC16	PC17	PC18
## 61	-1.41022616	0.6037959	-0.1303786	0.39039608	1.6025362	1.21907599
## 64	-0.03606751	-0.3561753	-1.0379504	0.34272840	-0.3003305	-0.16985189
## 133	-0.14005681	-1.0473703	1.9147476	-0.49530642	1.8985743	-0.40283070
## 9	-0.04287590	-0.2202414	-0.7746910	0.06317333	-1.1130884	0.62299100
## 62	0.51581961	-1.2902555	-1.2616186	0.17830163	-0.7233297	0.84834689
## 97	0.15118660	-0.3622167	0.7446460	-0.02884784	-0.6636075	0.02904599
##	PC19	PC20	PC21	PC22	PC23	PC24
## 61	0.03899124	0.56732449	-0.45722848	-0.8735651	-0.3077555	-0.33796851
## 64	0.16727918	0.25643668	-0.06322418	-0.2457664	-0.5834147	0.01080966
## 133	-0.66218408	-0.58879763	0.60539715	0.1625065	0.2207253	-0.64253464
## 9	-0.09916299	-0.22177450	-0.14991175	-0.4114198	-0.3224662	0.65366007
## 62	-1.43192502	0.07672738	-0.71972522	1.2146985	1.1155333	-0.35012882
## 97	0.03082389	0.29450918	0.84161592	-0.2964861	0.4086776	0.01642432
##	PC25	PC26	PC27	PC28	PC29	P
C30						
## 61	-0.082001155	-0.06538442	-0.41311152	-0.337088395	-0.24364814	-0.55447
190						
## 64	0.271670372	0.05337051	-0.23461856	-0.080755731	0.08490173	0.18488
998						
## 133	0.423544998	0.91648929	0.01684388	0.093856946	0.16524401	-0.03084
172						
## 9	-0.318622195	-0.13228087	-0.26674490	0.006067111	0.16431070	-0.09323
857						
## 62	-0.349209799	0.18517579	-0.10109457	0.218157673	-0.40105908	-0.40362
656						
## 97	-0.005161004	0.34149406	-0.10339531	-0.399620377	-0.15162225	0.21150
918						
##	PC31	PC32	PC33	PC34	PC35	P
C36						
## 61	0.185693063	-0.01785285	-0.51830277	-0.69447816	-0.058988467	0.25255
701						
## 64	-0.007019811	-0.20128297	0.07706095	-0.37130210	0.064419436	-0.19027
813						
## 133	-0.377646391	-0.07447068	0.33723386	-0.08460909	0.003638568	0.14800
423						
## 9	0.335649430	-0.28963499	-0.35471183	-0.12760030	-0.202838021	0.07260
857						
## 62	-0.188272547	0.45143461	0.66429336	0.20050370	0.216585026	-0.05678
520						
## 97	0.101173263	0.42551178	0.05091355	-0.04566099	-0.222227134	0.22286
952						
##	PC37	PC38	PC39	PC40	PC41	
PC42						
## 61	-0.19161214	0.211619658	-0.2024545751	0.083444024	-0.24197975	0.285
1998						

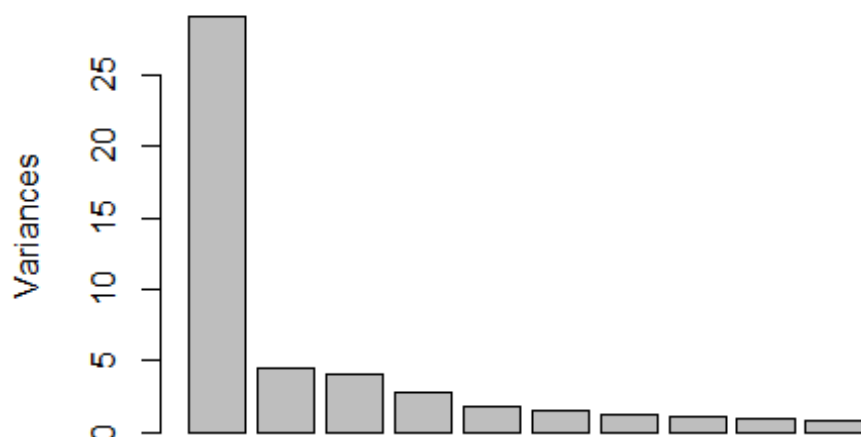
```

## 64 -0.14252696 -0.164827460 -0.0402622368 0.083279219 -0.25093744 -0.171
4923
## 133 0.09869151 0.007460935 -0.0003300664 -0.024808602 -0.24826440 -0.251
4427
## 9 -0.03041904 -0.150249054 0.1564791402 -0.316593730 0.31590721 0.210
6341
## 62 0.21229120 0.256529999 0.1145339032 -0.100028491 -0.25711252 0.104
9903
## 97 -0.04395584 0.169627467 0.1046777530 0.004875151 0.08408511 0.111
5071
##          PC43          PC44          PC45          PC46          PC47
PC48
## 61 -0.36315818 -0.21378580 -0.13754042 -0.079842817 -0.059862301 -0.03677
8722
## 64 0.09023978 0.12808646 -0.12803351 0.062235062 -0.030855095 -0.00268
6776
## 133 -0.03187235 0.15448581 -0.01152059 0.011909934 -0.009966696 -0.06013
9969
## 9 0.06256042 0.00338789 0.04481897 0.206511025 -0.068380725 -0.02966
8158
## 62 -0.02736285 -0.07166560 -0.07280740 0.117699648 0.083833775 -0.04416
8461
## 97 -0.04754129 0.03336189 -0.18236025 -0.009878981 -0.031374356 -0.21727
2000
##          PC49          PC50          PC51          PC52          PC53
PC54
## 61 -0.06832886 -0.120045948 0.006066169 0.010152616 0.06117844 0.0041
26251
## 64 0.04454729 0.075955533 -0.053654638 -0.022885334 0.01890509 -0.0052
66749
## 133 0.01637246 0.084773078 -0.017561232 0.001170816 -0.04401355 0.0161
36920
## 9 0.01191469 -0.007379773 0.017500785 0.031273143 -0.05680666 0.0140
84495
## 62 0.01976251 -0.038873174 -0.074515994 0.026576185 -0.06409826 -0.0085
11902
## 97 0.11371829 0.051823962 0.009862491 -0.050441851 0.07822175 0.0238
14635

```

```
plot(GDPdataTrainSet.pca.normdata)
```

GDPdataTrainSet.pca.normdata



#-----

```
var <- get_pca_var(GDPdataTrainSet.pca.normdata)
head(var$contrib, 4)
```

	Dim.1	Dim.2	Dim.3	Dim.4	Dim.5	D
im.6						
## MealInexpensive	2.601603	1.7276292	0.949641244	0.961719	0.258744233	0.6524
2528						
## MealFor2	2.881301	0.9341824	0.007625963	1.968744	0.000164928	0.8002
2089						
## McMealMcDonalds	2.462606	1.8575483	0.007561012	2.709421	0.004393870	0.0795
9736						
## DomesticBeer	2.451215	0.4107280	0.857835803	4.312730	1.467494336	0.2184
8614						
##	Dim.7	Dim.8	Dim.9	Dim.10	Dim.11	
## MealInexpensive	0.19066358	0.292230627	0.004829637	3.501514e-06	0.01086103	
## MealFor2	0.01688304	0.236957173	0.501873045	1.874577e-01	0.61236112	
## McMealMcDonalds	0.63148795	0.002103343	0.310202121	2.671404e-01	0.46862541	
## DomesticBeer	0.01097863	1.703680670	0.023738174	7.050939e-01	0.28414015	
##	Dim.12	Dim.13	Dim.14	Dim.15	Dim.16	
## MealInexpensive	0.063321757	0.40116766	0.6207874	0.04412147	1.629183810	
## MealFor2	0.183077325	0.04715038	0.6137021	0.09119239	0.245103101	
## McMealMcDonalds	0.004734944	0.42645848	3.2204461	0.15391049	0.003815063	
## DomesticBeer	1.994948629	0.45384607	0.7519904	0.35914245	0.446952422	
##	Dim.17	Dim.18	Dim.19	Dim.20	Dim.21	Di
m.22						
## MealInexpensive	0.1237578	0.4083340	2.9374330	0.04931285	0.119952225	0.882

```

0464
## MealFor2      0.2484491 0.1116661 0.1504796 1.13337517 0.105472472 0.193
0046
## McMealMcDonalds 1.0859507 3.1026946 4.6854984 0.02203289 0.002332839 0.280
1623
## DomesticBeer  0.3265666 0.3327646 0.3106847 2.45654316 0.344067336 0.823
0993
##              Dim.23   Dim.24   Dim.25   Dim.26   Dim.27   Di
m.28
## MealInexpensive 7.67188102 2.271265 2.76567192 4.8208516 2.583963 1.96396
2723
## MealFor2      0.08191806 2.444790 0.06896193 0.1519076 1.687890 0.00450
4047
## McMealMcDonalds 6.84917982 1.278699 3.09978908 0.1707493 7.718384 11.35192
3920
## DomesticBeer  4.83276223 1.592255 0.10589823 0.6728621 0.791822 0.55040
5058
##              Dim.29   Dim.30   Dim.31   Dim.32   Dim.33   D
im.34
## MealInexpensive 4.5297739 2.002563231 1.5323642 1.2686780 0.4220114 0.0077
51615
## MealFor2      1.1095409 0.008376718 1.4491009 3.4582349 0.4225812 0.0056
55504
## McMealMcDonalds 1.2174954 0.048991633 3.9607676 3.7572626 0.4857959 8.0517
36761
## DomesticBeer  0.4564613 0.026682430 0.4755489 0.3169414 4.4766282 0.0909
57888
##              Dim.35   Dim.36   Dim.37   Dim.38   Dim.39
## MealInexpensive 1.0630543 0.27355848 3.545499e-01 0.9732808 9.5014173
## MealFor2      11.0380040 0.07866191 9.363353e-05 0.8573810 0.7986373
## McMealMcDonalds 0.1588500 0.00216691 1.389502e-02 0.4985994 9.1026704
## DomesticBeer  0.1295367 0.69075575 4.160581e-01 0.1119689 2.0060554
##              Dim.40   Dim.41   Dim.42   Dim.43   Dim.44   Dim
.45
## MealInexpensive 3.8673874 3.6532208 8.1649580 13.1187297 1.93237303 2.0439
518
## MealFor2      0.7747005 0.6068458 1.1629438 2.9992821 2.41252495 3.4115
288
## McMealMcDonalds 0.1407823 6.2836899 2.1779089 0.7144497 0.09111278 0.5261
689
## DomesticBeer  4.7114240 0.2153042 0.1339594 0.8363595 1.68691272 1.9089
123
##              Dim.46   Dim.47   Dim.48   Dim.49   Dim.50
## MealInexpensive 1.315122 0.6696452 2.2411008 0.23753619 2.660515503
## MealFor2      28.422061 18.9857886 0.1068955 0.06632944 3.393564633
## McMealMcDonalds 8.203293 0.1974891 0.3059292 1.03138831 0.002741232
## DomesticBeer  3.919573 6.2410500 1.3916828 8.09486078 0.139284286
##              Dim.51   Dim.52   Dim.53   Dim.54
## MealInexpensive 0.35210897 0.639023800 0.1674991 0.0004611501
## MealFor2      0.44475007 0.006381291 2.2272609 0.0424588233

```

```

## McMealMcDonalds  0.09774089 0.001002934 0.6692258 0.0013969199
## DomesticBeer     23.74970555 0.243945912 7.8027319 0.1339669223

#-----

#pca 1 have the most variance
#To confirm it do summary (pca)
summary(GDPdataTrainSet.pca.normdata)

## Importance of components:
##              PC1      PC2      PC3      PC4      PC5      PC6      P
C7
## Standard deviation    5.3910 2.11885 2.00233 1.6661 1.35194 1.24836 1.072
83
## Proportion of Variance 0.5382 0.08314 0.07425 0.0514 0.03385 0.02886 0.021
31
## Cumulative Proportion 0.5382 0.62135 0.69559 0.7470 0.78085 0.80970 0.831
02
##              PC8      PC9      PC10      PC11      PC12      PC13
PC14
## Standard deviation    1.02113 0.93983 0.87451 0.82759 0.75936 0.68428 0.6
6622
## Proportion of Variance 0.01931 0.01636 0.01416 0.01268 0.01068 0.00867 0.0
0822
## Cumulative Proportion 0.85033 0.86669 0.88085 0.89353 0.90421 0.91288 0.9
2110
##              PC15      PC16      PC17      PC18      PC19      PC20      P
C21
## Standard deviation    0.6447 0.59364 0.58474 0.56078 0.52856 0.51585 0.48
052
## Proportion of Variance 0.0077 0.00653 0.00633 0.00582 0.00517 0.00493 0.00
428
## Cumulative Proportion 0.9288 0.93532 0.94166 0.94748 0.95265 0.95758 0.96
186
##              PC22      PC23      PC24      PC25      PC26      PC27      PC
28
## Standard deviation    0.44487 0.42751 0.41234 0.3960 0.3678 0.35827 0.341
08
## Proportion of Variance 0.00367 0.00338 0.00315 0.0029 0.0025 0.00238 0.002
15
## Cumulative Proportion 0.96552 0.96891 0.97205 0.9750 0.9775 0.97984 0.981
99
##              PC29      PC30      PC31      PC32      PC33      PC34      P
C35
## Standard deviation    0.31370 0.30362 0.2938 0.27272 0.26336 0.25612 0.24
004
## Proportion of Variance 0.00182 0.00171 0.0016 0.00138 0.00128 0.00121 0.00
107
## Cumulative Proportion 0.98382 0.98552 0.9871 0.98850 0.98978 0.99100 0.99
207

```

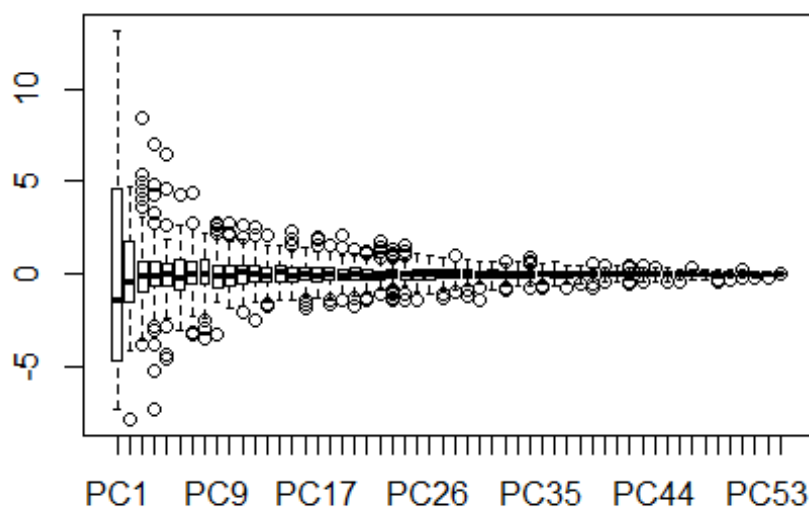


```
##          PC36    PC37    PC38    PC39    PC40    PC41
PC42
## Standard deviation    0.23061 0.22147 0.20875 0.19810 0.19150 0.18488 0.1
6701
## Proportion of Variance 0.00098 0.00091 0.00081 0.00073 0.00068 0.00063 0.0
0052
## Cumulative Proportion 0.99305 0.99396 0.99477 0.99549 0.99617 0.99680 0.9
9732
##          PC43    PC44    PC45    PC46    PC47    PC48
PC49
## Standard deviation    0.15845 0.14994 0.14446 0.13331 0.11751 0.11295 0.0
9906
## Proportion of Variance 0.00046 0.00042 0.00039 0.00033 0.00026 0.00024 0.0
0018
## Cumulative Proportion 0.99779 0.99820 0.99859 0.99892 0.99917 0.99941 0.9
9959
##          PC50    PC51    PC52    PC53    PC54
## Standard deviation    0.09357 0.08600 0.05447 0.04900 0.02284
## Proportion of Variance 0.00016 0.00014 0.00005 0.00004 0.00001
## Cumulative Proportion 0.99975 0.99989 0.99995 0.99999 1.00000

# We obtained 55 principle component
#The first 19 components account for >95% of total variance in the data

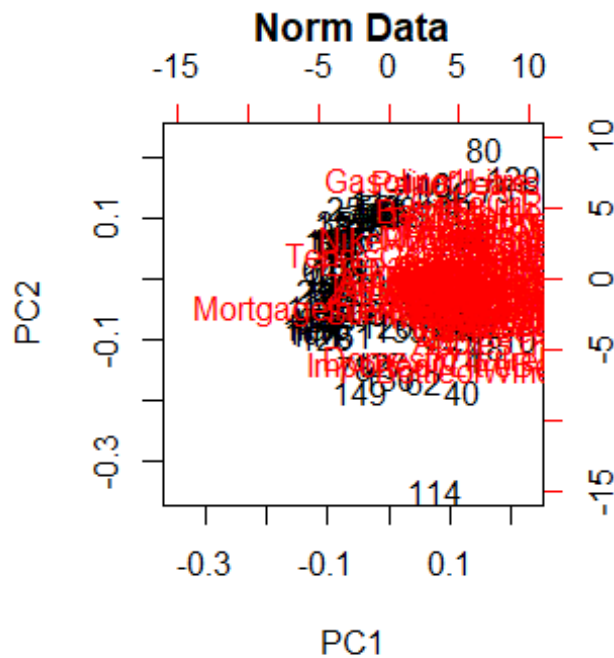
# Biplot the first two PCs.
#dim(GDPdataTrainSet.pca.normdata$x)
boxplot(GDPdataTrainSet.pca.normdata$x, main='Norm Data Transformation')
```

