COMPLEMENTOS DE FORMACIÓN EN TÉCNICAS DE MINERÍA DE DATOS

CAIO FERNANDES MORENO

UCM - Mineria de Datos

ANÁLISIS DE CLUSTERS

# 1. Los datos.

Aaaa

**PROC** **IMPORT** OUT= ucm.paises

DATAFILE= "C:\Users\win\Documents\GitHub\ucm\complementos\trabajocomplementos31enero16\DatosPaises-SAS.xls"

DBMS=EXCEL5 REPLACE;

GETNAMES=YES;

**RUN**;

# 2. Ejecucion

Aaaa

/\*

El archivo \DatosPaises.xlsx" (que podeis descargar del campus) contie-

ne informacion sobre 7 variables socioeconomicas de 133 paises. Seleccionar

aleatoriamente una muestra de 100 paises con el procedimiento

surveyselect

de la siguiente forma:

\*/

libname ucm 'C:\Users\win\Documents\GitHub\ucm\complementos\trabajocomplementos31enero16\';

**data** paises;

set ucm.paises;

**run**;

**proc** **print** data=paises (obs=**100**);

**run**;

**proc** **contents** data=paises out=sa;

**data**;set sa;if \_n\_=**1** then put 'LISTA DE VARIABLES CONTINUAS';if type=**1** then put name @@;**run**;

**data**;set sa;if \_n\_=**1** then put 'LISTA DE VARIABLES CATEGÓRICAS';if type=**2** then put name @@;**run**;

**proc** **surveyselect** data=paises method=srs n=**100** out=sample\_paises;

**run**;

/\*

Para la muestra obtenida, realizar un Analisis Cluster incluyendo SOLO

las variables demograficas (Pobl Natalidad EsperanzaVida Mortalidad

), que debe incluir como minimo:

\*/

**proc** **print** data=sample\_paises (obs=**100**);

var POBL NATALIDA ESPERANZ MORTALID;

**run**;

**proc** **stdize** data=sample\_paises out=sample\_paisesnorm;

var POBL NATALIDA ESPERANZ MORTALID;

**run**;

**proc** **print** data=sample\_paisesnorm;

var POBL NATALIDA ESPERANZ MORTALID;

**run**;

**proc** **print** data=sample\_paisesnorm;

**run**;

**proc** **cluster** data=sample\_paisesnorm method=average pseudo RSQUARE ccc outtree=sample\_paisesnormA

print=**10** plots=den(VERTICAL);

var POBL NATALIDA ESPERANZ MORTALID;

**run**;

**proc** **cluster** data=sample\_paisesnorm method=centroid pseudo ccc RSQUARE

outtree=sample\_paisesnormC

print=**10** plots=den(VERTICAL);

var POBL NATALIDA ESPERANZ MORTALID;

**run**;

**proc** **cluster** data=sample\_paisesnorm method=ward pseudo ccc RSQUARE

outtree=sample\_paisesnormW

print=**10** plots=den(VERTICAL);

var POBL NATALIDA ESPERANZ MORTALID;

**run**;

Resultados:

|  |
| --- |
| The SAS System |

| **Obs** | **PAIS** | **POBL** | **NATALIDA** | **ESPERANZ** | **MORTALID** | **BALANZAC** | **PIB** | **PRODCERE** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | Afganistán | 27963 | 35.6 | 59.8 | 8.6 | -4766 | 566 | 157.13532 |
| **2** | Albania | 2902 | 13.1 | 77.5 | 7.2 | -2861 | 3786 | 577.685262 |
| **3** | Alemania | 80435 | 8.3 | 80.7 | 10.8 | 205408 | 41100 | 2659.28619 |
| **4** | Angola | 21220 | 46.2 | 51.7 | 14.2 | 29864 | 4221 | 19.5415273 |
| **5** | Arabia Saudita | 28091 | 20.8 | 74.1 | 3.4 | 144283 | 19327 | 10.288944 |
| **6** | Argelia | 36036 | 25.1 | 74.4 | 5.1 | 17558 | 4350 | 113.11257 |
| **7** | Argentina | 41223 | 17.8 | 76 | 7.6 | 12057 | 11508 | 310.531847 |
| **8** | Armenia | 2963 | 13.3 | 74.6 | 9 | -2771 | 3125 | 191.307784 |
| **9** | Australia | 22163 | 13.5 | 82.1 | 6.7 | 10724 | 57593 | 82.6334118 |
| **10** | Austria | 8392 | 9.5 | 81.1 | 9.4 | -5712 | 46377 | 1593.5443 |
| **11** | Azerbaiyán | 9100 | 21.2 | 70.6 | 7 | 14760 | 5817 | 404.527894 |
| **12** | Bangladesh | 151617 | 20.4 | 71 | 5.5 | -11877 | 758 | 5684.91934 |
| **13** | Bélgica | 10930 | 11.6 | 80.5 | 9.8 | 15721 | 44273 | 2282.05176 |
| **14** | Benin | 9509 | 36.6 | 59.2 | 9.6 | -1057 | 690 | 393.304324 |
| **15** | Bielorrusia | 9492 | 11.7 | 71.1 | 14.2 | -9601 | 5818 | 764.607435 |
| **16** | Bolivia (Estado Plurinacional de) | 9918 | 24.4 | 67.7 | 7.6 | 998 | 1935 | 49.2931894 |
| **17** | Bosnia y Herzegovina | 3836 | 9.1 | 76.3 | 10.3 | -4402 | 4380 | 511.767948 |
| **18** | Botswana | 2048 | 25.6 | 64.1 | 7.5 | -975 | 6980 | 2.33708039 |
| **19** | Brasil | 198615 | 15.1 | 74.1 | 6.1 | 10378 | 10978 | 272.824753 |
| **20** | Bulgaria | 7407 | 9.4 | 74 | 15.1 | -4902 | 6587 | 1371.64747 |
| **21** | Burkina Faso | 15632 | 40.8 | 58.1 | 10 | -837 | 579 | 377.841176 |
| **22** | Camerún | 20590 | 37.5 | 54.9 | 11.9 | -952 | 1145 | 287.733333 |
| **23** | Canadá | 34127 | 10.9 | 81.8 | 7.3 | -4638 | 47297 | 694.911701 |
| **24** | Chad | 11897 | 45.9 | 51.1 | 14.5 | 903 | 736 | 43.048546 |
| **25** | Chile | 17015 | 13.5 | 81.2 | 5.1 | 11068 | 12685 | 225.751787 |
| **26** | Colombia | 45918 | 16.2 | 73.8 | 5.8 | -973 | 6180 | 95.7396875 |
| **27** | Congo | 4066 | 37.3 | 61.4 | 9 | 5213 | 2987 | 2.35377358 |
| **28** | Costa de Marfil | 20132 | 37.4 | 51 | 13.9 | 2423 | 1208 | 71.7585922 |
| **29** | Costa Rica | 4545 | 15.1 | 79.2 | 4.7 | -4214 | 7773 | 150.409019 |
| **30** | Croacia | 4317 | 9.8 | 77.1 | 12.4 | -8244 | 13754 | 2265.72666 |
| **31** | Cuba | 11308 | 10.5 | 79.2 | 7.7 | -5975 | 5702 | 121.623946 |
| **32** | Dinamarca | 5551 | 10.4 | 80 | 9.7 | 12589 | 57614 | 3342.91159 |
| **33** | Ecuador | 14934 | 21.2 | 75.5 | 5.2 | -3176 | 4637 | 363.654456 |
| **34** | Egipto | 82041 | 28.5 | 70.8 | 6.2 | -26485 | 2749 | 5410.08915 |
| **35** | El Salvador | 6038 | 17.5 | 72.6 | 6.7 | -4077 | 3444 | 634.516273 |
| **36** | Eslovaquia | 5407 | 10.5 | 76 | 9.8 | -2098 | 16381 | 1366.35703 |
| **37** | Eslovenia | 2053 | 10.5 | 80.1 | 9.4 | -1588 | 23352 | 1190.30417 |
| **38** | España | 46601 | 9.3 | 82.3 | 8.8 | -69274 | 30999 | 717.158754 |
| **39** | Estonia | 1332 | 10.7 | 76.5 | 11.9 | -675 | 15010 | 709.698745 |
| **40** | Etiopía | 87562 | 33.2 | 63.1 | 7.8 | -6216 | 302 | 424.364723 |
| **41** | Federación Rusa | 143158 | 12.7 | 69.8 | 13.9 | 168013 | 10618 | 278.162132 |
| **42** | Fiji | 860 | 20.7 | 69.7 | 6.8 | -975 | 3649 | 20.2988235 |
| **43** | Filipinas | 93039 | 24 | 68 | 6.7 | -6992 | 2136 | 1786.91037 |
| **44** | Finlandia | 5368 | 10.7 | 80.5 | 9.6 | 719 | 46165 | 1309.54048 |
| **45** | Francia | 62961 | 12.4 | 81.9 | 8.9 | -91697 | 40617 | 2367.79351 |
| **46** | Gabón | 1542 | 30.8 | 63.7 | 9 | 5706 | 8278 | 7.90697674 |
| **47** | Georgia | 4250 | 13.7 | 74.6 | 11.5 | -3580 | 2652 | 89.3115619 |
| **48** | Ghana | 24318 | 33.5 | 61 | 9.2 | -3077 | 1326 | 185.14121 |
| **49** | Grecia | 11178 | 8.9 | 80.6 | 10.5 | -39337 | 26967 | 493.14951 |
| **50** | Guatemala | 14732 | 27.7 | 71.5 | 5.4 | -6145 | 2882 | 390.413637 |
| **51** | Guinea | 11013 | 37.6 | 58 | 10.4 | 66 | 481 | 190.483333 |
| **52** | Haití | 9999 | 25.5 | 62.3 | 8.9 | -2568 | 621 | 246.949153 |
| **53** | Honduras | 7504 | 21.7 | 72.8 | 5 | -4367 | 2078 | 182.15456 |
| **54** | Hungría | 10015 | 9.3 | 75 | 13.2 | 7147 | 12939 | 2305.02979 |
| **55** | Indonesia | 241613 | 20.5 | 68.6 | 7.2 | 22751 | 2947 | 1500.83186 |
| **56** | Irak | 30868 | 35.1 | 69.2 | 5.3 | 8567 | 3783 | 563.086587 |
| **57** | Irán (República islámica de) | 74254 | 18.1 | 75.1 | 4.7 | 35912 | 5663 | 453.322342 |
| **58** | Irlanda | 4617 | 15.4 | 80.6 | 6.4 | 58265 | 48893 | 451.758218 |
| **59** | Israel | 7420 | 21.5 | 82.1 | 5.3 | -2817 | 31222 | 456.133843 |
| **60** | Italia | 59588 | 8.6 | 82.8 | 9.7 | -40116 | 35146 | 1371.19208 |
| **61** | Jamaica | 2741 | 17.6 | 75.4 | 6.8 | -3870 | 4827 | 5.26726058 |
| **62** | Japón | 127320 | 8.3 | 83.3 | 10 | 77337 | 43151 | 2497.8215 |
| **63** | Jordania | 6518 | 27.9 | 73.8 | 3.9 | -8062 | 4094 | 83.7485605 |
| **64** | Kazajstán | 16311 | 22.5 | 69.1 | 8.9 | 33220 | 9299 | 58.2563289 |
| **65** | Kenia | 40328 | 35.4 | 60.6 | 8.7 | -6925 | 970 | 149.467809 |
| **66** | Kirguistán | 5465 | 27.1 | 70.3 | 6.4 | -1467 | 899 | 142.565386 |
| **67** | Lesoto | 2011 | 28.9 | 49.5 | 14.9 | -1404 | 1083 | 75.6450766 |
| **68** | Letonia | 2090 | 10 | 74 | 14.5 | -2292 | 11417 | 804.725693 |
| **69** | Líbano | 4337 | 15 | 78.9 | 4.6 | -13439 | 8850 | 242.71487 |
| **70** | Libia | 6265 | 21.7 | 71.5 | 5.3 | 35510 | 13400 | 14.1908173 |
| **71** | Lituania | 3123 | 10.2 | 73.1 | 15.2 | -2658 | 12089 | 980.225194 |
| **72** | Madagascar | 21080 | 34.8 | 64.5 | 6.9 | -1464 | 415 | 124.711605 |
| **73** | Malasia | 28119 | 16.9 | 74.5 | 4.8 | 33990 | 8754 | 333.473548 |
| **74** | Malawi | 14769 | 39.6 | 61 | 8.6 | -1044 | 464 | 629.517698 |
| **75** | Malí | 15167 | 44.4 | 57.2 | 11 | -1434 | 672 | 154.096516 |
| **76** | Marruecos | 32108 | 21.3 | 73.6 | 5.7 | -17620 | 2869 | 257.684768 |
| **77** | Mauritania | 3591 | 34 | 62.8 | 8.1 | 91 | 1202 | 6.95048032 |
| **78** | México | 118617 | 19.3 | 76.5 | 4.8 | -3344 | 8906 | 327.280437 |
| **79** | Mongolia | 2713 | 24.6 | 68.9 | 6.2 | -379 | 2286 | 3.13064835 |
| **80** | Montenegro | 622 | 11.9 | 76 | 9.9 | -1749 | 6630 | 31.6920078 |
| **81** | Mozambique | 24321 | 40 | 54.6 | 11.8 | -1600 | 424 | 50.1621622 |
| **82** | Myanmar | 51733 | 18.2 | 65.6 | 8.2 | 3901 | 799 | 2783.14937 |
| **83** | Namibia | 2193 | 30.2 | 64.3 | 7.3 | -1276 | 5113 | 2.97611379 |
| **84** | Nepal | 26876 | 21 | 69 | 6.5 | -4550 | 607 | 1883.68115 |
| **85** | Nicaragua | 5738 | 21 | 74.5 | 4.8 | -2384 | 1535 | 191.232499 |
| **86** | Níger | 16292 | 49.8 | 60.7 | 9.6 | -1537 | 360 | 116.190233 |
| **87** | Nigeria | 159425 | 40.3 | 52.3 | 13.3 | 39765 | 2311 | 271.238194 |
| **88** | Noruega | 4891 | 11.7 | 81.3 | 8.4 | 53344 | 87611 | 1154.23387 |
| **89** | Nueva Caledonia | 246 | 15.7 | 76.2 | 6.9 | -1820 | 36789 | 18.5054348 |
| **90** | Nueva Zelanda | 4369 | 13.7 | 81.6 | 6.8 | 466 | 33260 | 88.7674645 |
| **91** | Omán | 2944 | 20.8 | 76.3 | 2.7 | 16827 | 20923 | 39.7148676 |
| **92** | Países Bajos | 16631 | 10.6 | 81.3 | 8.4 | 52718 | 50339 | 978.908795 |
| **93** | Pakistán | 170044 | 29.8 | 65.9 | 7.5 | -16373 | 1008 | 1287.39645 |
| **94** | Panamá | 3621 | 19.8 | 77.3 | 5 | -8313 | 7355 | 161.716998 |
| **95** | Papúa Nueva Guinea | 6848 | 29.1 | 62.3 | 7.7 | 1792 | 1415 | 11.8907563 |
| **96** | Paraguay | 6209 | 21.7 | 72.7 | 5.6 | -3524 | 3103 | 231.421674 |
| **97** | Perú | 29374 | 20.4 | 74.2 | 5.6 | 6747 | 5026 | 200.118104 |
| **98** | Polonia | 38575 | 10.4 | 77.1 | 9.8 | -18320 | 12479 | 1866.63914 |
| **99** | Portugal | 10585 | 8.5 | 80.6 | 10.3 | -26838 | 22503 | 301.231573 |
| **100** | Reino Unido | 62716 | 12.6 | 80.5 | 9.2 | -152487 | 38796 | 0.00232802 |