Norm Data Transformation



#Visualize first two components of your PCA.

```
biplot(GDPdataTrainSet.pca.normdata, choices = 1:2, main='Norm Data')
```



#correlations of the PCs

```
cor(GDPdataTrainSet.pca.normdata$x)
```

##		PC1	PC2	PC3	PC4	PC5
##	PC1	1.000000e+00	-7.948002e-15	5.913282e-16	5.076718e-16	-7.564693e-16
##	PC2	-7.948002e-15	1.000000e+00	-9.553407e-16	-5.294540e-16	9.984320e-17
##	PC3	5.913282e-16	-9.553407e-16	1.000000e+00	1.239250e-16	-2.082033e-16
##	PC4	5.076718e-16	-5.294540e-16	1.239250e-16	1.000000e+00	1.208962e-16
##	PC5	-7.564693e-16	9.984320e-17	-2.082033e-16	1.208962e-16	1.000000e+00
##	PC6	3.414830e-16	2.648861e-16	-4.616705e-16	-3.496233e-16	-2.058682e-16
##	PC7	-5.575013e-16	-1.543831e-16	-2.340112e-16	-1.361384e-17	2.800049e-18
##	PC8	3.263520e-17	-3.533789e-16	-1.639907e-16	3.528985e-16	-2.465244e-16
##	PC9	1.439891e-16	2.236913e-16	5.502265e-16	3.173884e-18	-2.887374e-17
##	PC10	-9.559588e-17	-3.941180e-17	-4.775818e-16	-3.850242e-16	1.269447e-16
##	PC11	-6.927158e-16	-3.836315e-17	-1.060939e-17	-1.816881e-16	3.894019e-16
##	PC12	-7.047251e-17	3.024758e-16	9.012465e-17	-6.673443e-16	3.009198e-16
##	PC13	-2.259207e-16	-3.199110e-16	-1.022500e-15	3.709589e-16	1.776320e-16
##	PC14	7.798662e-16	-7.901216e-16	2.230754e-16	1.971315e-16	1.923559e-16
##	PC15	1.673981e-15	6.396877e-16	2.371545e-16	8.157703e-17	-1.775563e-16
##	PC16	3.033266e-17	-4.829173e-16	1.305529e-16	1.144085e-16	-3.712162e-16
##	PC17	-1.234843e-16	-3.755865e-16	1.626027e-16	-4.162635e-16	3.804050e-16
##	PC18	-2.582267e-16	7.351428e-16	4.609631e-16	-3.816621e-17	5.259228e-16

##	PC19	3.743394e-16	-5.382046e-16	-2.248387e-16	2.995117e-16	-5.444638e-16
##	PC20	2.056028e-16	4.741192e-16	7.913332e-16	-1.250846e-16	8.194161e-17
##	PC21	1.283282e-15	3.281815e-16	2.413560e-16	3.936299e-16	-7.179894e-16
##	PC22	-5.616205e-16	8.081755e-17	3.152204e-16	-8.394959e-16	2.006950e-16
##	PC23	1.226856e-15	8.729398e-16	-1.033733e-15	1.406302e-15	-9.860354e-16
##	PC24	-7.957892e-16	5.737854e-16	-1.383258e-15	3.468024e-16	-1.200057e-15
##	PC25	1.365530e-15	1.550473e-15	-1.933245e-16	8.949048e-16	-3.184151e-16
##	PC26	-5.921703e-16	-2.137280e-16	2.680470e-16	4.325525e-16	-1.102550e-15
##	PC27	-2.211472e-15	4.672536e-16	-8.058100e-16	6.830964e-16	-2.635223e-16
##	PC28	-2.523559e-15	4.346105e-16	-1.515687e-15	-2.273751e-16	3.355442e-16
##	PC29	4.536241e-15	-8.683120e-17	8.370679e-16	-7.036917e-16	5.415253e-16
##	PC30	-2.031036e-15	1.392623e-17	4.349247e-16	6.157842e-16	3.208016e-16
##	PC31	-2.155999e-15	8.927090e-16	-2.971606e-16	-5.112951e-16	4.184851e-17
##	PC32	-3.768546e-15	3.913387e-16	-2.533964e-16	8.563905e-17	-7.862438e-16
##	PC33	-6.168452e-15	-1.067530e-15	-2.566158e-16	-8.773179e-16	2.559996e-16
##	PC34	-2.393364e-16	1.637275e-15	-9.551166e-16	5.122861e-16	5.337431e-16
##	PC35	1.063132e-15	-1.766521e-15	2.372577e-16	-1.485564e-15	-7.716034e-16
##	PC36	1.476919e-15	-5.246839e-16	1.235353e-17	-4.005139e-16	1.289234e-15
##	PC37	-8.809601e-16	-3.434880e-16	9.998540e-16	9.656370e-16	-3.152642e-16
##	PC38	4.255249e-16	3.907053e-16	8.309061e-16	1.458198e-15	-7.134943e-16
##	PC39	-2.292278e-15	-2.096479e-15	-1.131211e-18	2.201110e-15	-1.829186e-15
##	PC40	7.677715e-15	-1.021114e-15	-1.063400e-15	4.268771e-16	-7.188552e-16
##	PC41	-2.008741e-15	8.937684e-16	-1.096736e-15	1.777538e-16	-2.154393e-16
##	PC42	4.589955e-15	-1.489897e-16	-2.469240e-16	1.436391e-15	-1.990360e-16
##	PC43	1.032674e-14	-6.518663e-16	-4.665142e-16	4.698862e-19	3.694317e-16
##	PC44	1.741612e-16	2.119164e-15	3.126149e-16	-1.634674e-15	1.217966e-15
##	PC45	-3.196953e-15	1.469111e-15	-8.140933e-16	-4.514577e-16	-2.723826e-17
##	PC46	-5.931774e-15	-3.618915e-15	-7.085198e-16	-1.992713e-15	-1.048438e-16
##	PC47	-2.213842e-15	1.044760e-15	5.076239e-15	1.588380e-15	-8.894109e-16
##	PC48	-2.885707e-15	-1.108834e-15	-1.240739e-15	-2.296829e-17	-2.324959e-15
##	PC49	-1.090175e-15	-3.734902e-16	1.297233e-15	6.330508e-16	-3.646366e-15
##	PC50	-1.085299e-14	-3.105598e-15	-2.793472e-15	1.427591e-15	-2.901522e-15
##	PC51	-4.277645e-15	9.069281e-16	-6.792805e-16	3.666771e-16	-2.781161e-15
##	PC52	-1.106550e-14	5.520437e-17	6.858737e-16	-3.255756e-17	-2.937246e-15
##	PC53	1.182701e-14	-4.470542e-15	2.766986e-15	-4.749521e-15	3.777338e-15
##	PC54	3.752027e-15	1.119677e-15	-1.081259e-16	-3.682398e-16	3.611327e-15
##	PC6					
##	PC7					
##	PC8					
##	PC9					
##	PC10					
##	PC1	3.414830e-16	-5.575013e-16	3.263520e-17	1.439891e-16	-9.559588e-17
##	PC2	2.648861e-16	-1.543831e-16	-3.533789e-16	2.236913e-16	-3.941180e-17
##	PC3	-4.616705e-16	-2.340112e-16	-1.639907e-16	5.502265e-16	-4.775818e-16
##	PC4	-3.496233e-16	-1.361384e-17	3.528985e-16	3.173884e-18	-3.850242e-16
##	PC5	-2.058682e-16	2.800049e-18	-2.465244e-16	-2.887374e-17	1.269447e-16
##	PC6	1.000000e+00	-4.014249e-16	8.634608e-16	-1.358350e-16	-1.419515e-16
##	PC7	-4.014249e-16	1.000000e+00	-1.361944e-16	-4.764861e-16	2.804249e-16
##	PC8	8.634608e-16	-1.361944e-16	1.000000e+00	1.362426e-16	2.906796e-17
##	PC9	-1.358350e-16	-4.764861e-16	1.362426e-16	1.000000e+00	-1.842655e-16
##	PC10	-1.419515e-16	2.804249e-16	2.906796e-17	-1.842655e-16	1.000000e+00
##	PC11	-4.493073e-18	-1.079487e-16	-1.764076e-16	-5.100238e-16	8.801365e-16
##	PC12	2.733683e-16	1.570343e-16	-1.046860e-16	5.587428e-16	4.386427e-16
##	PC13	2.027779e-17	2.233654e-16	4.049102e-16	-6.247068e-16	1.382096e-16

##	PC14	-3.030562e-16	2.574289e-16	-3.146632e-16	-1.335866e-16	-2.603191e-16
##	PC15	-4.718471e-16	1.244291e-16	2.517309e-16	1.029417e-17	-1.765237e-16
##	PC16	-1.265993e-16	2.925690e-16	1.459095e-16	-1.826173e-17	-9.923439e-18
##	PC17	-6.465558e-17	7.122154e-17	5.379533e-17	4.340017e-17	-3.377054e-16
##	PC18	-6.562445e-17	-5.411412e-16	-2.401466e-16	1.712789e-16	3.013491e-16
##	PC19	-7.069633e-16	1.991034e-16	2.732003e-16	-3.358372e-16	-1.670304e-16
##	PC20	3.134041e-16	-1.061703e-16	5.737116e-16	5.053958e-17	-6.147474e-16
##	PC21	-8.267770e-16	-9.434006e-17	1.590591e-17	4.642507e-17	-3.062753e-16
##	PC22	-4.047782e-16	1.317516e-16	4.005745e-16	6.891306e-17	-2.748791e-17
##	PC23	6.082520e-17	7.631276e-16	1.782941e-17	1.193405e-15	2.402679e-16
##	PC24	-9.740826e-16	-1.542939e-17	-1.513397e-16	2.192129e-16	4.892508e-16
##	PC25	-7.905831e-16	3.244108e-16	6.991549e-16	-1.879264e-17	1.569171e-16
##	PC26	-4.079467e-17	-4.326666e-16	-1.086271e-16	-6.582951e-16	-6.361224e-16
##	PC27	-8.096428e-16	3.093751e-16	-8.309554e-16	-7.225492e-16	-9.960662e-18
##	PC28	-2.082327e-16	-1.858685e-16	5.559183e-16	4.364620e-16	-3.148686e-16
##	PC29	-5.466496e-16	7.802713e-16	-5.179820e-16	2.269082e-16	-2.669807e-16
##	PC30	-1.134762e-17	1.436733e-16	2.935981e-16	4.062375e-16	3.872260e-16
##	PC31	-3.833190e-17	-4.605445e-16	4.249529e-16	-6.725630e-17	1.591461e-16
##	PC32	-1.840207e-15	2.779780e-16	3.683630e-16	6.550889e-16	2.130666e-16
##	PC33	-2.968977e-16	9.378604e-16	-1.423947e-16	5.443978e-16	-3.795640e-16
##	PC34	1.508202e-16	4.830788e-16	-5.914536e-16	2.164918e-16	5.946172e-17
##	PC35	-1.066555e-15	4.716800e-16	-6.168508e-16	-5.067762e-18	5.570065e-16
##	PC36	-1.430756e-16	2.201266e-16	2.095009e-16	-2.627233e-16	-6.600205e-17
##	PC37	8.411065e-16	-5.163609e-16	6.178868e-16	-1.155442e-15	5.624459e-16
##	PC38	-8.991797e-16	-3.410506e-16	1.632976e-16	-3.373767e-16	8.166380e-16
##	PC39	-9.552180e-16	-8.051125e-16	2.307728e-16	-7.017284e-16	-8.282789e-17
##	PC40	1.310452e-15	1.102308e-16	-7.560182e-16	-7.515547e-16	-4.486314e-17
##	PC41	6.759947e-16	1.220395e-16	1.072385e-15	-7.098112e-16	-6.570273e-16
##	PC42	1.282472e-15	1.449709e-15	-1.105054e-16	-1.959209e-15	-1.135296e-15
##	PC43	-2.962904e-16	-1.929744e-16	1.596568e-16	9.885919e-17	-2.187183e-16
##	PC44	-2.137477e-16	2.552666e-16	4.166522e-16	8.214928e-16	-2.130978e-16
##	PC45	-1.992477e-16	9.468981e-17	1.112178e-16	-7.384909e-16	-1.054244e-16
##	PC46	3.036041e-16	1.107838e-16	-7.500215e-16	-7.716128e-16	-1.267356e-16
##	PC47	-9.267837e-16	-1.059120e-15	-5.713611e-16	-9.503313e-16	1.817920e-15
##	PC48	7.838965e-16	1.126691e-15	-1.215339e-15	-1.102115e-16	-3.603879e-16
##	PC49	1.594357e-15	4.467436e-16	1.093566e-15	-1.468961e-15	-1.646864e-16
##	PC50	-3.083829e-15	3.657712e-16	-1.425415e-15	6.928758e-16	1.842490e-15
##	PC51	2.025886e-15	-2.127660e-16	-3.421823e-15	-2.021353e-15	-1.835860e-16
##	PC52	1.897820e-15	-1.552744e-15	1.460050e-15	-1.468410e-15	3.281656e-15
##	PC53	7.076433e-16	-1.594417e-15	5.579465e-15	-3.004247e-16	2.567748e-15
##	PC54	-3.436094e-15	4.974963e-16	-6.944760e-15	2.867047e-16	5.320617e-15
##		PC11	PC12	PC13	PC14	PC15
##	PC1	-6.927158e-16	-7.047251e-17	-2.259207e-16	7.798662e-16	1.673981e-15
##	PC2	-3.836315e-17	3.024758e-16	-3.199110e-16	-7.901216e-16	6.396877e-16
##	PC3	-1.060939e-17	9.012465e-17	-1.022500e-15	2.230754e-16	2.371545e-16
##	PC4	-1.816881e-16	-6.673443e-16	3.709589e-16	1.971315e-16	8.157703e-17
##	PC5	3.894019e-16	3.009198e-16	1.776320e-16	1.923559e-16	-1.775563e-16
##	PC6	-4.493073e-18	2.733683e-16	2.027779e-17	-3.030562e-16	-4.718471e-16
##	PC7	-1.079487e-16	1.570343e-16	2.233654e-16	2.574289e-16	1.244291e-16
##	PC8	-1.764076e-16	-1.046860e-16	4.049102e-16	-3.146632e-16	2.517309e-16

##	PC9	-5.100238e-16	5.587428e-16	-6.247068e-16	-1.335866e-16	1.029417e-17
##	PC10	8.801365e-16	4.386427e-16	1.382096e-16	-2.603191e-16	-1.765237e-16
##	PC11	1.000000e+00	-6.362304e-17	-5.749425e-16	-5.231204e-17	1.857895e-16
##	PC12	-6.362304e-17	1.000000e+00	2.585180e-16	-2.248990e-16	5.160888e-16
##	PC13	-5.749425e-16	2.585180e-16	1.000000e+00	1.443996e-15	3.165052e-16
##	PC14	-5.231204e-17	-2.248990e-16	1.443996e-15	1.000000e+00	-8.610867e-17
##	PC15	1.857895e-16	5.160888e-16	3.165052e-16	-8.610867e-17	1.000000e+00
##	PC16	-5.794859e-17	-5.408934e-17	-1.440872e-15	-5.930428e-16	6.493372e-16
##	PC17	4.860485e-18	1.004205e-15	1.107497e-16	-1.596030e-16	-5.864633e-16
##	PC18	-5.478085e-17	4.142568e-16	1.234221e-16	-6.734329e-16	-9.240250e-16
##	PC19	-1.805263e-16	2.363011e-16	1.411593e-16	-4.820401e-16	-6.058638e-16
##	PC20	4.423225e-17	4.624105e-16	1.372080e-16	-5.840336e-17	-3.242585e-16
##	PC21	2.020379e-16	7.897297e-17	-4.513741e-16	-1.691606e-16	6.503725e-17
##	PC22	-4.032636e-16	1.607042e-16	-1.288564e-16	-2.141705e-16	2.027448e-16
##	PC23	4.433897e-16	-8.476026e-16	4.878715e-16	3.754774e-16	2.276740e-16
##	PC24	1.118628e-16	-4.062789e-17	-1.897198e-16	4.679475e-16	-1.361754e-16
##	PC25	-1.312711e-16	2.273441e-16	-1.608222e-16	3.665444e-16	-2.917067e-16
##	PC26	-7.003257e-16	4.607068e-16	-1.109613e-15	-2.015698e-16	1.822501e-16
##	PC27	-3.374269e-16	-2.081138e-16	2.653563e-16	4.581133e-16	2.494247e-16
##	PC28	-1.067309e-16	-4.258527e-16	3.504692e-16	4.455973e-16	2.371446e-16
##	PC29	-2.416930e-16	2.495130e-16	-3.698455e-16	-2.294963e-16	8.245281e-16
##	PC30	-2.543881e-16	-8.129161e-16	7.365181e-16	-1.959507e-16	2.837868e-16
##	PC31	1.057565e-15	-9.701685e-17	1.291271e-16	-2.193495e-16	2.043228e-16
##	PC32	-3.778523e-16	-2.262537e-16	-9.592282e-16	8.209465e-16	-7.553435e-17
##	PC33	-5.316405e-18	-1.389578e-16	5.727076e-16	1.039719e-15	1.661001e-16
##	PC34	7.418326e-16	-8.920061e-16	3.659120e-17	-3.945580e-16	-6.077413e-17
##	PC35	5.346556e-16	-4.705552e-17	-4.840942e-16	6.417451e-16	1.275349e-15
##	PC36	4.868095e-17	-6.248170e-17	-1.090400e-15	-3.502286e-17	2.073138e-16
##	PC37	-3.723511e-16	-1.763202e-16	-5.668982e-16	-3.338089e-16	1.917475e-16
##	PC38	-9.122181e-16	9.898756e-16	-2.789325e-16	-6.320873e-16	-2.556118e-17
##	PC39	-8.236149e-16	-2.426580e-15	4.425938e-16	9.425632e-16	4.962271e-16
##	PC40	-7.271162e-16	-5.986058e-16	1.159689e-16	4.095940e-17	1.733377e-16
##	PC41	7.653457e-16	-2.738959e-16	8.067283e-16	7.691240e-17	7.962203e-16
##	PC42	-1.014142e-15	-1.355900e-15	1.839691e-17	6.030467e-17	1.785575e-16
##	PC43	-4.471126e-16	-6.471907e-16	-3.820958e-16	1.001862e-15	3.262412e-16
##	PC44	-1.030759e-16	2.180975e-16	-3.521385e-16	-2.064989e-16	-5.191069e-16
##	PC45	-1.106814e-15	-1.677471e-16	-5.942605e-16	9.604160e-16	-1.005448e-15
##	PC46	4.122429e-16	8.854368e-16	3.874791e-16	5.956798e-17	-1.088020e-16
##	PC47	-9.204675e-16	-6.739227e-16	4.670321e-16	-3.983414e-16	4.922746e-16
##	PC48	-4.341432e-16	-6.848356e-16	1.149226e-15	-6.463740e-16	-1.270110e-15
##	PC49	-6.250681e-16	-1.467558e-15	4.208661e-16	-9.257280e-17	1.145147e-16
##	PC50	1.768489e-15	-1.368166e-15	-4.429650e-16	6.932432e-16	8.517087e-16
##	PC51	-4.032251e-16	1.247552e-15	-1.647988e-16	1.165759e-15	-1.067912e-15
##	PC52	-5.313427e-16	-3.017558e-15	-9.894621e-17	-2.443149e-15	2.168672e-15
##	PC53	-1.657473e-15	3.311296e-15	-8.531662e-16	1.144921e-15	-7.977412e-16
##	PC54	-4.145559e-15	-5.822745e-15	1.204401e-16	3.942666e-15	-6.294080e-15
##		PC16		PC17		PC18
##	PC1	3.033266e-17	-1.234843e-16	-2.582267e-16	3.743394e-16	2.056028e-16
##	PC2	-4.829173e-16	-3.755865e-16	7.351428e-16	-5.382046e-16	4.741192e-16
##	PC3	1.305529e-16	1.626027e-16	4.609631e-16	-2.248387e-16	7.913332e-16

## PC4	1.144085e-16	-4.162635e-16	-3.816621e-17	2.995117e-16	-1.250846e-16
## PC5	-3.712162e-16	3.804050e-16	5.259228e-16	-5.444638e-16	8.194161e-17
## PC6	-1.265993e-16	-6.465558e-17	-6.562445e-17	-7.069633e-16	3.134041e-16
## PC7	2.925690e-16	7.122154e-17	-5.411412e-16	1.991034e-16	-1.061703e-16
## PC8	1.459095e-16	5.379533e-17	-2.401466e-16	2.732003e-16	5.737116e-16
## PC9	-1.826173e-17	4.340017e-17	1.712789e-16	-3.358372e-16	5.053958e-17
## PC10	-9.923439e-18	-3.377054e-16	3.013491e-16	-1.670304e-16	-6.147474e-16
## PC11	-5.794859e-17	4.860485e-18	-5.478085e-17	-1.805263e-16	4.423225e-17
## PC12	-5.408934e-17	1.004205e-15	4.142568e-16	2.363011e-16	4.624105e-16
## PC13	-1.440872e-15	1.107497e-16	1.234221e-16	1.411593e-16	1.372080e-16
## PC14	-5.930428e-16	-1.596030e-16	-6.734329e-16	-4.820401e-16	-5.840336e-17
## PC15	6.493372e-16	-5.864633e-16	-9.240250e-16	-6.058638e-16	-3.242585e-16
## PC16	1.000000e+00	2.584054e-16	1.705568e-15	3.121189e-16	2.212962e-16
## PC17	2.584054e-16	1.000000e+00	-4.339928e-16	-4.881352e-16	1.441765e-16
## PC18	1.705568e-15	-4.339928e-16	1.000000e+00	-5.397083e-16	3.644388e-16
## PC19	3.121189e-16	-4.881352e-16	-5.397083e-16	1.000000e+00	1.491278e-16
## PC20	2.212962e-16	1.441765e-16	3.644388e-16	1.491278e-16	1.000000e+00
## PC21	-5.458251e-16	-4.575513e-16	-3.209766e-16	8.871609e-16	-1.567397e-16
## PC22	8.568371e-17	-4.338806e-16	-2.346479e-16	1.065501e-16	-2.550405e-16
## PC23	-1.733882e-16	5.843531e-16	5.701653e-16	6.959729e-16	-2.855981e-16
## PC24	-1.232275e-16	-4.801295e-16	-5.538206e-16	3.186580e-16	-8.611716e-17
## PC25	4.487146e-16	2.378190e-16	9.362966e-17	-3.625792e-16	-2.445928e-16
## PC26	-6.889961e-17	-3.173468e-16	1.975048e-16	3.798933e-16	-2.026112e-16
## PC27	-1.724740e-16	1.167727e-16	5.900153e-17	2.029943e-16	1.810865e-16
## PC28	5.671087e-16	6.036476e-16	-5.718813e-16	1.418524e-16	-2.712589e-16
## PC29	-1.441955e-16	-6.062723e-16	-6.692100e-18	2.293551e-16	-4.133915e-16
## PC30	1.566994e-16	-1.567311e-16	7.400339e-16	4.688787e-16	2.005391e-16
## PC31	-6.449148e-16	6.402692e-16	1.883117e-16	1.087290e-16	3.568049e-16
## PC32	4.318954e-16	-5.351941e-16	-1.644074e-16	5.947182e-16	-3.057060e-16
## PC33	2.027496e-16	1.594904e-16	-4.402171e-16	4.420698e-16	-4.029685e-16
## PC34	-4.954333e-16	6.849574e-16	1.295974e-16	1.031238e-16	-4.298513e-16
## PC35	7.474324e-16	3.325550e-16	-9.426969e-16	6.835815e-16	2.730781e-18
## PC36	1.664614e-16	1.238976e-15	2.715106e-16	-7.403869e-16	8.646833e-16
## PC37	6.716925e-16	-1.351509e-16	-1.295783e-16	3.199250e-16	-1.630519e-16
## PC38	8.033814e-16	-3.637049e-16	-6.883829e-16	7.523124e-17	-3.045536e-16
## PC39	-3.628482e-16	-4.126695e-16	9.508136e-17	-6.180309e-16	-2.538614e-16
## PC40	-1.117760e-16	3.166447e-16	-1.187367e-15	-7.294901e-17	2.561349e-17
## PC41	-8.473388e-16	2.923074e-16	-3.555179e-16	8.621749e-17	-1.143850e-16
## PC42	3.267219e-16	-4.567887e-16	2.274444e-16	-1.710286e-15	1.817502e-16
## PC43	-1.004384e-16	-4.454406e-16	-5.355739e-16	-1.072965e-16	-1.231776e-16
## PC44	-2.918449e-16	3.114973e-16	-1.237697e-15	-3.222329e-16	2.127922e-16
## PC45	2.064584e-16	-1.891637e-16	1.305911e-16	-5.420260e-16	8.084053e-16
## PC46	4.594167e-16	-1.635312e-16	-9.970177e-16	3.591923e-16	-2.437023e-16
## PC47	-9.979405e-16	7.250476e-16	2.508653e-17	6.087997e-16	1.969475e-16
## PC48	-1.311204e-15	-4.156936e-16	-1.020571e-15	2.640294e-16	4.025027e-17
## PC49	4.192908e-16	-5.429973e-16	-2.544524e-16	-2.690889e-16	1.269315e-15
## PC50	3.205167e-17	-5.180771e-17	2.970991e-16	6.087083e-16	3.609723e-18
## PC51	-1.199537e-15	-1.796229e-15	-6.908279e-16	-2.286192e-15	1.680352e-15
## PC52	-2.959468e-16	3.393597e-17	2.073048e-15	-1.348470e-15	1.898225e-15
## PC53	1.516552e-15	2.178308e-15	-1.161311e-15	3.343703e-15	1.092237e-15

##	PC54	4.302859e-15	6.298601e-15	9.671620e-16	-3.734364e-15	1.426010e-15
##		PC21	PC22	PC23	PC24	PC25
##	PC1	1.283282e-15	-5.616205e-16	1.226856e-15	-7.957892e-16	1.365530e-15
##	PC2	3.281815e-16	8.081755e-17	8.729398e-16	5.737854e-16	1.550473e-15
##	PC3	2.413560e-16	3.152204e-16	-1.033733e-15	-1.383258e-15	-1.933245e-16
##	PC4	3.936299e-16	-8.394959e-16	1.406302e-15	3.468024e-16	8.949048e-16
##	PC5	-7.179894e-16	2.006950e-16	-9.860354e-16	-1.200057e-15	-3.184151e-16
##	PC6	-8.267770e-16	-4.047782e-16	6.082520e-17	-9.740826e-16	-7.905831e-16
##	PC7	-9.434006e-17	1.317516e-16	7.631276e-16	-1.542939e-17	3.244108e-16
##	PC8	1.590591e-17	4.005745e-16	1.782941e-17	-1.513397e-16	6.991549e-16
##	PC9	4.642507e-17	6.891306e-17	1.193405e-15	2.192129e-16	-1.879264e-17
##	PC10	-3.062753e-16	-2.748791e-17	2.402679e-16	4.892508e-16	1.569171e-16
##	PC11	2.020379e-16	-4.032636e-16	4.433897e-16	1.118628e-16	-1.312711e-16
##	PC12	7.897297e-17	1.607042e-16	-8.476026e-16	-4.062789e-17	2.273441e-16
##	PC13	-4.513741e-16	-1.288564e-16	4.878715e-16	-1.897198e-16	-1.608222e-16
##	PC14	-1.691606e-16	-2.141705e-16	3.754774e-16	4.679475e-16	3.665444e-16
##	PC15	6.503725e-17	2.027448e-16	2.276740e-16	-1.361754e-16	-2.917067e-16
##	PC16	-5.458251e-16	8.568371e-17	-1.733882e-16	-1.232275e-16	4.487146e-16
##	PC17	-4.575513e-16	-4.338806e-16	5.843531e-16	-4.801295e-16	2.378190e-16
##	PC18	-3.209766e-16	-2.346479e-16	5.701653e-16	-5.538206e-16	9.362966e-17
##	PC19	8.871609e-16	1.065501e-16	6.959729e-16	3.186580e-16	-3.625792e-16
##	PC20	-1.567397e-16	-2.550405e-16	-2.855981e-16	-8.611716e-17	-2.445928e-16
##	PC21	1.000000e+00	3.498968e-17	6.655008e-16	7.004277e-16	4.320383e-16
##	PC22	3.498968e-17	1.000000e+00	-3.743668e-16	-1.090458e-15	3.724290e-16
##	PC23	6.655008e-16	-3.743668e-16	1.000000e+00	-9.779268e-16	5.379558e-17
##	PC24	7.004277e-16	-1.090458e-15	-9.779268e-16	1.000000e+00	1.076917e-16
##	PC25	4.320383e-16	3.724290e-16	5.379558e-17	1.076917e-16	1.000000e+00
##	PC26	1.975073e-16	-9.047705e-16	6.938211e-16	-2.746274e-16	3.411375e-16
##	PC27	3.952673e-16	-6.765692e-16	5.711712e-16	-2.171631e-16	-4.836220e-16
##	PC28	2.373684e-16	-1.067840e-17	-1.968228e-16	5.323179e-16	7.079297e-17
##	PC29	3.220129e-16	-2.031372e-16	-9.081696e-16	-6.201059e-16	-2.991428e-16
##	PC30	-1.768836e-16	-1.073249e-16	-3.758030e-16	1.058629e-16	-4.839418e-17
##	PC31	-7.046020e-16	7.872936e-16	-2.851115e-16	6.262042e-16	3.926918e-16
##	PC32	5.887120e-16	-2.408766e-18	1.487602e-17	-1.855054e-16	-8.062035e-17
##	PC33	4.412897e-18	-8.975258e-17	-4.427006e-16	-8.676965e-16	9.501292e-17
##	PC34	2.686926e-16	2.248980e-16	-1.654271e-16	8.709009e-16	1.421465e-15
##	PC35	-7.407990e-16	-3.507744e-16	1.165673e-16	4.998070e-16	-3.130122e-16
##	PC36	-4.573592e-16	7.259129e-16	-6.088846e-17	-4.349920e-17	-1.168050e-16
##	PC37	-2.340338e-16	5.880067e-16	5.866880e-16	-4.452363e-16	-4.440995e-16
##	PC38	5.050587e-16	6.747881e-16	6.462580e-16	-1.002660e-16	-1.650603e-17
##	PC39	2.425847e-16	9.039142e-16	1.469814e-16	2.408670e-16	3.625894e-16
##	PC40	-3.697230e-16	-1.760284e-16	4.391360e-16	1.647694e-15	-6.168158e-16
##	PC41	-6.493451e-17	-3.390257e-16	-1.058046e-15	-1.691452e-16	-8.520200e-17
##	PC42	3.708618e-16	1.021352e-16	-5.064490e-16	-4.040710e-16	5.543269e-16
##	PC43	-1.172176e-16	5.823872e-16	-9.461822e-16	-2.773436e-16	-9.710104e-16
##	PC44	-5.473717e-16	1.200936e-16	-1.352264e-16	4.420489e-16	2.615476e-16
##	PC45	-1.040598e-16	2.178554e-16	-4.522907e-16	6.057840e-16	2.012775e-16
##	PC46	-7.120226e-17	-8.766105e-16	8.241293e-16	-9.632417e-16	5.897586e-16
##	PC47	-1.682566e-15	5.601245e-16	8.241872e-16	-1.859112e-16	-1.796516e-15
##	PC48	-3.014174e-16	2.757408e-17	6.481592e-16	3.904550e-16	4.306521e-16