|  |
| --- |
| The SAS System |

The CONTENTS Procedure

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Set Name** | WORK.PAISES | **Observations** | 133 |
| **Member Type** | DATA | **Variables** | 8 |
| **Engine** | V9 | **Indexes** | 0 |
| **Created** | 19/01/2016 11:46:52 | **Observation Length** | 96 |
| **Last Modified** | 19/01/2016 11:46:52 | **Deleted Observations** | 0 |
| **Protection** |  | **Compressed** | NO |
| **Data Set Type** |  | **Sorted** | NO |
| **Label** |  |  |  |
| **Data Representation** | WINDOWS\_64 |  |  |
| **Encoding** | wlatin1 Western (Windows) |  |  |

| **Engine/Host Dependent Information** | |
| --- | --- |
| **Data Set Page Size** | 65536 |
| **Number of Data Set Pages** | 1 |
| **First Data Page** | 1 |
| **Max Obs per Page** | 681 |
| **Obs in First Data Page** | 133 |
| **Number of Data Set Repairs** | 0 |
| **ExtendObsCounter** | YES |
| **Filename** | C:\Users\win\AppData\Local\Temp\SAS Temporary Files\\_TD3112\_PC\_\paises.sas7bdat |
| **Release Created** | 9.0401M1 |
| **Host Created** | X64\_7PRO |

| **Alphabetic List of Variables and Attributes** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **Variable** | **Type** | **Len** | **Format** | **Informat** | **Label** |
| **6** | BALANZAC | Num | 8 | BEST10. | BEST10. | BALANZACOMERCIAL |
| **4** | ESPERANZ | Num | 8 | BEST13. | BEST13. | ESPERANZAVIDA |
| **5** | MORTALID | Num | 8 | BEST9. | BEST9. | MORTALIDAD |
| **3** | NATALIDA | Num | 8 | BEST10. | BEST10. | NATALIDAD |
| **1** | PAIS | Char | 39 | $39. | $39. | PAIS |
| **7** | PIB | Num | 8 | BEST10. | BEST10. | PIB |
| **2** | POBL | Num | 8 | BEST9. | BEST9. | POBL |
| **8** | PRODCERE | Num | 8 | BEST10. | BEST10. | PRODCEREALES |

|  |
| --- |
| The SAS System |

The SURVEYSELECT Procedure

|  |  |
| --- | --- |
| **Selection Method** | Simple Random Sampling |

|  |  |
| --- | --- |
| **Input Data Set** | PAISES |
| **Random Number Seed** | 286394001 |
| **Sample Size** | 100 |
| **Selection Probability** | 0.75188 |
| **Sampling Weight** | 1.33 |
| **Output Data Set** | SAMPLE\_PAISES |

|  |
| --- |
| The SAS System |

| **Obs** | **POBL** | **NATALIDA** | **ESPERANZ** | **MORTALID** |
| --- | --- | --- | --- | --- |
| **1** | 27963 | 35.6 | 59.8 | 8.6 |
| **2** | 2902 | 13.1 | 77.5 | 7.2 |
| **3** | 80435 | 8.3 | 80.7 | 10.8 |
| **4** | 21220 | 46.2 | 51.7 | 14.2 |
| **5** | 28091 | 20.8 | 74.1 | 3.4 |
| **6** | 36036 | 25.1 | 74.4 | 5.1 |
| **7** | 41223 | 17.8 | 76 | 7.6 |
| **8** | 2963 | 13.3 | 74.6 | 9 |
| **9** | 22163 | 13.5 | 82.1 | 6.7 |
| **10** | 8392 | 9.5 | 81.1 | 9.4 |
| **11** | 9100 | 21.2 | 70.6 | 7 |
| **12** | 151617 | 20.4 | 71 | 5.5 |
| **13** | 10930 | 11.6 | 80.5 | 9.8 |
| **14** | 9509 | 36.6 | 59.2 | 9.6 |
| **15** | 9492 | 11.7 | 71.1 | 14.2 |
| **16** | 9918 | 24.4 | 67.7 | 7.6 |
| **17** | 3836 | 9.1 | 76.3 | 10.3 |
| **18** | 2048 | 25.6 | 64.1 | 7.5 |
| **19** | 198615 | 15.1 | 74.1 | 6.1 |
| **20** | 7407 | 9.4 | 74 | 15.1 |
| **21** | 15632 | 40.8 | 58.1 | 10 |
| **22** | 20590 | 37.5 | 54.9 | 11.9 |
| **23** | 34127 | 10.9 | 81.8 | 7.3 |
| **24** | 11897 | 45.9 | 51.1 | 14.5 |
| **25** | 17015 | 13.5 | 81.2 | 5.1 |
| **26** | 45918 | 16.2 | 73.8 | 5.8 |
| **27** | 4066 | 37.3 | 61.4 | 9 |
| **28** | 20132 | 37.4 | 51 | 13.9 |
| **29** | 4545 | 15.1 | 79.2 | 4.7 |
| **30** | 4317 | 9.8 | 77.1 | 12.4 |
| **31** | 11308 | 10.5 | 79.2 | 7.7 |
| **32** | 5551 | 10.4 | 80 | 9.7 |
| **33** | 14934 | 21.2 | 75.5 | 5.2 |
| **34** | 82041 | 28.5 | 70.8 | 6.2 |
| **35** | 6038 | 17.5 | 72.6 | 6.7 |
| **36** | 5407 | 10.5 | 76 | 9.8 |
| **37** | 2053 | 10.5 | 80.1 | 9.4 |
| **38** | 46601 | 9.3 | 82.3 | 8.8 |
| **39** | 1332 | 10.7 | 76.5 | 11.9 |
| **40** | 87562 | 33.2 | 63.1 | 7.8 |
| **41** | 143158 | 12.7 | 69.8 | 13.9 |
| **42** | 860 | 20.7 | 69.7 | 6.8 |
| **43** | 93039 | 24 | 68 | 6.7 |
| **44** | 5368 | 10.7 | 80.5 | 9.6 |
| **45** | 62961 | 12.4 | 81.9 | 8.9 |
| **46** | 1542 | 30.8 | 63.7 | 9 |
| **47** | 4250 | 13.7 | 74.6 | 11.5 |
| **48** | 24318 | 33.5 | 61 | 9.2 |
| **49** | 11178 | 8.9 | 80.6 | 10.5 |
| **50** | 14732 | 27.7 | 71.5 | 5.4 |
| **51** | 11013 | 37.6 | 58 | 10.4 |
| **52** | 9999 | 25.5 | 62.3 | 8.9 |
| **53** | 7504 | 21.7 | 72.8 | 5 |
| **54** | 10015 | 9.3 | 75 | 13.2 |
| **55** | 241613 | 20.5 | 68.6 | 7.2 |
| **56** | 30868 | 35.1 | 69.2 | 5.3 |
| **57** | 74254 | 18.1 | 75.1 | 4.7 |
| **58** | 4617 | 15.4 | 80.6 | 6.4 |
| **59** | 7420 | 21.5 | 82.1 | 5.3 |
| **60** | 59588 | 8.6 | 82.8 | 9.7 |
| **61** | 2741 | 17.6 | 75.4 | 6.8 |
| **62** | 127320 | 8.3 | 83.3 | 10 |
| **63** | 6518 | 27.9 | 73.8 | 3.9 |
| **64** | 16311 | 22.5 | 69.1 | 8.9 |
| **65** | 40328 | 35.4 | 60.6 | 8.7 |
| **66** | 5465 | 27.1 | 70.3 | 6.4 |
| **67** | 2011 | 28.9 | 49.5 | 14.9 |
| **68** | 2090 | 10 | 74 | 14.5 |
| **69** | 4337 | 15 | 78.9 | 4.6 |
| **70** | 6265 | 21.7 | 71.5 | 5.3 |
| **71** | 3123 | 10.2 | 73.1 | 15.2 |
| **72** | 21080 | 34.8 | 64.5 | 6.9 |
| **73** | 28119 | 16.9 | 74.5 | 4.8 |
| **74** | 14769 | 39.6 | 61 | 8.6 |
| **75** | 15167 | 44.4 | 57.2 | 11 |
| **76** | 32108 | 21.3 | 73.6 | 5.7 |
| **77** | 3591 | 34 | 62.8 | 8.1 |
| **78** | 118617 | 19.3 | 76.5 | 4.8 |
| **79** | 2713 | 24.6 | 68.9 | 6.2 |
| **80** | 622 | 11.9 | 76 | 9.9 |
| **81** | 24321 | 40 | 54.6 | 11.8 |
| **82** | 51733 | 18.2 | 65.6 | 8.2 |
| **83** | 2193 | 30.2 | 64.3 | 7.3 |
| **84** | 26876 | 21 | 69 | 6.5 |
| **85** | 5738 | 21 | 74.5 | 4.8 |
| **86** | 16292 | 49.8 | 60.7 | 9.6 |
| **87** | 159425 | 40.3 | 52.3 | 13.3 |
| **88** | 4891 | 11.7 | 81.3 | 8.4 |
| **89** | 246 | 15.7 | 76.2 | 6.9 |
| **90** | 4369 | 13.7 | 81.6 | 6.8 |
| **91** | 2944 | 20.8 | 76.3 | 2.7 |
| **92** | 16631 | 10.6 | 81.3 | 8.4 |
| **93** | 170044 | 29.8 | 65.9 | 7.5 |
| **94** | 3621 | 19.8 | 77.3 | 5 |
| **95** | 6848 | 29.1 | 62.3 | 7.7 |
| **96** | 6209 | 21.7 | 72.7 | 5.6 |
| **97** | 29374 | 20.4 | 74.2 | 5.6 |
| **98** | 38575 | 10.4 | 77.1 | 9.8 |
| **99** | 10585 | 8.5 | 80.6 | 10.3 |
| **100** | 62716 | 12.6 | 80.5 | 9.2 |