##	PC49	-1.710611e-15	2.835024e-15	-3.520886e-17	1.250139e-15	-3.918283e-16
##	PC50	4.999508e-16	-9.918918e-16	4.171823e-19	5.367373e-16	9.222670e-16
##	PC51	1.452539e-15	1.737924e-15	-2.147507e-15	5.729243e-16	5.145923e-17
##	PC52	-2.600317e-16	2.319329e-15	4.576027e-16	3.058556e-16	4.067921e-15
##	PC53	-2.271826e-15	-2.395680e-15	8.069232e-17	-1.829256e-15	-1.659596e-15
##	PC54	2.086086e-15	-2.186907e-15	-3.849053e-15	-1.021630e-15	-7.424496e-17
##		PC26	PC27	PC28	PC29	PC30
##	PC1	-5.921703e-16	-2.211472e-15	-2.523559e-15	4.536241e-15	-2.031036e-15
##	PC2	-2.137280e-16	4.672536e-16	4.346105e-16	-8.683120e-17	1.392623e-17
##	PC3	2.680470e-16	-8.058100e-16	-1.515687e-15	8.370679e-16	4.349247e-16
##	PC4	4.325525e-16	6.830964e-16	-2.273751e-16	-7.036917e-16	6.157842e-16
##	PC5	-1.102550e-15	-2.635223e-16	3.355442e-16	5.415253e-16	3.208016e-16
##	PC6	-4.079467e-17	-8.096428e-16	-2.082327e-16	-5.466496e-16	-1.134762e-17
##	PC7	-4.326666e-16	3.093751e-16	-1.858685e-16	7.802713e-16	1.436733e-16
##	PC8	-1.086271e-16	-8.309554e-16	5.559183e-16	-5.179820e-16	2.935981e-16
##	PC9	-6.582951e-16	-7.225492e-16	4.364620e-16	2.269082e-16	4.062375e-16
##	PC10	-6.361224e-16	-9.960662e-18	-3.148686e-16	-2.669807e-16	3.872260e-16
##	PC11	-7.003257e-16	-3.374269e-16	-1.067309e-16	-2.416930e-16	-2.543881e-16
##	PC12	4.607068e-16	-2.081138e-16	-4.258527e-16	2.495130e-16	-8.129161e-16
##	PC13	-1.109613e-15	2.653563e-16	3.504692e-16	-3.698455e-16	7.365181e-16
##	PC14	-2.015698e-16	4.581133e-16	4.455973e-16	-2.294963e-16	-1.959507e-16
##	PC15	1.822501e-16	2.494247e-16	2.371446e-16	8.245281e-16	2.837868e-16
##	PC16	-6.889961e-17	-1.724740e-16	5.671087e-16	-1.441955e-16	1.566994e-16
##	PC17	-3.173468e-16	1.167727e-16	6.036476e-16	-6.062723e-16	-1.567311e-16
##	PC18	1.975048e-16	5.900153e-17	-5.718813e-16	-6.692100e-18	7.400339e-16
##	PC19	3.798933e-16	2.029943e-16	1.418524e-16	2.293551e-16	4.688787e-16
##	PC20	-2.026112e-16	1.810865e-16	-2.712589e-16	-4.133915e-16	2.005391e-16
##	PC21	1.975073e-16	3.952673e-16	2.373684e-16	3.220129e-16	-1.768836e-16
##	PC22	-9.047705e-16	-6.765692e-16	-1.067840e-17	-2.031372e-16	-1.073249e-16
##	PC23	6.938211e-16	5.711712e-16	-1.968228e-16	-9.081696e-16	-3.758030e-16
##	PC24	-2.746274e-16	-2.171631e-16	5.323179e-16	-6.201059e-16	1.058629e-16
##	PC25	3.411375e-16	-4.836220e-16	7.079297e-17	-2.991428e-16	-4.839418e-17
##	PC26	1.000000e+00	-2.541110e-16	-4.365409e-16	4.187686e-16	-6.653631e-17
##	PC27	-2.541110e-16	1.000000e+00	-1.001886e-15	-4.830323e-16	5.557819e-16
##	PC28	-4.365409e-16	-1.001886e-15	1.000000e+00	-8.661335e-17	6.309230e-16
##	PC29	4.187686e-16	-4.830323e-16	-8.661335e-17	1.000000e+00	-1.770756e-16
##	PC30	-6.653631e-17	5.557819e-16	6.309230e-16	-1.770756e-16	1.000000e+00
##	PC31	-2.629922e-16	-1.146680e-16	1.398148e-16	2.053350e-16	8.443320e-17
##	PC32	-2.827447e-17	3.542129e-16	-6.006236e-16	2.796691e-16	9.892874e-17
##	PC33	4.610291e-16	-3.952813e-16	-1.726786e-16	5.193066e-16	7.629203e-17
##	PC34	2.494442e-16	-2.731931e-16	-4.243344e-16	-6.170452e-17	-2.384289e-16
##	PC35	1.297751e-16	1.522993e-16	3.672013e-16	9.387496e-16	6.719547e-16
##	PC36	-2.980545e-16	-2.221175e-16	-9.869036e-17	2.198614e-16	9.325376e-16
##	PC37	2.937669e-16	-7.293349e-16	-4.268335e-16	8.666109e-16	1.432419e-16
##	PC38	1.274057e-16	9.964544e-16	1.413923e-17	3.055279e-16	7.986349e-16
##	PC39	6.488032e-17	6.082558e-17	1.922361e-16	-2.618853e-16	1.590692e-16
##	PC40	-8.076244e-16	5.087621e-16	2.595359e-16	8.096646e-16	4.041056e-16
##	PC41	2.334016e-16	-2.121327e-16	1.500402e-16	5.390151e-16	7.663259e-16
##	PC42	3.912716e-16	-3.598952e-16	-4.388648e-17	-8.211921e-16	4.815785e-16
##	PC43	-6.387898e-17	3.508160e-16	-3.893239e-16	1.457338e-15	3.642031e-16

##	PC44	-6.451040e-16	4.665846e-16	-3.277021e-16	3.584606e-16	1.074275e-16
##	PC45	8.370583e-16	-5.305293e-16	-1.427875e-16	-9.067582e-16	-1.893156e-15
##	PC46	2.899280e-16	6.872461e-16	1.231838e-15	2.828862e-16	-2.558993e-17
##	PC47	1.438885e-16	3.498239e-16	-9.194330e-18	-6.607552e-17	-1.174270e-15
##	PC48	1.306591e-15	9.379877e-16	4.932172e-16	5.605006e-16	-5.827599e-16
##	PC49	2.180920e-16	-5.928267e-17	-1.138725e-16	-6.087424e-16	-8.615460e-17
##	PC50	2.544707e-16	3.447442e-16	-7.618808e-16	1.878429e-16	-9.620639e-16
##	PC51	-1.551765e-15	2.473667e-16	-1.648349e-17	-4.702651e-16	-1.114008e-16
##	PC52	6.962311e-16	-5.155597e-16	1.020107e-15	-1.824643e-16	1.815349e-15
##	PC53	-7.097315e-16	-1.061289e-16	4.457204e-16	-7.152995e-16	-1.682030e-16
##	PC54	5.143136e-15	6.938201e-15	-5.974576e-15	2.494087e-17	-1.074394e-15
##		PC31	PC32	PC33	PC34	PC35
##	PC1	-2.155999e-15	-3.768546e-15	-6.168452e-15	-2.393364e-16	1.063132e-15
##	PC2	8.927090e-16	3.913387e-16	-1.067530e-15	1.637275e-15	-1.766521e-15
##	PC3	-2.971606e-16	-2.533964e-16	-2.566158e-16	-9.551166e-16	2.372577e-16
##	PC4	-5.112951e-16	8.563905e-17	-8.773179e-16	5.122861e-16	-1.485564e-15
##	PC5	4.184851e-17	-7.862438e-16	2.559996e-16	5.337431e-16	-7.716034e-16
##	PC6	-3.833190e-17	-1.840207e-15	-2.968977e-16	1.508202e-16	-1.066555e-15
##	PC7	-4.605445e-16	2.779780e-16	9.378604e-16	4.830788e-16	4.716800e-16
##	PC8	4.249529e-16	3.683630e-16	-1.423947e-16	-5.914536e-16	-6.168508e-16
##	PC9	-6.725630e-17	6.550889e-16	5.443978e-16	2.164918e-16	-5.067762e-18
##	PC10	1.591461e-16	2.130666e-16	-3.795640e-16	5.946172e-17	5.570065e-16
##	PC11	1.057565e-15	-3.778523e-16	-5.316405e-18	7.418326e-16	5.346556e-16
##	PC12	-9.701685e-17	-2.262537e-16	-1.389578e-16	-8.920061e-16	-4.705552e-17
##	PC13	1.291271e-16	-9.592282e-16	5.727076e-16	3.659120e-17	-4.840942e-16
##	PC14	-2.193495e-16	8.209465e-16	1.039719e-15	-3.945580e-16	6.417451e-16
##	PC15	2.043228e-16	-7.553435e-17	1.661001e-16	-6.077413e-17	1.275349e-15
##	PC16	-6.449148e-16	4.318954e-16	2.027496e-16	-4.954333e-16	7.474324e-16
##	PC17	6.402692e-16	-5.351941e-16	1.594904e-16	6.849574e-16	3.325550e-16
##	PC18	1.883117e-16	-1.644074e-16	-4.402171e-16	1.295974e-16	-9.426969e-16
##	PC19	1.087290e-16	5.947182e-16	4.420698e-16	1.031238e-16	6.835815e-16
##	PC20	3.568049e-16	-3.057060e-16	-4.029685e-16	-4.298513e-16	2.730781e-18
##	PC21	-7.046020e-16	5.887120e-16	4.412897e-18	2.686926e-16	-7.407990e-16
##	PC22	7.872936e-16	-2.408766e-18	-8.975258e-17	2.248980e-16	-3.507744e-16
##	PC23	-2.851115e-16	1.487602e-17	-4.427006e-16	-1.654271e-16	1.165673e-16
##	PC24	6.262042e-16	-1.855054e-16	-8.676965e-16	8.709009e-16	4.998070e-16
##	PC25	3.926918e-16	-8.062035e-17	9.501292e-17	1.421465e-15	-3.130122e-16
##	PC26	-2.629922e-16	-2.827447e-17	4.610291e-16	2.494442e-16	1.297751e-16
##	PC27	-1.146680e-16	3.542129e-16	-3.952813e-16	-2.731931e-16	1.522993e-16
##	PC28	1.398148e-16	-6.006236e-16	-1.726786e-16	-4.243344e-16	3.672013e-16
##	PC29	2.053350e-16	2.796691e-16	5.193066e-16	-6.170452e-17	9.387496e-16
##	PC30	8.443320e-17	9.892874e-17	7.629203e-17	-2.384289e-16	6.719547e-16
##	PC31	1.000000e+00	4.529497e-16	5.333112e-16	-6.169021e-17	8.134070e-16
##	PC32	4.529497e-16	1.000000e+00	-1.312767e-17	4.288441e-16	2.451507e-16
##	PC33	5.333112e-16	-1.312767e-17	1.000000e+00	-1.845508e-16	-3.167785e-16
##	PC34	-6.169021e-17	4.288441e-16	-1.845508e-16	1.000000e+00	6.445534e-16
##	PC35	8.134070e-16	2.451507e-16	-3.167785e-16	6.445534e-16	1.000000e+00
##	PC36	-8.449072e-16	2.110732e-16	3.719279e-17	-3.126879e-16	5.814507e-16
##	PC37	8.880429e-17	2.552403e-16	2.994994e-17	-6.432229e-16	-1.058066e-16
##	PC38	2.531049e-16	3.853288e-16	4.985313e-16	-1.599198e-16	-1.655383e-16

##	PC39	7.100230e-17	4.434314e-16	2.387130e-17	4.974699e-16	-4.397998e-16
##	PC40	2.888201e-16	-7.551425e-16	-5.391274e-16	-2.241385e-16	-5.449489e-16
##	PC41	1.533847e-16	-2.062719e-16	-4.923912e-17	2.654904e-16	4.456680e-16
##	PC42	3.446436e-16	1.112521e-16	2.028288e-16	-5.898712e-16	-8.924899e-16
##	PC43	-6.496418e-17	-7.155726e-16	8.264898e-16	7.521814e-16	-7.590868e-16
##	PC44	1.179889e-15	-1.016783e-15	-9.283544e-16	-5.059872e-16	-1.121396e-15
##	PC45	3.763869e-16	2.734856e-17	-1.050942e-17	-1.304384e-15	1.132307e-15
##	PC46	-1.263179e-15	-3.554421e-16	2.659597e-16	3.657319e-16	1.030907e-16
##	PC47	4.180779e-16	-6.816243e-16	1.218886e-15	8.519426e-16	1.412481e-15
##	PC48	1.118195e-15	4.882756e-16	-6.849415e-16	1.368228e-15	4.182023e-16
##	PC49	-4.469183e-16	4.993996e-16	1.457884e-16	-1.468721e-15	1.353830e-16
##	PC50	-8.621746e-16	7.386231e-16	3.925396e-16	1.251339e-15	2.238343e-16
##	PC51	-6.482901e-16	-1.443760e-15	-1.945586e-16	4.450717e-16	1.263267e-15
##	PC52	-9.616746e-17	2.567465e-15	2.275808e-15	1.366859e-15	1.634383e-15
##	PC53	2.177625e-15	9.569618e-16	-1.415512e-15	-1.765261e-15	-3.987856e-17
##	PC54	-3.167474e-15	-2.196190e-15	-4.692200e-15	-6.219265e-15	5.232600e-15
##		PC36	PC37	PC38	PC39	PC40
##	PC1	1.476919e-15	-8.809601e-16	4.255249e-16	-2.292278e-15	7.677715e-15
##	PC2	-5.246839e-16	-3.434880e-16	3.907053e-16	-2.096479e-15	-1.021114e-15
##	PC3	1.235353e-17	9.998540e-16	8.309061e-16	-1.131211e-18	-1.063400e-15
##	PC4	-4.005139e-16	9.656370e-16	1.458198e-15	2.201110e-15	4.268771e-16
##	PC5	1.289234e-15	-3.152642e-16	-7.134943e-16	-1.829186e-15	-7.188552e-16
##	PC6	-1.430756e-16	8.411065e-16	-8.991797e-16	-9.552180e-16	1.310452e-15
##	PC7	2.201266e-16	-5.163609e-16	-3.410506e-16	-8.051125e-16	1.102308e-16
##	PC8	2.095009e-16	6.178868e-16	1.632976e-16	2.307728e-16	-7.560182e-16
##	PC9	-2.627233e-16	-1.155442e-15	-3.373767e-16	-7.017284e-16	-7.515547e-16
##	PC10	-6.600205e-17	5.624459e-16	8.166380e-16	-8.282789e-17	-4.486314e-17
##	PC11	4.868095e-17	-3.723511e-16	-9.122181e-16	-8.236149e-16	-7.271162e-16
##	PC12	-6.248170e-17	-1.763202e-16	9.898756e-16	-2.426580e-15	-5.986058e-16
##	PC13	-1.090400e-15	-5.668982e-16	-2.789325e-16	4.425938e-16	1.159689e-16
##	PC14	-3.502286e-17	-3.338089e-16	-6.320873e-16	9.425632e-16	4.095940e-17
##	PC15	2.073138e-16	1.917475e-16	-2.556118e-17	4.962271e-16	1.733377e-16
##	PC16	1.664614e-16	6.716925e-16	8.033814e-16	-3.628482e-16	-1.117760e-16
##	PC17	1.238976e-15	-1.351509e-16	-3.637049e-16	-4.126695e-16	3.166447e-16
##	PC18	2.715106e-16	-1.295783e-16	-6.883829e-16	9.508136e-17	-1.187367e-15
##	PC19	-7.403869e-16	3.199250e-16	7.523124e-17	-6.180309e-16	-7.294901e-17
##	PC20	8.646833e-16	-1.630519e-16	-3.045536e-16	-2.538614e-16	2.561349e-17
##	PC21	-4.573592e-16	-2.340338e-16	5.050587e-16	2.425847e-16	-3.697230e-16
##	PC22	7.259129e-16	5.880067e-16	6.747881e-16	9.039142e-16	-1.760284e-16
##	PC23	-6.088846e-17	5.866880e-16	6.462580e-16	1.469814e-16	4.391360e-16
##	PC24	-4.349920e-17	-4.452363e-16	-1.002660e-16	2.408670e-16	1.647694e-15
##	PC25	-1.168050e-16	-4.440995e-16	-1.650603e-17	3.625894e-16	-6.168158e-16
##	PC26	-2.980545e-16	2.937669e-16	1.274057e-16	6.488032e-17	-8.076244e-16
##	PC27	-2.221175e-16	-7.293349e-16	9.964544e-16	6.082558e-17	5.087621e-16
##	PC28	-9.869036e-17	-4.268335e-16	1.413923e-17	1.922361e-16	2.595359e-16
##	PC29	2.198614e-16	8.666109e-16	3.055279e-16	-2.618853e-16	8.096646e-16
##	PC30	9.325376e-16	1.432419e-16	7.986349e-16	1.590692e-16	4.041056e-16
##	PC31	-8.449072e-16	8.880429e-17	2.531049e-16	7.100230e-17	2.888201e-16
##	PC32	2.110732e-16	2.552403e-16	3.853288e-16	4.434314e-16	-7.551425e-16
##	PC33	3.719279e-17	2.994994e-17	4.985313e-16	2.387130e-17	-5.391274e-16

##	PC34	-3.126879e-16	-6.432229e-16	-1.599198e-16	4.974699e-16	-2.241385e-16
##	PC35	5.814507e-16	-1.058066e-16	-1.655383e-16	-4.397998e-16	-5.449489e-16
##	PC36	1.000000e+00	8.808063e-16	6.407866e-16	-5.822037e-16	4.705975e-17
##	PC37	8.808063e-16	1.000000e+00	6.177383e-16	3.152092e-16	-3.718119e-16
##	PC38	6.407866e-16	6.177383e-16	1.000000e+00	-2.844881e-16	-1.242974e-15
##	PC39	-5.822037e-16	3.152092e-16	-2.844881e-16	1.000000e+00	3.360751e-16
##	PC40	4.705975e-17	-3.718119e-16	-1.242974e-15	3.360751e-16	1.000000e+00
##	PC41	-2.129735e-16	-1.376795e-15	4.046030e-17	1.373358e-16	7.256926e-17
##	PC42	7.451724e-16	1.331255e-15	-3.169386e-16	1.548160e-16	-8.175973e-16
##	PC43	2.021785e-16	-1.664270e-17	2.569307e-16	8.546017e-16	7.130285e-16
##	PC44	1.268730e-17	-6.470323e-16	-2.996047e-16	6.021840e-16	-7.262089e-16
##	PC45	-7.358896e-16	2.752621e-17	-5.403918e-16	-1.621670e-16	-2.697848e-16
##	PC46	7.234163e-16	-1.194701e-15	2.705668e-17	2.647576e-17	-1.816649e-16
##	PC47	-4.207460e-16	3.945803e-16	-3.052814e-16	1.103421e-15	-6.062723e-16
##	PC48	-4.454592e-16	-9.196411e-16	-3.112450e-16	2.180149e-16	4.468174e-16
##	PC49	-1.354915e-16	9.315573e-16	-4.165871e-16	-2.785893e-16	-3.601979e-16
##	PC50	-4.722534e-16	-2.493228e-16	-5.266429e-16	-1.487038e-17	-4.620097e-16
##	PC51	-2.123678e-15	-1.305588e-15	1.130606e-15	7.476097e-17	-3.156203e-17
##	PC52	-2.783227e-16	6.425458e-16	1.857934e-15	1.564424e-15	1.751897e-15
##	PC53	-1.714716e-16	-4.804819e-16	-1.665464e-15	-1.564432e-15	1.188270e-16
##	PC54	-3.451661e-15	-1.388356e-15	-3.160089e-15	-3.205366e-15	2.467197e-15
##	PC41		PC42	PC43	PC44	PC45
##	PC1	-2.008741e-15	4.589955e-15	1.032674e-14	1.741612e-16	-3.196953e-15
##	PC2	8.937684e-16	-1.489897e-16	-6.518663e-16	2.119164e-15	1.469111e-15
##	PC3	-1.096736e-15	-2.469240e-16	-4.665142e-16	3.126149e-16	-8.140933e-16
##	PC4	1.777538e-16	1.436391e-15	4.698862e-19	-1.634674e-15	-4.514577e-16
##	PC5	-2.154393e-16	-1.990360e-16	3.694317e-16	1.217966e-15	-2.723826e-17
##	PC6	6.759947e-16	1.282472e-15	-2.962904e-16	-2.137477e-16	-1.992477e-16
##	PC7	1.220395e-16	1.449709e-15	-1.929744e-16	2.552666e-16	9.468981e-17
##	PC8	1.072385e-15	-1.105054e-16	1.596568e-16	4.166522e-16	1.112178e-16
##	PC9	-7.098112e-16	-1.959209e-15	9.885919e-17	8.214928e-16	-7.384909e-16
##	PC10	-6.570273e-16	-1.135296e-15	-2.187183e-16	-2.130978e-16	-1.054244e-16
##	PC11	7.653457e-16	-1.014142e-15	-4.471126e-16	-1.030759e-16	-1.106814e-15
##	PC12	-2.738959e-16	-1.355900e-15	-6.471907e-16	2.180975e-16	-1.677471e-16
##	PC13	8.067283e-16	1.839691e-17	-3.820958e-16	-3.521385e-16	-5.942605e-16
##	PC14	7.691240e-17	6.030467e-17	1.001862e-15	-2.064989e-16	9.604160e-16
##	PC15	7.962203e-16	1.785575e-16	3.262412e-16	-5.191069e-16	-1.005448e-15
##	PC16	-8.473388e-16	3.267219e-16	-1.004384e-16	-2.918449e-16	2.064584e-16
##	PC17	2.923074e-16	-4.567887e-16	-4.454406e-16	3.114973e-16	-1.891637e-16
##	PC18	-3.555179e-16	2.274444e-16	-5.355739e-16	-1.237697e-15	1.305911e-16
##	PC19	8.621749e-17	-1.710286e-15	-1.072965e-16	-3.222329e-16	-5.420260e-16
##	PC20	-1.143850e-16	1.817502e-16	-1.231776e-16	2.127922e-16	8.084053e-16
##	PC21	-6.493451e-17	3.708618e-16	-1.172176e-16	-5.473717e-16	-1.040598e-16
##	PC22	-3.390257e-16	1.021352e-16	5.823872e-16	1.200936e-16	2.178554e-16
##	PC23	-1.058046e-15	-5.064490e-16	-9.461822e-16	-1.352264e-16	-4.522907e-16
##	PC24	-1.691452e-16	-4.040710e-16	-2.773436e-16	4.420489e-16	6.057840e-16
##	PC25	-8.520200e-17	5.543269e-16	-9.710104e-16	2.615476e-16	2.012775e-16
##	PC26	2.334016e-16	3.912716e-16	-6.387898e-17	-6.451040e-16	8.370583e-16
##	PC27	-2.121327e-16	-3.598952e-16	3.508160e-16	4.665846e-16	-5.305293e-16
##	PC28	1.500402e-16	-4.388648e-17	-3.893239e-16	-3.277021e-16	-1.427875e-16

##	PC29	5.390151e-16	-8.211921e-16	1.457338e-15	3.584606e-16	-9.067582e-16
##	PC30	7.663259e-16	4.815785e-16	3.642031e-16	1.074275e-16	-1.893156e-15
##	PC31	1.533847e-16	3.446436e-16	-6.496418e-17	1.179889e-15	3.763869e-16
##	PC32	-2.062719e-16	1.112521e-16	-7.155726e-16	-1.016783e-15	2.734856e-17
##	PC33	-4.923912e-17	2.028288e-16	8.264898e-16	-9.283544e-16	-1.050942e-17
##	PC34	2.654904e-16	-5.898712e-16	7.521814e-16	-5.059872e-16	-1.304384e-15
##	PC35	4.456680e-16	-8.924899e-16	-7.590868e-16	-1.121396e-15	1.132307e-15
##	PC36	-2.129735e-16	7.451724e-16	2.021785e-16	1.268730e-17	-7.358896e-16
##	PC37	-1.376795e-15	1.331255e-15	-1.664270e-17	-6.470323e-16	2.752621e-17
##	PC38	4.046030e-17	-3.169386e-16	2.569307e-16	-2.996047e-16	-5.403918e-16
##	PC39	1.373358e-16	1.548160e-16	8.546017e-16	6.021840e-16	-1.621670e-16
##	PC40	7.256926e-17	-8.175973e-16	7.130285e-16	-7.262089e-16	-2.697848e-16
##	PC41	1.000000e+00	-3.696939e-16	-9.133005e-17	4.378071e-16	-2.033743e-15
##	PC42	-3.696939e-16	1.000000e+00	6.452050e-16	2.959994e-16	4.407183e-16
##	PC43	-9.133005e-17	6.452050e-16	1.000000e+00	1.468217e-16	1.483123e-15
##	PC44	4.378071e-16	2.959994e-16	1.468217e-16	1.000000e+00	1.437040e-15
##	PC45	-2.033743e-15	4.407183e-16	1.483123e-15	1.437040e-15	1.000000e+00
##	PC46	-5.452410e-16	-3.097983e-16	9.735665e-16	-5.944879e-16	3.089046e-16
##	PC47	-4.840475e-16	-1.262069e-15	7.199259e-16	-2.069320e-16	-5.784528e-16
##	PC48	8.172805e-16	4.648220e-16	-9.588765e-16	-6.190860e-16	-9.256331e-16
##	PC49	5.844783e-16	-6.242168e-16	-6.188944e-16	-1.010880e-15	-7.010568e-16
##	PC50	-5.056692e-16	3.269396e-16	-9.274414e-16	-6.937782e-16	-1.057224e-15
##	PC51	6.203761e-16	1.821181e-16	9.957144e-16	1.012977e-15	1.347340e-15
##	PC52	-5.703370e-16	-1.775994e-15	-1.265209e-15	1.695290e-15	-5.560413e-16
##	PC53	9.149870e-16	-3.749989e-16	-8.784876e-16	-1.540838e-15	-7.927421e-16
##	PC54	-1.482356e-15	5.468640e-16	2.942949e-15	-1.910253e-15	-2.307560e-15
##	PC46		PC47	PC48	PC49	PC50
##	PC1	-5.931774e-15	-2.213842e-15	-2.885707e-15	-1.090175e-15	-1.085299e-14
##	PC2	-3.618915e-15	1.044760e-15	-1.108834e-15	-3.734902e-16	-3.105598e-15
##	PC3	-7.085198e-16	5.076239e-15	-1.240739e-15	1.297233e-15	-2.793472e-15
##	PC4	-1.992713e-15	1.588380e-15	-2.296829e-17	6.330508e-16	1.427591e-15
##	PC5	-1.048438e-16	-8.894109e-16	-2.324959e-15	-3.646366e-15	-2.901522e-15
##	PC6	3.036041e-16	-9.267837e-16	7.838965e-16	1.594357e-15	-3.083829e-15
##	PC7	1.107838e-16	-1.059120e-15	1.126691e-15	4.467436e-16	3.657712e-16
##	PC8	-7.500215e-16	-5.713611e-16	-1.215339e-15	1.093566e-15	-1.425415e-15
##	PC9	-7.716128e-16	-9.503313e-16	-1.102115e-16	-1.468961e-15	6.928758e-16
##	PC10	-1.267356e-16	1.817920e-15	-3.603879e-16	-1.646864e-16	1.842490e-15
##	PC11	4.122429e-16	-9.204675e-16	-4.341432e-16	-6.250681e-16	1.768489e-15
##	PC12	8.854368e-16	-6.739227e-16	-6.848356e-16	-1.467558e-15	-1.368166e-15
##	PC13	3.874791e-16	4.670321e-16	1.149226e-15	4.208661e-16	-4.429650e-16
##	PC14	5.956798e-17	-3.983414e-16	-6.463740e-16	-9.257280e-17	6.932432e-16
##	PC15	-1.088020e-16	4.922746e-16	-1.270110e-15	1.145147e-16	8.517087e-16
##	PC16	4.594167e-16	-9.979405e-16	-1.311204e-15	4.192908e-16	3.205167e-17
##	PC17	-1.635312e-16	7.250476e-16	-4.156936e-16	-5.429973e-16	-5.180771e-17
##	PC18	-9.970177e-16	2.508653e-17	-1.020571e-15	-2.544524e-16	2.970991e-16
##	PC19	3.591923e-16	6.087997e-16	2.640294e-16	-2.690889e-16	6.087083e-16
##	PC20	-2.437023e-16	1.969475e-16	4.025027e-17	1.269315e-15	3.609723e-18
##	PC21	-7.120226e-17	-1.682566e-15	-3.014174e-16	-1.710611e-15	4.999508e-16
##	PC22	-8.766105e-16	5.601245e-16	2.757408e-17	2.835024e-15	-9.918918e-16
##	PC23	8.241293e-16	8.241872e-16	6.481592e-16	-3.520886e-17	4.171823e-19