|  |
| --- |
| The SAS System |

| **Obs** | **POBL** | **NATALIDA** | **ESPERANZ** | **MORTALID** |
| --- | --- | --- | --- | --- |
| **1** | 27963 | 35.6 | 59.8 | 8.6 |
| **2** | 2902 | 13.1 | 77.5 | 7.2 |
| **3** | 80435 | 8.3 | 80.7 | 10.8 |
| **4** | 21220 | 46.2 | 51.7 | 14.2 |
| **5** | 28091 | 20.8 | 74.1 | 3.4 |
| **6** | 36036 | 25.1 | 74.4 | 5.1 |
| **7** | 41223 | 17.8 | 76 | 7.6 |
| **8** | 2963 | 13.3 | 74.6 | 9 |
| **9** | 22163 | 13.5 | 82.1 | 6.7 |
| **10** | 9100 | 21.2 | 70.6 | 7 |
| **11** | 9509 | 36.6 | 59.2 | 9.6 |
| **12** | 9492 | 11.7 | 71.1 | 14.2 |
| **13** | 2048 | 25.6 | 64.1 | 7.5 |
| **14** | 198615 | 15.1 | 74.1 | 6.1 |
| **15** | 7407 | 9.4 | 74 | 15.1 |
| **16** | 15632 | 40.8 | 58.1 | 10 |
| **17** | 20590 | 37.5 | 54.9 | 11.9 |
| **18** | 34127 | 10.9 | 81.8 | 7.3 |
| **19** | 11897 | 45.9 | 51.1 | 14.5 |
| **20** | 45918 | 16.2 | 73.8 | 5.8 |
| **21** | 4066 | 37.3 | 61.4 | 9 |
| **22** | 20132 | 37.4 | 51 | 13.9 |
| **23** | 4317 | 9.8 | 77.1 | 12.4 |
| **24** | 11308 | 10.5 | 79.2 | 7.7 |
| **25** | 14934 | 21.2 | 75.5 | 5.2 |
| **26** | 82041 | 28.5 | 70.8 | 6.2 |
| **27** | 6038 | 17.5 | 72.6 | 6.7 |
| **28** | 5407 | 10.5 | 76 | 9.8 |
| **29** | 46601 | 9.3 | 82.3 | 8.8 |
| **30** | 1332 | 10.7 | 76.5 | 11.9 |
| **31** | 87562 | 33.2 | 63.1 | 7.8 |
| **32** | 93039 | 24 | 68 | 6.7 |
| **33** | 62961 | 12.4 | 81.9 | 8.9 |
| **34** | 4250 | 13.7 | 74.6 | 11.5 |
| **35** | 24318 | 33.5 | 61 | 9.2 |
| **36** | 14732 | 27.7 | 71.5 | 5.4 |
| **37** | 11013 | 37.6 | 58 | 10.4 |
| **38** | 9999 | 25.5 | 62.3 | 8.9 |
| **39** | 7504 | 21.7 | 72.8 | 5 |
| **40** | 241613 | 20.5 | 68.6 | 7.2 |
| **41** | 4617 | 15.4 | 80.6 | 6.4 |
| **42** | 7420 | 21.5 | 82.1 | 5.3 |
| **43** | 2741 | 17.6 | 75.4 | 6.8 |
| **44** | 127320 | 8.3 | 83.3 | 10 |
| **45** | 6518 | 27.9 | 73.8 | 3.9 |
| **46** | 16311 | 22.5 | 69.1 | 8.9 |
| **47** | 40328 | 35.4 | 60.6 | 8.7 |
| **48** | 2090 | 10 | 74 | 14.5 |
| **49** | 4337 | 15 | 78.9 | 4.6 |
| **50** | 3123 | 10.2 | 73.1 | 15.2 |
| **51** | 28119 | 16.9 | 74.5 | 4.8 |
| **52** | 14769 | 39.6 | 61 | 8.6 |
| **53** | 118617 | 19.3 | 76.5 | 4.8 |
| **54** | 2713 | 24.6 | 68.9 | 6.2 |
| **55** | 24321 | 40 | 54.6 | 11.8 |
| **56** | 2193 | 30.2 | 64.3 | 7.3 |
| **57** | 26876 | 21 | 69 | 6.5 |
| **58** | 16292 | 49.8 | 60.7 | 9.6 |
| **59** | 159425 | 40.3 | 52.3 | 13.3 |
| **60** | 4891 | 11.7 | 81.3 | 8.4 |
| **61** | 246 | 15.7 | 76.2 | 6.9 |
| **62** | 4369 | 13.7 | 81.6 | 6.8 |
| **63** | 2944 | 20.8 | 76.3 | 2.7 |
| **64** | 16631 | 10.6 | 81.3 | 8.4 |
| **65** | 170044 | 29.8 | 65.9 | 7.5 |
| **66** | 3621 | 19.8 | 77.3 | 5 |
| **67** | 6848 | 29.1 | 62.3 | 7.7 |
| **68** | 6209 | 21.7 | 72.7 | 5.6 |
| **69** | 38575 | 10.4 | 77.1 | 9.8 |
| **70** | 10585 | 8.5 | 80.6 | 10.3 |
| **71** | 62716 | 12.6 | 80.5 | 9.2 |
| **72** | 10506 | 34.3 | 49.5 | 15.2 |
| **73** | 49090 | 10.2 | 78.4 | 10.1 |
| **74** | 24501 | 42.6 | 58.1 | 10.7 |
| **75** | 6260 | 14.4 | 69.9 | 9.2 |
| **76** | 9898 | 27.2 | 65.5 | 7 |
| **77** | 45649 | 21.4 | 73.2 | 6 |
| **78** | 10294 | 15.7 | 79.5 | 5.5 |
| **79** | 20299 | 32.9 | 63.1 | 7.5 |
| **80** | 12957 | 34.9 | 66.2 | 7.1 |
| **81** | 9059 | 38.9 | 65.8 | 6.6 |
| **82** | 20721 | 9.3 | 82.6 | 4.5 |
| **83** | 51622 | 21 | 57.1 | 12.5 |
| **84** | 36115 | 33.7 | 63.1 | 7.9 |
| **85** | 9383 | 12 | 81.9 | 9.4 |
| **86** | 7830 | 10.2 | 82.7 | 8.1 |
| **87** | 66692 | 11.2 | 74.1 | 7.7 |
| **88** | 7581 | 31 | 69.1 | 5.7 |
| **89** | 6391 | 36.3 | 59 | 9.3 |
| **90** | 10639 | 18.4 | 74.6 | 6.6 |
| **91** | 5042 | 21.5 | 65.4 | 7.8 |
| **92** | 45648 | 10.8 | 70.8 | 15.3 |
| **93** | 33149 | 43.7 | 57.3 | 10.2 |
| **94** | 3374 | 14.4 | 77 | 9.3 |
| **95** | 27739 | 23.3 | 68.3 | 7 |
| **96** | 28996 | 20 | 74 | 5.5 |
| **97** | 88358 | 17.4 | 75.6 | 5.8 |
| **98** | 23592 | 33.2 | 63.5 | 7.1 |
| **99** | 13918 | 40.6 | 58.8 | 9.7 |
| **100** | 13974 | 36.1 | 54.8 | 11.1 |

|  |
| --- |
| The SAS System |

| **Obs** | **POBL** | **NATALIDA** | **ESPERANZ** | **MORTALID** |
| --- | --- | --- | --- | --- |
| **1** | -0.051633 | 1.14230648 | -1.1503042058 | 0.0516511 |
| **2** | -0.641721 | -0.8872178 | 0.82145489188 | -0.433661 |
| **3** | 1.1838775 | -1.320183 | 1.17793111293 | 0.8142852 |
| **4** | -0.210404 | 2.09843792 | -2.0526346403 | 1.9929016 |
| **5** | -0.048619 | -0.1926695 | 0.44269890702 | -1.750939 |
| **6** | 0.1384548 | 0.19519514 | 0.47611855274 | -1.16163 |
| **7** | 0.2605883 | -0.4632727 | 0.65435666327 | -0.295001 |
| **8** | -0.640285 | -0.8691776 | 0.49839831656 | 0.1903119 |
| **9** | -0.1882 | -0.8511374 | 1.33388945964 | -0.606987 |
| **10** | -0.495783 | -0.1565891 | 0.05280304024 | -0.502992 |
| **11** | -0.486152 | 1.23250756 | -1.2171434972 | 0.398303 |
| **12** | -0.486553 | -1.0134993 | 0.10850244978 | 1.9929016 |
| **13** | -0.66183 | 0.24029568 | -0.6712892838 | -0.329666 |
| **14** | 3.966554 | -0.7068157 | 0.44269890702 | -0.814979 |
| **15** | -0.535646 | -1.2209618 | 0.43155902511 | 2.3048883 |
| **16** | -0.34198 | 1.61135209 | -1.3396821982 | 0.5369638 |
| **17** | -0.225238 | 1.31368853 | -1.6961584193 | 1.1956023 |
| **18** | 0.0935053 | -1.0856602 | 1.30046981392 | -0.398996 |
| **19** | -0.429924 | 2.0713776 | -2.1194739318 | 2.0968972 |
| **20** | 0.3711372 | -0.6075945 | 0.40927926129 | -0.918974 |
| **21** | -0.614314 | 1.29564831 | -0.9720660953 | 0.1903119 |
| **22** | -0.236022 | 1.30466842 | -2.1306138137 | 1.8889061 |
| **23** | -0.608404 | -1.1848814 | 0.77689536425 | 1.3689282 |
| **24** | -0.443793 | -1.1217406 | 1.01083288432 | -0.260336 |
| **25** | -0.358415 | -0.1565891 | 0.59865725373 | -1.126965 |
| **26** | 1.2216925 | 0.50187881 | 0.07508280406 | -0.780313 |
| **27** | -0.567881 | -0.4903331 | 0.2756006784 | -0.606987 |
| **28** | -0.582738 | -1.1217406 | 0.65435666327 | 0.4676334 |
| **29** | 0.3872192 | -1.2299819 | 1.35616922346 | 0.1209815 |
| **30** | -0.678689 | -1.1037004 | 0.7100560728 | 1.1956023 |
| **31** | 1.3516904 | 0.92582388 | -0.7826881028 | -0.22567 |
| **32** | 1.4806523 | 0.09597395 | -0.2368338894 | -0.606987 |
| **33** | 0.7724331 | -0.9503586 | 1.31160969583 | 0.1556467 |
| **34** | -0.609981 | -0.8330972 | 0.49839831656 | 1.0569416 |
| **35** | -0.137458 | 0.95288421 | -1.0166256229 | 0.2596423 |
| **36** | -0.363171 | 0.42971794 | 0.15306197741 | -1.057635 |
| **37** | -0.450739 | 1.32270864 | -1.3508220801 | 0.6756245 |
| **38** | -0.474615 | 0.23127557 | -0.8718071581 | 0.1556467 |
| **39** | -0.533362 | -0.1114885 | 0.29788044222 | -1.196296 |
| **40** | 4.9789887 | -0.2197298 | -0.1699945979 | -0.433661 |
| **41** | -0.60134 | -0.6797553 | 1.16679123103 | -0.710983 |
| **42** | -0.53534 | -0.1295288 | 1.33388945964 | -1.0923 |
| **43** | -0.645512 | -0.481313 | 0.58751737182 | -0.572322 |
| **44** | 2.2878358 | -1.320183 | 1.46756804254 | 0.5369638 |
| **45** | -0.556579 | 0.44775816 | 0.40927926129 | -1.577613 |
| **46** | -0.325992 | -0.0393277 | -0.1142951884 | 0.1556467 |
| **47** | 0.2395146 | 1.12426626 | -1.0611851505 | 0.0863163 |
| **48** | -0.660841 | -1.1668412 | 0.43155902511 | 2.0968972 |
| **49** | -0.607933 | -0.7158358 | 0.97741323859 | -1.334956 |
| **50** | -0.636518 | -1.148801 | 0.33130008794 | 2.3395535 |
| **51** | -0.04796 | -0.5444537 | 0.48725843465 | -1.265626 |
| **52** | -0.3623 | 1.5031108 | -1.0166256229 | 0.0516511 |
| **53** | 2.0829142 | -0.3279711 | 0.7100560728 | -1.265626 |
| **54** | -0.646171 | 0.1500946 | -0.1365749522 | -0.780313 |
| **55** | -0.137388 | 1.53919123 | -1.729578065 | 1.1609371 |
| **56** | -0.658415 | 0.65522064 | -0.6490095199 | -0.398996 |
| **57** | -0.077227 | -0.1746293 | -0.1254350703 | -0.676318 |
| **58** | -0.326439 | 2.42316181 | -1.0500452686 | 0.398303 |
| **59** | 3.0437829 | 1.56625155 | -1.9857953489 | 1.6809149 |
| **60** | -0.594888 | -1.0134993 | 1.24477040438 | -0.017679 |
| **61** | -0.70426 | -0.652695 | 0.67663642708 | -0.537657 |
| **62** | -0.607179 | -0.8330972 | 1.2781900501 | -0.572322 |
| **63** | -0.640732 | -0.1926695 | 0.68777630899 | -1.993595 |
| **64** | -0.318457 | -1.1127205 | 1.24477040438 | -0.017679 |
| **65** | 3.2938188 | 0.61914021 | -0.4707714094 | -0.329666 |
| **66** | -0.624792 | -0.2828706 | 0.79917512807 | -1.196296 |
| **67** | -0.548808 | 0.55599946 | -0.8718071581 | -0.260336 |
| **68** | -0.563854 | -0.1114885 | 0.28674056031 | -0.988304 |
| **69** | 0.1982383 | -1.1307607 | 0.77689536425 | 0.4676334 |
| **70** | -0.460817 | -1.3021428 | 1.16679123103 | 0.6409593 |
| **71** | 0.7666644 | -0.9323184 | 1.15565134912 | 0.2596423 |
| **72** | -0.462677 | 1.02504507 | -2.2977120423 | 2.3395535 |
| **73** | 0.4458254 | -1.148801 | 0.92171382905 | 0.5716289 |
| **74** | -0.133149 | 1.77371404 | -1.3396821982 | 0.7796201 |
| **75** | -0.562654 | -0.7699564 | -0.0251761331 | 0.2596423 |
| **76** | -0.476993 | 0.3846174 | -0.5153309371 | -0.502992 |
| **77** | 0.3648033 | -0.1385489 | 0.34243996985 | -0.849644 |
| **78** | -0.467669 | -0.652695 | 1.04425253004 | -1.02297 |
| **79** | -0.23209 | 0.89876356 | -0.7826881028 | -0.329666 |
| **80** | -0.404965 | 1.07916572 | -0.4373517637 | -0.468327 |
| **81** | -0.496748 | 1.43997004 | -0.4819112913 | -0.641653 |
| **82** | -0.222154 | -1.2299819 | 1.38958886918 | -1.369622 |
| **83** | 0.5054441 | -0.1746293 | -1.4510810173 | 1.4035934 |
| **84** | 0.1403149 | 0.97092442 | -0.7826881028 | -0.191005 |
| **85** | -0.489119 | -0.986439 | 1.31160969583 | 0.3289726 |
| **86** | -0.525686 | -1.148801 | 1.40072875109 | -0.121675 |
| **87** | 0.8602836 | -1.0585999 | 0.44269890702 | -0.260336 |
| **88** | -0.531549 | 0.72738151 | -0.1142951884 | -0.953639 |
| **89** | -0.559569 | 1.20544723 | -1.2394232611 | 0.2943074 |
| **90** | -0.459545 | -0.4091521 | 0.49839831656 | -0.641653 |
| **91** | -0.591333 | -0.1295288 | -0.526470819 | -0.22567 |
| **92** | 0.3647797 | -1.0946803 | 0.07508280406 | 2.3742187 |
| **93** | 0.0704772 | 1.87293522 | -1.4288012535 | 0.6062941 |
| **94** | -0.630608 | -0.7699564 | 0.76575548234 | 0.2943074 |
| **95** | -0.056907 | 0.03283319 | -0.2034142436 | -0.502992 |
| **96** | -0.02731 | -0.2648304 | 0.43155902511 | -1.02297 |
| **97** | 1.3704331 | -0.4993532 | 0.60979713563 | -0.918974 |
| **98** | -0.154553 | 0.92582388 | -0.7381285752 | -0.468327 |
| **99** | -0.382338 | 1.59331188 | -1.2617030249 | 0.4329682 |
| **100** | -0.381019 | 1.18740702 | -1.7072983012 | 0.9182808 |