##	PC24	-9.632417e-16	-1.859112e-16	3.904550e-16	1.250139e-15	5.367373e-16
##	PC25	5.897586e-16	-1.796516e-15	4.306521e-16	-3.918283e-16	9.222670e-16
##	PC26	2.899280e-16	1.438885e-16	1.306591e-15	2.180920e-16	2.544707e-16
##	PC27	6.872461e-16	3.498239e-16	9.379877e-16	-5.928267e-17	3.447442e-16
##	PC28	1.231838e-15	-9.194330e-18	4.932172e-16	-1.138725e-16	-7.618808e-16
##	PC29	2.828862e-16	-6.607552e-17	5.605006e-16	-6.087424e-16	1.878429e-16
##	PC30	-2.558993e-17	-1.174270e-15	-5.827599e-16	-8.615460e-17	-9.620639e-16
##	PC31	-1.263179e-15	4.180779e-16	1.118195e-15	-4.469183e-16	-8.621746e-16
##	PC32	-3.554421e-16	-6.816243e-16	4.882756e-16	4.993996e-16	7.386231e-16
##	PC33	2.659597e-16	1.218886e-15	-6.849415e-16	1.457884e-16	3.925396e-16
##	PC34	3.657319e-16	8.519426e-16	1.368228e-15	-1.468721e-15	1.251339e-15
##	PC35	1.030907e-16	1.412481e-15	4.182023e-16	1.353830e-16	2.238343e-16
##	PC36	7.234163e-16	-4.207460e-16	-4.454592e-16	-1.354915e-16	-4.722534e-16
##	PC37	-1.194701e-15	3.945803e-16	-9.196411e-16	9.315573e-16	-2.493228e-16
##	PC38	2.705668e-17	-3.052814e-16	-3.112450e-16	-4.165871e-16	-5.266429e-16
##	PC39	2.647576e-17	1.103421e-15	2.180149e-16	-2.785893e-16	-1.487038e-17
##	PC40	-1.816649e-16	-6.062723e-16	4.468174e-16	-3.601979e-16	-4.620097e-16
##	PC41	-5.452410e-16	-4.840475e-16	8.172805e-16	5.844783e-16	-5.056692e-16
##	PC42	-3.097983e-16	-1.262069e-15	4.648220e-16	-6.242168e-16	3.269396e-16
##	PC43	9.735665e-16	7.199259e-16	-9.588765e-16	-6.188944e-16	-9.274414e-16
##	PC44	-5.944879e-16	-2.069320e-16	-6.190860e-16	-1.010880e-15	-6.937782e-16
##	PC45	3.089046e-16	-5.784528e-16	-9.256331e-16	-7.010568e-16	-1.057224e-15
##	PC46	1.000000e+00	4.442256e-16	-4.139869e-16	2.357053e-16	-2.578542e-17
##	PC47	4.442256e-16	1.000000e+00	-3.976032e-16	-1.126204e-15	3.112592e-15
##	PC48	-4.139869e-16	-3.976032e-16	1.000000e+00	5.583789e-16	-9.331399e-16
##	PC49	2.357053e-16	-1.126204e-15	5.583789e-16	1.000000e+00	-3.140436e-16
##	PC50	-2.578542e-17	3.112592e-15	-9.331399e-16	-3.140436e-16	1.000000e+00
##	PC51	-4.675703e-16	-3.451715e-15	4.381116e-16	-6.434410e-16	-3.935128e-16
##	PC52	2.577348e-15	1.253819e-15	1.657396e-15	-1.998347e-15	2.456176e-15
##	PC53	1.850213e-16	4.767442e-16	-1.187114e-16	2.615703e-15	-1.248074e-15
##	PC54	4.762425e-15	4.104918e-15	-5.212001e-15	3.672734e-16	-1.246608e-15
##		PC51	PC52	PC53	PC54	
##	PC1	-4.277645e-15	-1.106550e-14	1.182701e-14	3.752027e-15	
##	PC2	9.069281e-16	5.520437e-17	-4.470542e-15	1.119677e-15	
##	PC3	-6.792805e-16	6.858737e-16	2.766986e-15	-1.081259e-16	
##	PC4	3.666771e-16	-3.255756e-17	-4.749521e-15	-3.682398e-16	
##	PC5	-2.781161e-15	-2.937246e-15	3.777338e-15	3.611327e-15	
##	PC6	2.025886e-15	1.897820e-15	7.076433e-16	-3.436094e-15	
##	PC7	-2.127660e-16	-1.552744e-15	-1.594417e-15	4.974963e-16	
##	PC8	-3.421823e-15	1.460050e-15	5.579465e-15	-6.944760e-15	
##	PC9	-2.021353e-15	-1.468410e-15	-3.004247e-16	2.867047e-16	
##	PC10	-1.835860e-16	3.281656e-15	2.567748e-15	5.320617e-15	
##	PC11	-4.032251e-16	-5.313427e-16	-1.657473e-15	-4.145559e-15	
##	PC12	1.247552e-15	-3.017558e-15	3.311296e-15	-5.822745e-15	
##	PC13	-1.647988e-16	-9.894621e-17	-8.531662e-16	1.204401e-16	
##	PC14	1.165759e-15	-2.443149e-15	1.144921e-15	3.942666e-15	
##	PC15	-1.067912e-15	2.168672e-15	-7.977412e-16	-6.294080e-15	
##	PC16	-1.199537e-15	-2.959468e-16	1.516552e-15	4.302859e-15	
##	PC17	-1.796229e-15	3.393597e-17	2.178308e-15	6.298601e-15	
##	PC18	-6.908279e-16	2.073048e-15	-1.161311e-15	9.671620e-16	

```

## PC19 -2.286192e-15 -1.348470e-15 3.343703e-15 -3.734364e-15
## PC20 1.680352e-15 1.898225e-15 1.092237e-15 1.426010e-15
## PC21 1.452539e-15 -2.600317e-16 -2.271826e-15 2.086086e-15
## PC22 1.737924e-15 2.319329e-15 -2.395680e-15 -2.186907e-15
## PC23 -2.147507e-15 4.576027e-16 8.069232e-17 -3.849053e-15
## PC24 5.729243e-16 3.058556e-16 -1.829256e-15 -1.021630e-15
## PC25 5.145923e-17 4.067921e-15 -1.659596e-15 -7.424496e-17
## PC26 -1.551765e-15 6.962311e-16 -7.097315e-16 5.143136e-15
## PC27 2.473667e-16 -5.155597e-16 -1.061289e-16 6.938201e-15
## PC28 -1.648349e-17 1.020107e-15 4.457204e-16 -5.974576e-15
## PC29 -4.702651e-16 -1.824643e-16 -7.152995e-16 2.494087e-17
## PC30 -1.114008e-16 1.815349e-15 -1.682030e-16 -1.074394e-15
## PC31 -6.482901e-16 -9.616746e-17 2.177625e-15 -3.167474e-15
## PC32 -1.443760e-15 2.567465e-15 9.569618e-16 -2.196190e-15
## PC33 -1.945586e-16 2.275808e-15 -1.415512e-15 -4.692200e-15
## PC34 4.450717e-16 1.366859e-15 -1.765261e-15 -6.219265e-15
## PC35 1.263267e-15 1.634383e-15 -3.987856e-17 5.232600e-15
## PC36 -2.123678e-15 -2.783227e-16 -1.714716e-16 -3.451661e-15
## PC37 -1.305588e-15 6.425458e-16 -4.804819e-16 -1.388356e-15
## PC38 1.130606e-15 1.857934e-15 -1.665464e-15 -3.160089e-15
## PC39 7.476097e-17 1.564424e-15 -1.564432e-15 -3.205366e-15
## PC40 -3.156203e-17 1.751897e-15 1.188270e-16 2.467197e-15
## PC41 6.203761e-16 -5.703370e-16 9.149870e-16 -1.482356e-15
## PC42 1.821181e-16 -1.775994e-15 -3.749989e-16 5.468640e-16
## PC43 9.957144e-16 -1.265209e-15 -8.784876e-16 2.942949e-15
## PC44 1.012977e-15 1.695290e-15 -1.540838e-15 -1.910253e-15
## PC45 1.347340e-15 -5.560413e-16 -7.927421e-16 -2.307560e-15
## PC46 -4.675703e-16 2.577348e-15 1.850213e-16 4.762425e-15
## PC47 -3.451715e-15 1.253819e-15 4.767442e-16 4.104918e-15
## PC48 4.381116e-16 1.657396e-15 -1.187114e-16 -5.212001e-15
## PC49 -6.434410e-16 -1.998347e-15 2.615703e-15 3.672734e-16
## PC50 -3.935128e-16 2.456176e-15 -1.248074e-15 -1.246608e-15
## PC51 1.000000e+00 -9.516795e-17 1.127204e-15 -3.562616e-16
## PC52 -9.516795e-17 1.000000e+00 1.691972e-16 -3.864593e-15
## PC53 1.127204e-15 1.691972e-16 1.000000e+00 1.753105e-15
## PC54 -3.562616e-16 -3.864593e-15 1.753105e-15 1.000000e+00

```

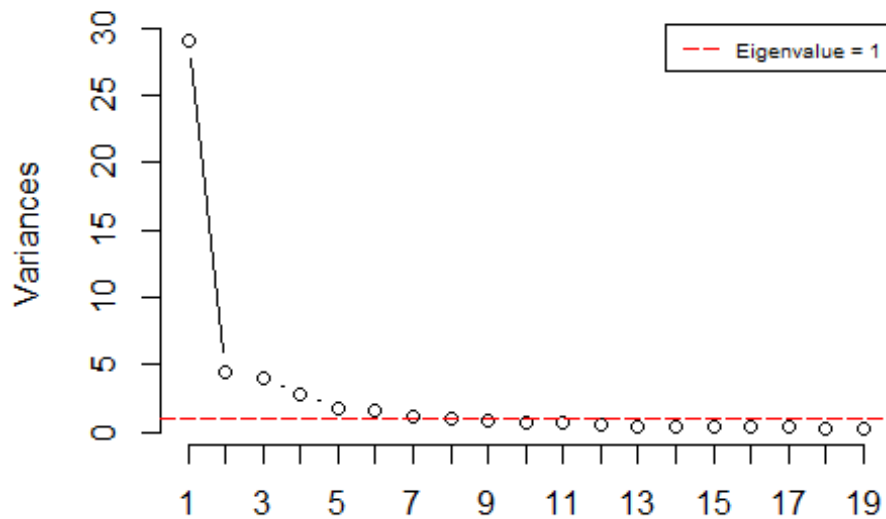
```
#-----
```

```

screplot(GDPdataTrainSet.pca.normdata, type = "l", npcs = 19, main = "Screeplot of the first 19 PCs")
abline(h = 1, col="red", lty=5)
legend("topright", legend=c("Eigenvalue = 1"),
      col=c("red"), lty=5, cex=0.6)

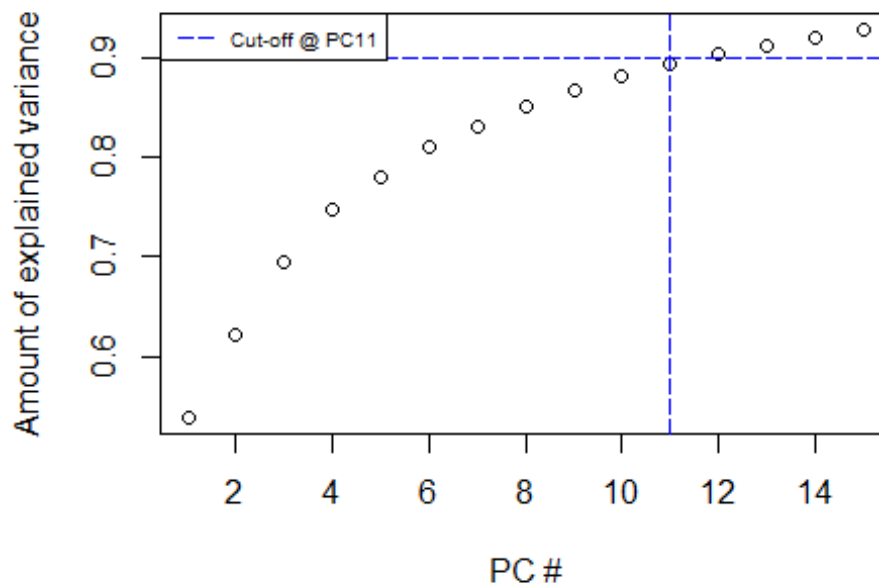
```

Screeplot of the first 19 PCs



```
cumpro <- cumsum(GDPdataTrainSet.pca.normdata$sdev^2 / sum(GDPdataTrainSet.pca.normdata$sdev^2))
plot(cumpro[0:15], xlab = "PC #", ylab = "Amount of explained variance", main = "Cumulative variance plot")
abline(v = 11, col="blue", lty=5)
abline(h = 0.9, col="blue", lty=5)
legend("topleft", legend=c("Cut-off @ PC11"),
      col=c("blue"), lty=5, cex=0.6)
```

Cumulative variance plot



#Note: The first 11 components has an Eigenvalue >1 and explains almost 90% of variance

#We can effectively reduce dimensionality from 160 to 11 if we consider 90 % variance

#-----

#-----

#Predict using PCA

```
PredictingData<- predict(GDPdataTrainSet.pca.normdata, newdata = GDPdata.test
.set )
```

#select the first 19 pca components i.e., 95 % variance

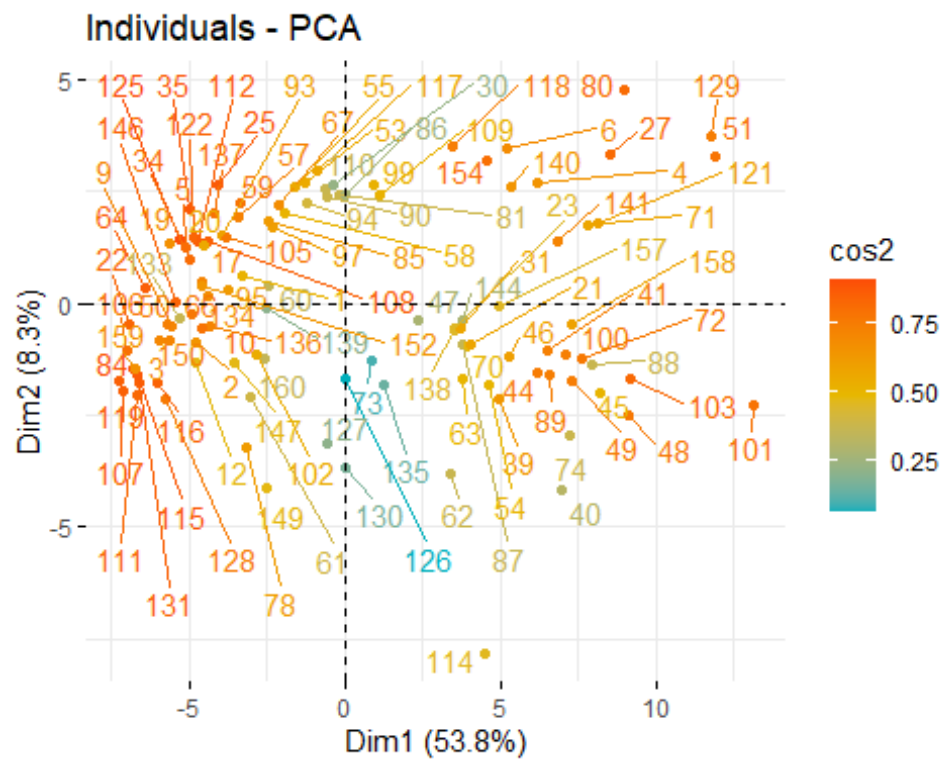
we tend to look at the first few principal components in order to find interesting patterns in the data.

```
#PredictingData<-PredictingData[,1:19]
```

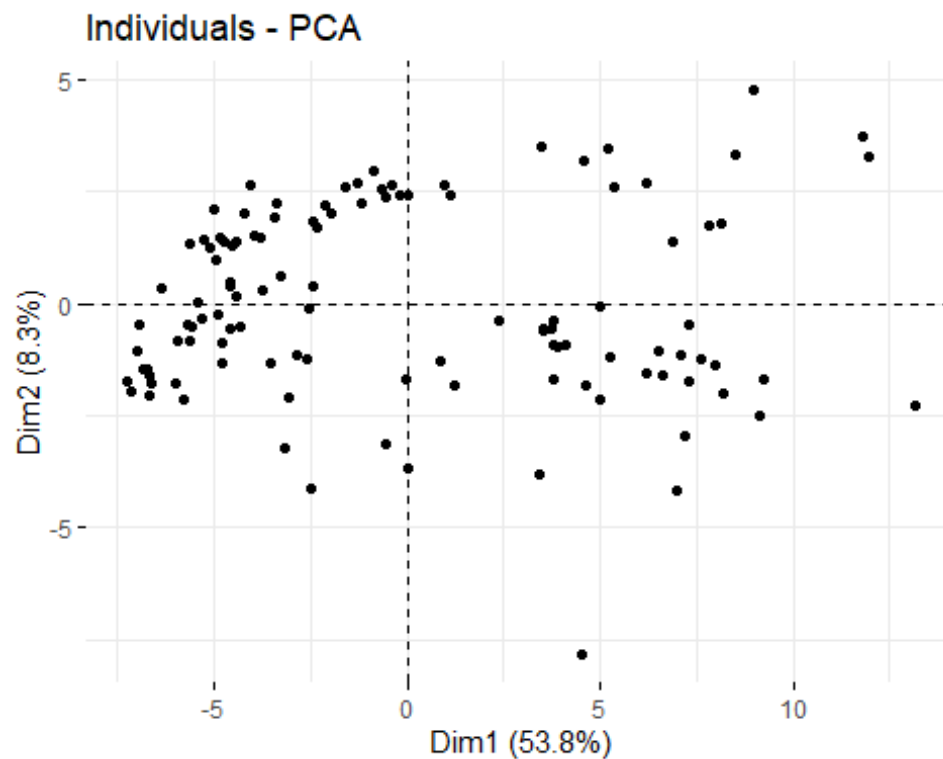
#-----

#-----

```
fviz_pca_ind(GDPdataTrainSet.pca.normdata,
              col.ind = "cos2", # Color by the quality of representation
              gradient.cols = c("#00AFBB", "#E7B800", "#FC4E07"),
              repel = TRUE      # Avoid text overlapping
)
```

```
# Color individuals by groups
#Plots: quality and countries
fviz_pca_ind(GDPdataTrainSet.pca.normdata, label="none")
```



```
fviz_pca_ind(GDPdataTrainSet.pca.normdata, label="none", habillage=GDPdataCou
ntrytrainset$Country)

## Warning in grid.Call.graphics(C_points, x$x, x$y, x$pch, x$size): unimplem
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## pch value '28'

## Warning in grid.Call.graphics(C_points, x$x, x$y, x$pch, x$size): unimplem
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```

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## pch value '29'

## Warning in grid.Call.graphics(C_points, x$x, x$y, x$pch, x$size): unimplem
ented
## pch value '30'

## Warning in grid.Call.graphics(C_points, x$x, x$y, x$pch, x$size): unimplem
ented
## pch value '30'

## Warning in grid.Call.graphics(C_points, x$x, x$y, x$pch, x$size): unimplem
ented
## pch value '31'

## Warning in grid.Call.graphics(C_points, x$x, x$y, x$pch, x$size): unimplem
ented
## pch value '31'
```