|  |
| --- |
| The SAS System |

| **Obs** | **PAIS** | **POBL** | **NATALIDA** | **ESPERANZ** | **MORTALID** | **BALANZAC** | **PIB** | **PRODCERE** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | Afganistán | -0.051633 | 1.14230648 | -1.1503042058 | 0.0516511 | -4766 | 566 | 157.13532 |
| **2** | Albania | -0.641721 | -0.8872178 | 0.82145489188 | -0.433661 | -2861 | 3786 | 577.685262 |
| **3** | Alemania | 1.1838775 | -1.320183 | 1.17793111293 | 0.8142852 | 205408 | 41100 | 2659.28619 |
| **4** | Angola | -0.210404 | 2.09843792 | -2.0526346403 | 1.9929016 | 29864 | 4221 | 19.5415273 |
| **5** | Arabia Saudita | -0.048619 | -0.1926695 | 0.44269890702 | -1.750939 | 144283 | 19327 | 10.288944 |
| **6** | Argelia | 0.1384548 | 0.19519514 | 0.47611855274 | -1.16163 | 17558 | 4350 | 113.11257 |
| **7** | Argentina | 0.2605883 | -0.4632727 | 0.65435666327 | -0.295001 | 12057 | 11508 | 310.531847 |
| **8** | Armenia | -0.640285 | -0.8691776 | 0.49839831656 | 0.1903119 | -2771 | 3125 | 191.307784 |
| **9** | Australia | -0.1882 | -0.8511374 | 1.33388945964 | -0.606987 | 10724 | 57593 | 82.6334118 |
| **10** | Azerbaiyán | -0.495783 | -0.1565891 | 0.05280304024 | -0.502992 | 14760 | 5817 | 404.527894 |
| **11** | Benin | -0.486152 | 1.23250756 | -1.2171434972 | 0.398303 | -1057 | 690 | 393.304324 |
| **12** | Bielorrusia | -0.486553 | -1.0134993 | 0.10850244978 | 1.9929016 | -9601 | 5818 | 764.607435 |
| **13** | Botswana | -0.66183 | 0.24029568 | -0.6712892838 | -0.329666 | -975 | 6980 | 2.33708039 |
| **14** | Brasil | 3.966554 | -0.7068157 | 0.44269890702 | -0.814979 | 10378 | 10978 | 272.824753 |
| **15** | Bulgaria | -0.535646 | -1.2209618 | 0.43155902511 | 2.3048883 | -4902 | 6587 | 1371.64747 |
| **16** | Burkina Faso | -0.34198 | 1.61135209 | -1.3396821982 | 0.5369638 | -837 | 579 | 377.841176 |
| **17** | Camerún | -0.225238 | 1.31368853 | -1.6961584193 | 1.1956023 | -952 | 1145 | 287.733333 |
| **18** | Canadá | 0.0935053 | -1.0856602 | 1.30046981392 | -0.398996 | -4638 | 47297 | 694.911701 |
| **19** | Chad | -0.429924 | 2.0713776 | -2.1194739318 | 2.0968972 | 903 | 736 | 43.048546 |
| **20** | Colombia | 0.3711372 | -0.6075945 | 0.40927926129 | -0.918974 | -973 | 6180 | 95.7396875 |
| **21** | Congo | -0.614314 | 1.29564831 | -0.9720660953 | 0.1903119 | 5213 | 2987 | 2.35377358 |
| **22** | Costa de Marfil | -0.236022 | 1.30466842 | -2.1306138137 | 1.8889061 | 2423 | 1208 | 71.7585922 |
| **23** | Croacia | -0.608404 | -1.1848814 | 0.77689536425 | 1.3689282 | -8244 | 13754 | 2265.72666 |
| **24** | Cuba | -0.443793 | -1.1217406 | 1.01083288432 | -0.260336 | -5975 | 5702 | 121.623946 |
| **25** | Ecuador | -0.358415 | -0.1565891 | 0.59865725373 | -1.126965 | -3176 | 4637 | 363.654456 |
| **26** | Egipto | 1.2216925 | 0.50187881 | 0.07508280406 | -0.780313 | -26485 | 2749 | 5410.08915 |
| **27** | El Salvador | -0.567881 | -0.4903331 | 0.2756006784 | -0.606987 | -4077 | 3444 | 634.516273 |
| **28** | Eslovaquia | -0.582738 | -1.1217406 | 0.65435666327 | 0.4676334 | -2098 | 16381 | 1366.35703 |
| **29** | España | 0.3872192 | -1.2299819 | 1.35616922346 | 0.1209815 | -69274 | 30999 | 717.158754 |
| **30** | Estonia | -0.678689 | -1.1037004 | 0.7100560728 | 1.1956023 | -675 | 15010 | 709.698745 |
| **31** | Etiopía | 1.3516904 | 0.92582388 | -0.7826881028 | -0.22567 | -6216 | 302 | 424.364723 |
| **32** | Filipinas | 1.4806523 | 0.09597395 | -0.2368338894 | -0.606987 | -6992 | 2136 | 1786.91037 |
| **33** | Francia | 0.7724331 | -0.9503586 | 1.31160969583 | 0.1556467 | -91697 | 40617 | 2367.79351 |
| **34** | Georgia | -0.609981 | -0.8330972 | 0.49839831656 | 1.0569416 | -3580 | 2652 | 89.3115619 |
| **35** | Ghana | -0.137458 | 0.95288421 | -1.0166256229 | 0.2596423 | -3077 | 1326 | 185.14121 |
| **36** | Guatemala | -0.363171 | 0.42971794 | 0.15306197741 | -1.057635 | -6145 | 2882 | 390.413637 |
| **37** | Guinea | -0.450739 | 1.32270864 | -1.3508220801 | 0.6756245 | 66 | 481 | 190.483333 |
| **38** | Haití | -0.474615 | 0.23127557 | -0.8718071581 | 0.1556467 | -2568 | 621 | 246.949153 |
| **39** | Honduras | -0.533362 | -0.1114885 | 0.29788044222 | -1.196296 | -4367 | 2078 | 182.15456 |
| **40** | Indonesia | 4.9789887 | -0.2197298 | -0.1699945979 | -0.433661 | 22751 | 2947 | 1500.83186 |
| **41** | Irlanda | -0.60134 | -0.6797553 | 1.16679123103 | -0.710983 | 58265 | 48893 | 451.758218 |
| **42** | Israel | -0.53534 | -0.1295288 | 1.33388945964 | -1.0923 | -2817 | 31222 | 456.133843 |
| **43** | Jamaica | -0.645512 | -0.481313 | 0.58751737182 | -0.572322 | -3870 | 4827 | 5.26726058 |
| **44** | Japón | 2.2878358 | -1.320183 | 1.46756804254 | 0.5369638 | 77337 | 43151 | 2497.8215 |
| **45** | Jordania | -0.556579 | 0.44775816 | 0.40927926129 | -1.577613 | -8062 | 4094 | 83.7485605 |
| **46** | Kazajstán | -0.325992 | -0.0393277 | -0.1142951884 | 0.1556467 | 33220 | 9299 | 58.2563289 |
| **47** | Kenia | 0.2395146 | 1.12426626 | -1.0611851505 | 0.0863163 | -6925 | 970 | 149.467809 |
| **48** | Letonia | -0.660841 | -1.1668412 | 0.43155902511 | 2.0968972 | -2292 | 11417 | 804.725693 |
| **49** | Líbano | -0.607933 | -0.7158358 | 0.97741323859 | -1.334956 | -13439 | 8850 | 242.71487 |
| **50** | Lituania | -0.636518 | -1.148801 | 0.33130008794 | 2.3395535 | -2658 | 12089 | 980.225194 |