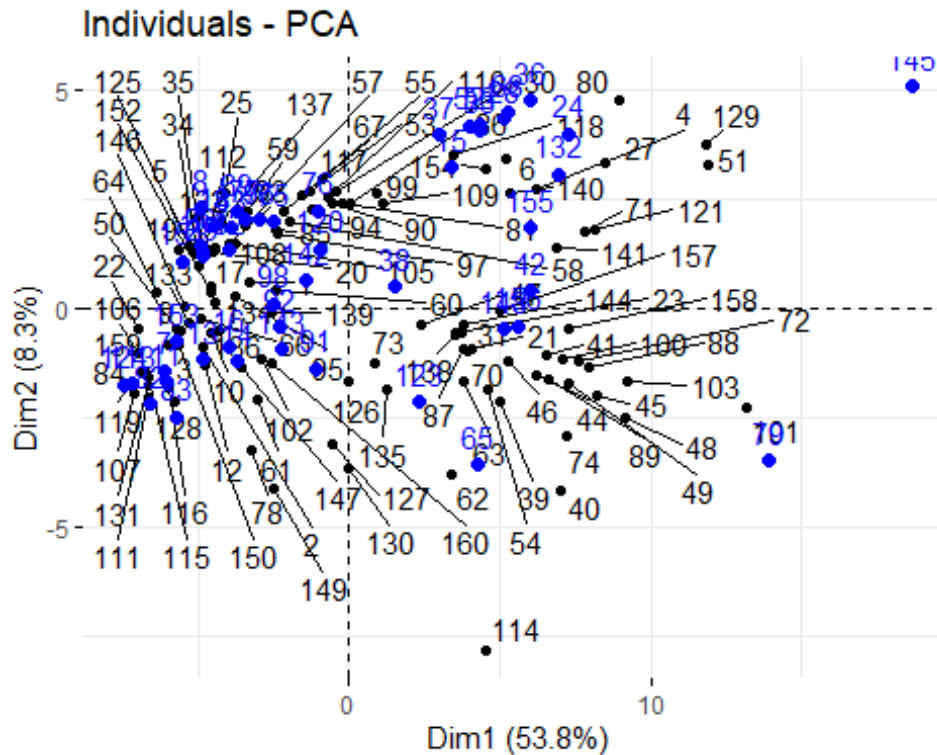


Groups

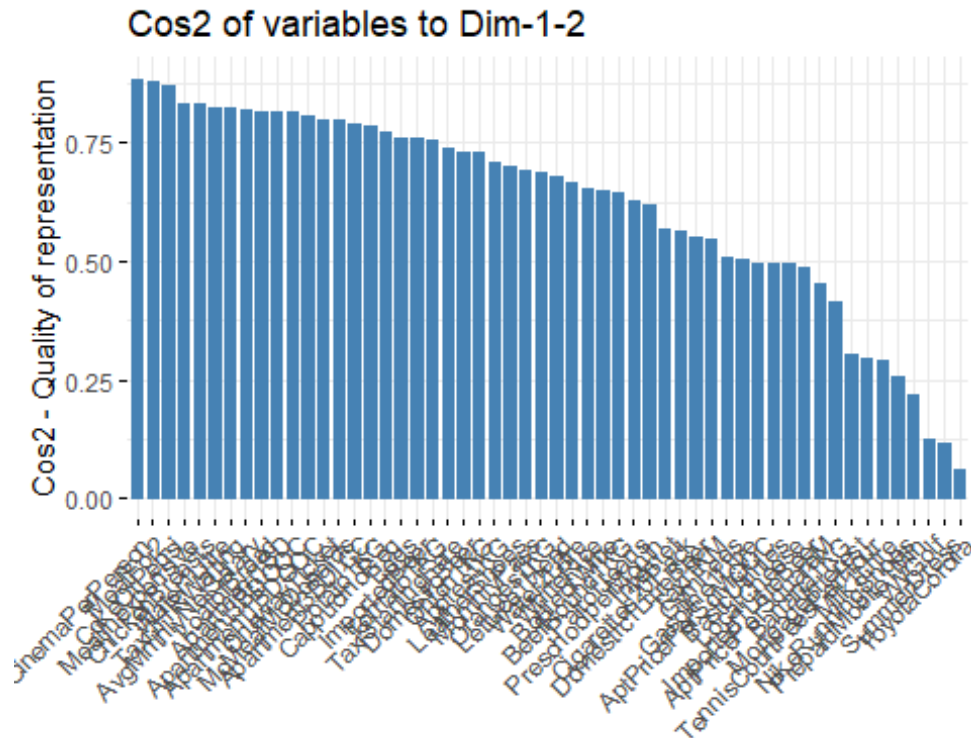


#-----

```
#-----
#Variable correlation plots
# Plot of train data
p <- fviz_pca_ind(GDPdataTrainSet.pca.normdata, repel = TRUE)
# Add predicted data
fviz_add(p, PredictingData, color = "blue")
```



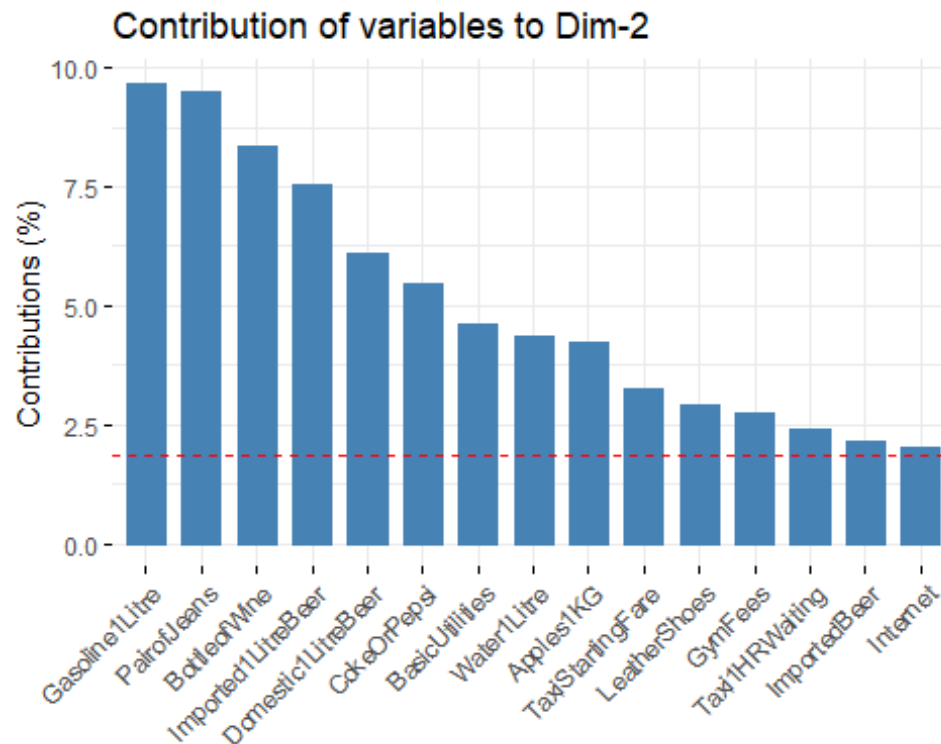
```
#Posively and negatively (opposite to positive) correlated variables are grouped together
#The distance between variables and the origin measures the quality of the variables on the factor map
#Quality of representation
#The quality of representation of the variables on factor map is called cos2 (square cosine, squared coordinates)
# Total cos2 of variables on Dim.1 and Dim.2
fviz_cos2(GDPdataTrainSet.pca.normdata, choice = "var", axes = 1:2)
```



```

#A high cos2 shows a good representation of the variable on the principal com
ponent.
#The closer a variable is to the circle of correlations, the better its repre
sentation on the factor map
#more important to interpret these components
#A low cos2 indicates that the variable is not perfectly represented by the P
Cs.
#In this case the variable is close to the center of the circle which are les
s important for the first components
#-----
#The top variables contributing to the principal components:
# Contributions of variables to PC1
fviz_contrib(GDPdataTrainSet.pca.normdata, choice = "var", axes = 1, top = 35
)

```

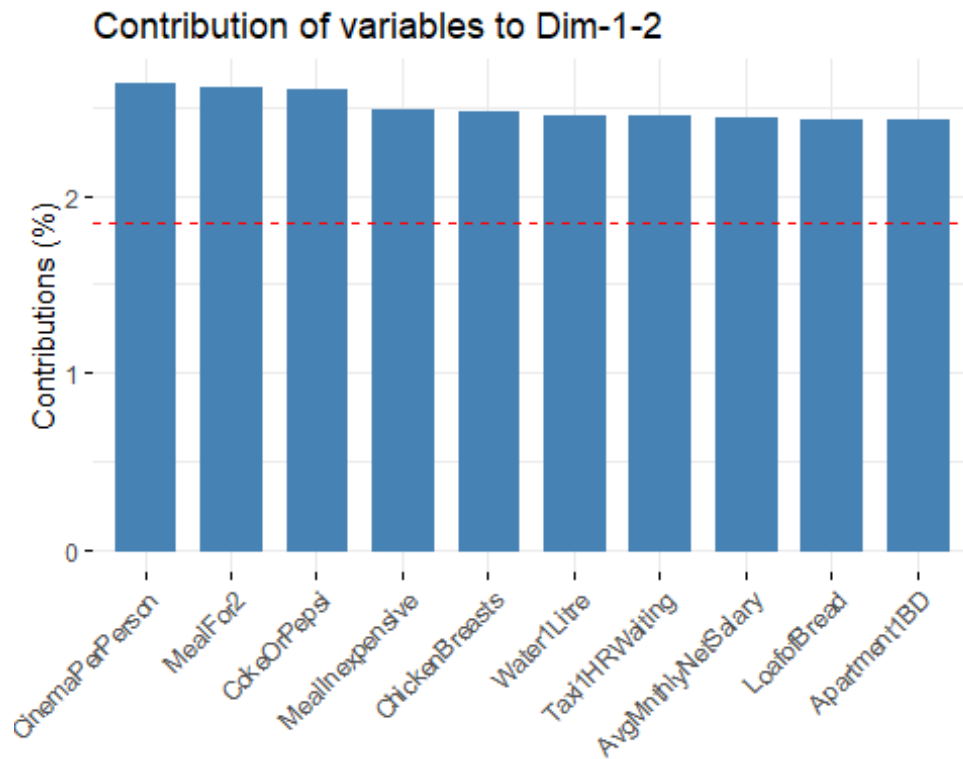



#By comparing PC1 and PC2

#We can say that CokeorPepsi, ImportedBeer, Water1Litre, LeatherShoes, TaxiStartingFare, Taxi1HRWaiting, Oranges1KG and Apple1KG, contribute the most to the dimensions 1 and 2.

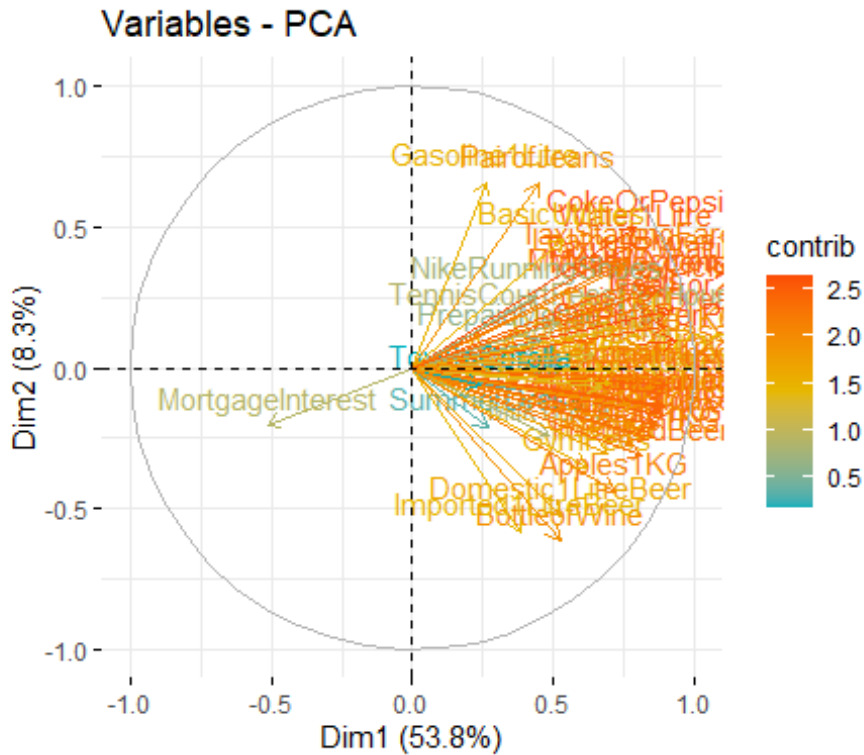
#The total contribution to PC1 and PC2

```
fviz_contrib(GDPdataTrainSet.pca.normdata, choice = "var", axes = 1:2, top = 10)
```

#The most important (or, contributing) variables are highlighted on the following correlation plot

```
fviz_pca_var(GDPdataTrainSet.pca.normdata, col.var = "contrib",
              gradient.cols = c("#00AFBB", "#E7B800", "#FC4E07")
)
```



```
#-----

#-----
#Investigated how the variables are related to one another
#plot('GDPdata(,1:5)')
#-----

#Regression analysis
#Regression helps show the relationship between a response variable with respect to predictor variables
#Building a model for estimating GDP of a country based on the monetary values of all the goods available in that country
GDPresults = lm(GDPUSDInMillions ~ ., data = GDPdata_lm)
summary(GDPresults)

##
## Call:
## lm(formula = GDPUSDInMillions ~ ., data = GDPdata_lm)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.212080 -0.045360 -0.006231  0.039523  0.279102
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   5.193e-03  9.419e-02   0.055  0.956136
## MealInexpensive 1.479e+05  1.360e+05   1.087  0.279534
```