| **51** | Malasia | -0.04796 | -0.5444537 | 0.48725843465 | -1.265626 | 33990 | 8754 | 333.473548 |
| **52** | Malawi | -0.3623 | 1.5031108 | -1.0166256229 | 0.0516511 | -1044 | 464 | 629.517698 |
| **53** | México | 2.0829142 | -0.3279711 | 0.7100560728 | -1.265626 | -3344 | 8906 | 327.280437 |
| **54** | Mongolia | -0.646171 | 0.1500946 | -0.1365749522 | -0.780313 | -379 | 2286 | 3.13064835 |
| **55** | Mozambique | -0.137388 | 1.53919123 | -1.729578065 | 1.1609371 | -1600 | 424 | 50.1621622 |
| **56** | Namibia | -0.658415 | 0.65522064 | -0.6490095199 | -0.398996 | -1276 | 5113 | 2.97611379 |
| **57** | Nepal | -0.077227 | -0.1746293 | -0.1254350703 | -0.676318 | -4550 | 607 | 1883.68115 |
| **58** | Níger | -0.326439 | 2.42316181 | -1.0500452686 | 0.398303 | -1537 | 360 | 116.190233 |
| **59** | Nigeria | 3.0437829 | 1.56625155 | -1.9857953489 | 1.6809149 | 39765 | 2311 | 271.238194 |
| **60** | Noruega | -0.594888 | -1.0134993 | 1.24477040438 | -0.017679 | 53344 | 87611 | 1154.23387 |
| **61** | Nueva Caledonia | -0.70426 | -0.652695 | 0.67663642708 | -0.537657 | -1820 | 36789 | 18.5054348 |
| **62** | Nueva Zelanda | -0.607179 | -0.8330972 | 1.2781900501 | -0.572322 | 466 | 33260 | 88.7674645 |
| **63** | Omán | -0.640732 | -0.1926695 | 0.68777630899 | -1.993595 | 16827 | 20923 | 39.7148676 |
| **64** | Países Bajos | -0.318457 | -1.1127205 | 1.24477040438 | -0.017679 | 52718 | 50339 | 978.908795 |
| **65** | Pakistán | 3.2938188 | 0.61914021 | -0.4707714094 | -0.329666 | -16373 | 1008 | 1287.39645 |
| **66** | Panamá | -0.624792 | -0.2828706 | 0.79917512807 | -1.196296 | -8313 | 7355 | 161.716998 |
| **67** | Papúa Nueva Guinea | -0.548808 | 0.55599946 | -0.8718071581 | -0.260336 | 1792 | 1415 | 11.8907563 |
| **68** | Paraguay | -0.563854 | -0.1114885 | 0.28674056031 | -0.988304 | -3524 | 3103 | 231.421674 |
| **69** | Polonia | 0.1982383 | -1.1307607 | 0.77689536425 | 0.4676334 | -18320 | 12479 | 1866.63914 |
| **70** | Portugal | -0.460817 | -1.3021428 | 1.16679123103 | 0.6409593 | -26838 | 22503 | 301.231573 |
| **71** | Reino Unido | 0.7666644 | -0.9323184 | 1.15565134912 | 0.2596423 | -152487 | 38796 | 0.00232802 |
| **72** | Republica Checa | -0.462677 | 1.02504507 | -2.2977120423 | 2.3395535 | 6420 | 19616 | 1629.30154 |
| **73** | República de Corea | 0.4458254 | -1.148801 | 0.92171382905 | 0.5716289 | 41172 | 22588 | 3548.76957 |
| **74** | República Democrática Popular de Corea | -0.133149 | 1.77371404 | -1.3396821982 | 0.7796201 | -1075 | 570 | 1727.26236 |
| **75** | República Democrática Popular Lao | -0.562654 | -0.7699564 | -0.0251761331 | 0.2596423 | -314 | 1054 | 1657.15674 |
| **76** | República Dominicana | -0.476993 | 0.3846174 | -0.5153309371 | -0.502992 | -10349 | 5089 | 242.448138 |
| **77** | República Unida de Tanzanía | 0.3648033 | -0.1385489 | 0.34243996985 | -0.849644 | -4186 | 686 | 515.276753 |
| **78** | Ruanda | -0.467669 | -0.652695 | 1.04425253004 | -1.02297 | -1146 | 526 | 401.4965 |
| **79** | Rumania | -0.23209 | 0.89876356 | -0.7826881028 | -0.329666 | -12528 | 7685 | 1216.98726 |
| **80** | Senegal | -0.404965 | 1.07916572 | -0.4373517637 | -0.468327 | -2383 | 998 | 196.097837 |
| **81** | Serbia | -0.496748 | 1.43997004 | -0.4819112913 | -0.641653 | -6920 | 5412 | 1838.67445 |
| **82** | Siria, República Árabe | -0.222154 | -1.2299819 | 1.38958886918 | -1.369622 | -2950 | 2808 | 280.31765 |
| **83** | Sudáfrica | 0.5054441 | -0.1746293 | -1.4510810173 | 1.4035934 | 1691 | 7295 | 152.576058 |
| **84** | Sudán | 0.1403149 | 0.97092442 | -0.7826881028 | -0.191005 | 1360 | 1513 | 31.6085784 |
| **85** | Suecia | -0.489119 | -0.986439 | 1.31160969583 | 0.3289726 | 9616 | 52053 | 1421.08888 |
| **86** | Suiza | -0.525686 | -1.148801 | 1.40072875109 | -0.121675 | 18866 | 74223 | 604.318509 |
| **87** | Tailandia | 0.8602836 | -1.0585999 | 0.44269890702 | -0.260336 | 10252 | 5102 | 319.596523 |
| **88** | Tayikistán | -0.531549 | 0.72738151 | -0.1142951884 | -0.953639 | -1462 | 740 | 247.581538 |
| **89** | Togo | -0.559569 | 1.20544723 | -1.2394232611 | 0.2943074 | -356 | 503 | 68.0041558 |
| **90** | Túnez | -0.459545 | -0.4091521 | 0.49839831656 | -0.641653 | -5791 | 4143 | 0.59529715 |
| **91** | Turkmenistán | -0.591333 | -0.1295288 | -0.526470819 | -0.22567 | 935 | 4393 | 967.577132 |
| **92** | Ucrania | 0.3647797 | -1.0946803 | 0.07508280406 | 2.3742187 | -9337 | 3066 | 71.7391336 |
| **93** | Uganda | 0.0704772 | 1.87293522 | -1.4288012535 | 0.6062941 | -1594 | 636 | 226.798485 |
| **94** | Uruguay | -0.630608 | -0.7699564 | 0.76575548234 | 0.2943074 | -1912 | 11531 | 218.93571 |
| **95** | Uzbekistán | -0.056907 | 0.03283319 | -0.2034142436 | -0.502992 | 3201 | 1423 | 277.871862 |
| **96** | Venezuela (República Bolivariana de) | -0.02731 | -0.2648304 | 0.43155902511 | -1.02297 | 31930 | 13559 | 179.166667 |
| **97** | Viet Nam | 1.3704331 | -0.4993532 | 0.60979713563 | -0.918974 | -12121 | 1302 | 4113.40159 |
| **98** | Yemen | -0.154553 | 0.92582388 | -0.7381285752 | -0.468327 | -1249 | 1358 | 43.0289707 |
| **99** | Zambia | -0.382338 | 1.59331188 | -1.2617030249 | 0.4329682 | 1888 | 1225 | 129.955571 |
| **100** | Zimbabue | -0.381019 | 1.18740702 | -1.7072983012 | 0.9182808 | -601 | 721 | 88.2230864 |