## MealFor2	-3.416e+04	4.728e+04	-0.723	0.471556	
## McMealMcDonalds	2.148e+05	2.764e+05	0.777	0.438763	
## DomesticBeer	-9.095e+05	4.874e+05	-1.866	0.064817	.
## ImportedBeer	5.393e+05	4.541e+05	1.188	0.237673	
## CokeOrPepsi	1.915e+06	1.275e+06	1.502	0.136005	
## Water1Litre	-2.859e+06	1.551e+06	-1.843	0.068165	.
## Milk1Litre	-2.871e+06	9.902e+05	-2.900	0.004550	***
## LoafofBread	1.064e+06	8.085e+05	1.316	0.191018	
## Eggs	4.504e+05	7.320e+05	0.615	0.539665	
## LocalCheese	5.062e+05	1.153e+05	4.392	2.69e-05	***
## Water2Litre	4.541e+05	1.130e+06	0.402	0.688612	
## BottleofWine	1.848e+05	8.799e+04	2.100	0.038117	*
## Domestic1LitreBeer	-3.431e+06	8.790e+05	-3.904	0.000168	***
## Imported1LitreBeer	2.216e+06	5.965e+05	3.716	0.000327	***
## Cigarettes20Pack	1.245e+05	1.298e+05	0.960	0.339401	
## OnewayTicket	-2.434e+06	5.674e+05	-4.290	3.99e-05	***
## ChickenBreasts	-1.060e+06	2.039e+05	-5.199	9.96e-07	***
## MonthlyPass	6.696e+04	1.563e+04	4.285	4.06e-05	***
## Gasoline1Litre	1.293e+06	1.140e+06	1.134	0.259474	
## VWGolf	-2.694e+01	6.651e+01	-0.405	0.686279	
## Apartment1BD	5.210e+03	5.606e+03	0.929	0.354773	
## Apartment1BD00C	-6.396e+03	7.081e+03	-0.903	0.368468	
## Apartment3BDICC	3.060e+02	2.413e+03	0.127	0.899330	
## Apartment3BD00C	-4.179e+02	3.828e+03	-0.109	0.913277	
## BasicUtilities	-3.292e+03	6.945e+03	-0.474	0.636454	
## PrepaidMobile1MIn	-1.103e+07	3.246e+06	-3.398	0.000961	***
## Internet	1.663e+04	2.362e+04	0.704	0.482807	
## GymFees	-4.293e+04	2.592e+04	-1.656	0.100726	
## TennisCourtFeesPerHour	-4.326e+04	4.841e+04	-0.894	0.373611	
## CinemaPerPerson	3.979e+05	1.960e+05	2.031	0.044824	*
## PairofJeans	-4.577e+04	2.945e+04	-1.554	0.123163	
## SummerDress	-1.387e+04	4.543e+04	-0.305	0.760806	
## NikeRunningShoes	3.965e+03	2.567e+04	0.154	0.877536	
## LeatherShoes	3.510e+04	2.435e+04	1.441	0.152483	
## AptPricePerSquareM	-2.775e+01	3.068e+02	-0.090	0.928112	
## AptPricePerSqMOOC	-5.372e+02	5.184e+02	-1.036	0.302442	
## AvgMnthlyNetSalary	4.608e+03	7.571e+02	6.086	1.91e-08	***
## MortgageInterest	3.174e+04	3.854e+04	0.824	0.412089	
## TaxiStartingFare	-4.908e+04	2.570e+05	-0.191	0.848944	
## Taxi1KM	-1.135e+06	5.356e+05	-2.118	0.036505	*
## Taxi1HRWaiting	2.763e+04	4.793e+04	0.576	0.565511	
## Apples1KG	-7.687e+05	5.613e+05	-1.370	0.173755	
## Oranges1KG	-5.166e+05	6.219e+05	-0.831	0.408034	
## Potato1KG	-1.988e+06	1.098e+06	-1.810	0.073229	.
## Lettuce1Head	-3.946e+06	8.893e+05	-4.437	2.25e-05	***
## CappucinoReg	1.159e+06	4.677e+05	2.479	0.014784	*
## WhiteRice	2.236e+06	5.188e+05	4.310	3.69e-05	***
## Tomato1KG	-1.526e+05	7.492e+05	-0.204	0.839013	
## Banana1KG	-1.326e+06	7.726e+05	-1.716	0.089093	.
## Onion1KG	2.906e+06	9.945e+05	2.922	0.004262	**

```
## BeefRound1KG          1.903e+05  1.224e+05   1.555 0.122931
## ToyotaCorolla        -9.944e+01  6.813e+01  -1.460 0.147408
## PreschoolperMonth    -2.350e+03  1.103e+03  -2.132 0.035373 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.08724 on 105 degrees of freedom
## Multiple R-squared:  0.9342, Adjusted R-squared:  0.9004
## F-statistic: 27.61 on 54 and 105 DF,  p-value: < 2.2e-16
```

#Analysis of F-statistics(p-value: < 2.2e-16) shows that atleast one of the p redictor variables is significantly related to the outcome variable

#Analysis the coefficients to find the predictor variables is significantly r elated to the outcome variable.

summary(GDPresults)\$coefficient

##	Estimate	Std. Error	t value	Pr(> t)
## (Intercept)	5.192999e-03	9.418798e-02	0.05513441	9.561362e-01
## MealInexpensive	1.478694e+05	1.360368e+05	1.08698086	2.795342e-01
## MealFor2	-3.416086e+04	4.727753e+04	-0.72256016	4.715565e-01
## McMealMcDonalds	2.147911e+05	2.763501e+05	0.77724273	4.387632e-01
## DomesticBeer	-9.095062e+05	4.873817e+05	-1.86610673	6.481724e-02
## ImportedBeer	5.392532e+05	4.540716e+05	1.18759504	2.376726e-01
## CokeOrPepsi	1.915237e+06	1.274816e+06	1.50236277	1.360050e-01
## Water1Litre	-2.858615e+06	1.551153e+06	-1.84289683	6.816509e-02
## Milk1Litre	-2.871150e+06	9.901803e+05	-2.89962353	4.550438e-03
## LoafofBread	1.064054e+06	8.085119e+05	1.31606433	1.910184e-01
## Eggs	4.504398e+05	7.320247e+05	0.61533419	5.396654e-01
## LocalCheese	5.061852e+05	1.152614e+05	4.39162657	2.693083e-05
## Water2Litre	4.540588e+05	1.129925e+06	0.40184871	6.886122e-01
## BottleofWine	1.847941e+05	8.799370e+04	2.10008370	3.811711e-02
## Domestic1LitreBeer	-3.431489e+06	8.790063e+05	-3.90382686	1.675786e-04
## Imported1LitreBeer	2.216299e+06	5.964950e+05	3.71553630	3.269821e-04
## Cigarettes20Pack	1.245246e+05	1.297509e+05	0.95972038	3.394007e-01
## OnewayTicket	-2.434010e+06	5.674122e+05	-4.28966818	3.990221e-05
## ChickenBreasts	-1.060027e+06	2.039079e+05	-5.19855582	9.958265e-07
## MonthlyPass	6.696182e+04	1.562712e+04	4.28497516	4.062534e-05
## Gasoline1Litre	1.293007e+06	1.140452e+06	1.13376710	2.594742e-01
## VWGolf	-2.693984e+01	6.651301e+01	-0.40503116	6.862786e-01
## Apartment1BD	5.210325e+03	5.605641e+03	0.92947876	3.547730e-01
## Apartment1BD00C	-6.396071e+03	7.081276e+03	-0.90323712	3.684676e-01
## Apartment3BDICC	3.059728e+02	2.412776e+03	0.12681358	8.993305e-01
## Apartment3BD00C	-4.179464e+02	3.828429e+03	-0.10916916	9.132767e-01
## BasicUtilities	-3.292143e+03	6.944827e+03	-0.47404249	6.364539e-01
## PrepaidMobile1MIn	-1.102839e+07	3.245850e+06	-3.39769011	9.610784e-04
## Internet	1.663381e+04	2.361759e+04	0.70429723	4.828068e-01
## GymFees	-4.292714e+04	2.592364e+04	-1.65590703	1.007264e-01
## TennisCourtFeesPerHour	-4.325765e+04	4.841145e+04	-0.89354178	3.736106e-01
## CinemaPerPerson	3.978978e+05	1.959521e+05	2.03058680	4.482447e-02
## PairofJeans	-4.576977e+04	2.945045e+04	-1.55412809	1.231629e-01

```
## SummerDress          -1.386621e+04 4.543092e+04 -0.30521527 7.608064e-01
## NikeRunningShoes      3.964938e+03 2.566798e+04  0.15447020 8.775355e-01
## LeatherShoes          3.510103e+04 2.435419e+04  1.44127292 1.524833e-01
## AptPricePerSquareM    -2.774991e+01 3.068394e+02 -0.09043788 9.281116e-01
## AptPricePerSqMOOC     -5.371880e+02 5.183705e+02 -1.03630120 3.024424e-01
## AvgMnthlyNetSalary    4.608062e+03 7.571336e+02  6.08619420 1.913946e-08
## MortgageInterest      3.173890e+04 3.854138e+04  0.82350180 4.120892e-01
## TaxiStartingFare      -4.907808e+04 2.570381e+05 -0.19093695 8.489437e-01
## Taxi1KM               -1.134646e+06 5.356281e+05 -2.11834730 3.650511e-02
## Taxi1HRWaiting        2.763393e+04 4.793397e+04  0.57649993 5.655111e-01
## Apples1KG             -7.687057e+05 5.612909e+05 -1.36953156 1.737551e-01
## Oranges1KG            -5.165693e+05 6.218556e+05 -0.83069011 4.080336e-01
## Potato1KG             -1.987602e+06 1.098405e+06 -1.80953496 7.322888e-02
## Lettuce1Head          -3.946206e+06 8.893453e+05 -4.43720366 2.254945e-05
## CappucinoReg          1.159173e+06 4.676810e+05  2.47855511 1.478412e-02
## WhiteRice             2.235853e+06 5.187776e+05  4.30984817 3.693151e-05
## Tomato1KG            -1.525749e+05 7.491625e+05 -0.20366062 8.390129e-01
## Banana1KG            -1.325928e+06 7.726406e+05 -1.71609931 8.909290e-02
## Onion1KG              2.905669e+06 9.944923e+05  2.92176105 4.262036e-03
## BeefRound1KG         1.903040e+05 1.223740e+05  1.55510252 1.229307e-01
## ToyotaCorolla        -9.944125e+01 6.813297e+01 -1.45951728 1.474081e-01
## PreschoolperMonth    -2.350296e+03 1.102602e+03 -2.13159093 3.537336e-02
```

*#Analysis of t-values show that local cheese, domestic1litrebeer imported1lit
erbeer, onewayticket, chickenbreasts, monthlypass, prepaidmobilephone,
#avgmonthlynetsalary, lettuce1head, and whiterice are significantly associate
d to changes in GDP*

```
#-----
```

```
#-----
```

#Regression analysis using PCA

#PCA is due to various explanatory variables

#Standard linear models potentially more powerful when using PCA

#combining both the explanatory variables - PCs, and explained variable - y

```
pcs <- as.data.frame(GDPdataTrainSet.pca.normdata$x)
```

```
pcs.data <- cbind(GDPdata_y_train.set, pcs)
```

```
pcsmodel <- lm(GDPdata_y_train.set ~ ., data = pcs.data)
```

```
summary(pcsmodel)
```

```
##
```

```
## Call:
```

```
## lm(formula = GDPdata_y_train.set ~ ., data = pcs.data)
```

```
##
```

```
## Residuals:
```

```
##      Min       1Q   Median       3Q      Max
```

```
## -0.155582 -0.039609 -0.000687  0.037971  0.232669
```

```
##
```

```
## Coefficients:
```

```
##      Estimate Std. Error t value Pr(>|t|)
```

## (Intercept)	0.1550573	0.0079888	19.409	< 2e-16	***
## PC1	0.0251157	0.0014885	16.873	< 2e-16	***
## PC2	-0.0487008	0.0037873	-12.859	< 2e-16	***
## PC3	-0.0706349	0.0040077	-17.625	< 2e-16	***
## PC4	-0.0283475	0.0048166	-5.885	2.21e-07	***
## PC5	-0.0090974	0.0059357	-1.533	0.130890	
## PC6	0.0834193	0.0064282	12.977	< 2e-16	***
## PC7	0.0443762	0.0074799	5.933	1.85e-07	***
## PC8	0.0451266	0.0078587	5.742	3.79e-07	***
## PC9	-0.0613281	0.0085385	-7.183	1.58e-09	***
## PC10	0.0063901	0.0091762	0.696	0.489024	
## PC11	-0.0198361	0.0096965	-2.046	0.045410	*
## PC12	-0.0354073	0.0105677	-3.351	0.001436	**
## PC13	0.0473455	0.0117272	4.037	0.000163	***
## PC14	0.0535734	0.0120452	4.448	4.07e-05	***
## PC15	-0.0235756	0.0124467	-1.894	0.063287	.
## PC16	-0.1133667	0.0135179	-8.386	1.57e-11	***
## PC17	-0.0128240	0.0137236	-0.934	0.354015	
## PC18	-0.0418079	0.0143099	-2.922	0.004983	**
## PC19	0.0496518	0.0151822	3.270	0.001825	**
## PC20	-0.0438881	0.0155564	-2.821	0.006573	**
## PC21	-0.0040672	0.0167002	-0.244	0.808460	
## PC22	-0.0834910	0.0180382	-4.629	2.17e-05	***
## PC23	-0.0849488	0.0187708	-4.526	3.11e-05	***
## PC24	-0.0689898	0.0194612	-3.545	0.000792	***
## PC25	-0.0502899	0.0202645	-2.482	0.016049	*
## PC26	0.0383144	0.0218199	1.756	0.084470	.
## PC27	-0.0311136	0.0223988	-1.389	0.170213	
## PC28	-0.0009223	0.0235272	-0.039	0.968867	
## PC29	0.0264901	0.0255813	1.036	0.304795	
## PC30	0.0614879	0.0264302	2.326	0.023574	*
## PC31	-0.0175088	0.0273162	-0.641	0.524114	
## PC32	0.0810688	0.0294243	2.755	0.007862	**
## PC33	0.1025331	0.0304703	3.365	0.001375	**
## PC34	0.0260269	0.0313318	0.831	0.409616	
## PC35	-0.0906184	0.0334301	-2.711	0.008856	**
## PC36	-0.0145228	0.0347981	-0.417	0.677994	
## PC37	-0.0880671	0.0362339	-2.431	0.018248	*
## PC38	0.0119437	0.0384415	0.311	0.757164	
## PC39	0.1344123	0.0405093	3.318	0.001583	**
## PC40	-0.1368580	0.0419042	-3.266	0.001849	**
## PC41	0.0879171	0.0434060	2.025	0.047511	*
## PC42	-0.0653448	0.0480504	-1.360	0.179210	
## PC43	-0.0498128	0.0506436	-0.984	0.329471	
## PC44	0.0580525	0.0535202	1.085	0.282628	
## PC45	0.1399917	0.0555481	2.520	0.014554	*
## PC46	0.2074172	0.0601952	3.446	0.001076	**
## PC47	-0.2299176	0.0682899	-3.367	0.001367	**
## PC48	0.1958510	0.0710493	2.757	0.007832	**
## PC49	0.1628580	0.0810118	2.010	0.049140	*

```

## PC50      -0.0448697  0.0857633  -0.523  0.602876
## PC51      -0.1847696  0.0933064  -1.980  0.052510 .
## PC52      -0.1542097  0.1473139  -1.047  0.299606
## PC53       0.0328753  0.1637758   0.201  0.841622
## PC54      -0.1033328  0.3513652  -0.294  0.769758
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.08455 on 57 degrees of freedom
## Multiple R-squared:  0.9615, Adjusted R-squared:  0.9249
## F-statistic: 26.33 on 54 and 57 DF,  p-value: < 2.2e-16

#only the first principal components turned out to be significant
#-----

#-----
#Next analysis using only first principle component
#Pca 1 is used as it has the most variance
#Obtained pca 1 for your analyses with the following
#Built into a linear regression model using pca1
#pca1=GDPdataTrainSet.pca.normdata$x[,1]
pca1=as.data.frame(GDPdataTrainSet.pca.normdata$x[,1])
pca1.data <- cbind(GDPdata_y_train.set, pca1)
pca1model <- lm(GDPdata_y_train.set ~ ., data = pca1.data)
summary(pca1model)

##
## Call:
## lm(formula = GDPdata_y_train.set ~ ., data = pca1.data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.45033 -0.15992 -0.04544  0.02160  0.75001
##
## Coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   0.155057   0.026323   5.891 4.26e-08
***
## `GDPdataTrainSet.pca.normdata$x[, 1]` 0.025116   0.004905   5.121 1.31e-06
***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2786 on 110 degrees of freedom
## Multiple R-squared:  0.1925, Adjusted R-squared:  0.1852
## F-statistic: 26.22 on 1 and 110 DF,  p-value: 1.306e-06

#-----

#-----

```

#Model accuracy assessment
#In multiple linear regression
#The R^2 represents the correlation coefficient between the observed values
#of the outcome variable (y) and the fitted (i.e., predicted) values of y .
#An R^2 value close to 1 indicates that the model explains a large portion of
the variance in the outcome variable.
#But R^2 will always increase when more variables are added to the model
#A solution is to adjust the R^2 by taking into account the number of predictor
variables.
#By comparing multiple regression analysis using actual GDP data, all the principle
components and first principle component
it shows that analysis using all the PCAs shows maximum R^2 value (0.9241) than
using only first PCA (0.265) and predictor variables (GDP data) (0.9004)
#The study shows the first 9 PCAs are enough for the analysis
#Regression analysis using PCA will give a better result
#However PCR is not a feature selection method because each of the calculated
principal components
#is a linear combination of the original variables.