|  |
| --- |
| The SAS System |

The CLUSTER Procedure

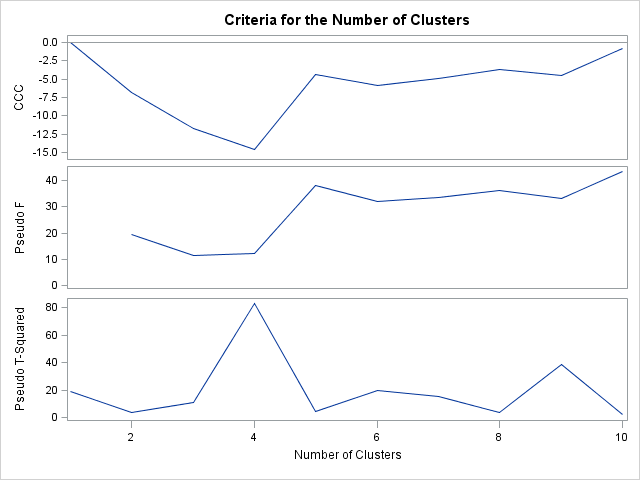
Average Linkage Cluster Analysis

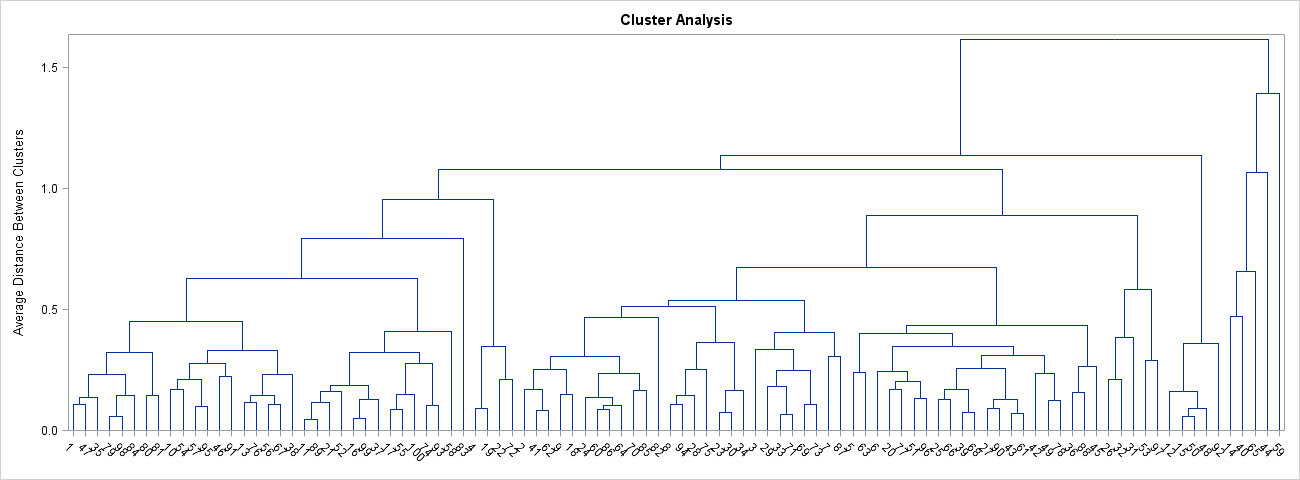
| **Eigenvalues of the Covariance Matrix** | | | | |
| --- | --- | --- | --- | --- |
|  | **Eigenvalue** | **Difference** | **Proportion** | **Cumulative** |
| **1** | 2.02913563 | 1.01910937 | 0.5073 | 0.5073 |
| **2** | 1.01002626 | 0.11486008 | 0.2525 | 0.7598 |
| **3** | 0.89516618 | 0.82949426 | 0.2238 | 0.9836 |
| **4** | 0.06567193 |  | 0.0164 | 1.0000 |

|  |  |
| --- | --- |
| **Root-Mean-Square Total-Sample Standard Deviation** | 1 |

|  |  |
| --- | --- |
| **Root-Mean-Square Distance Between Observations** | 2.828427 |

| **Cluster History** | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Number of Clusters** | **Clusters Joined** | | **Freq** | **Semipartial R-Square** | **R-Square** | **Approximate Expected R-Square** | **Cubic Clustering Criterion** | **Pseudo F Statistic** | **Pseudo t-Squared** | **Norm RMS Distance** | **Tie** |
| **10** | **CL15** | **OB65** | 3 | 0.0051 | .813 | .823 | -.87 | 43.5 | 2.3 | 0.6579 |  |
| **9** | **CL13** | **CL18** | 48 | 0.0694 | .744 | .807 | -4.5 | 33.0 | 38.3 | 0.6758 |  |
| **8** | **CL11** | **OB83** | 33 | 0.0099 | .734 | .788 | -3.7 | 36.2 | 3.8 | 0.7948 |  |
| **7** | **CL9** | **CL12** | 53 | 0.0493 | .684 | .764 | -4.9 | 33.6 | 15.4 | 0.8913 |  |
| **6** | **CL8** | **CL25** | 37 | 0.0537 | .631 | .734 | -5.8 | 32.1 | 20.0 | 0.9569 |  |
| **5** | **CL10** | **OB44** | 4 | 0.0155 | .615 | .695 | -4.4 | 38.0 | 4.2 | 1.0691 |  |
| **4** | **CL6** | **CL7** | 90 | 0.3390 | .276 | .641 | -15 | 12.2 | 83.0 | 1.0796 |  |
| **3** | **CL4** | **CL24** | 95 | 0.0847 | .192 | .539 | -12 | 11.5 | 11.2 | 1.1376 |  |
| **2** | **CL5** | **OB59** | 5 | 0.0269 | .165 | .390 | -6.9 | 19.3 | 3.5 | 1.3951 |  |
| **1** | **CL3** | **CL2** | 100 | 0.1646 | .000 | .000 | 0.00 | . | 19.3 | 1.6177 |  |





|  |
| --- |
| The SAS System |

The CLUSTER Procedure

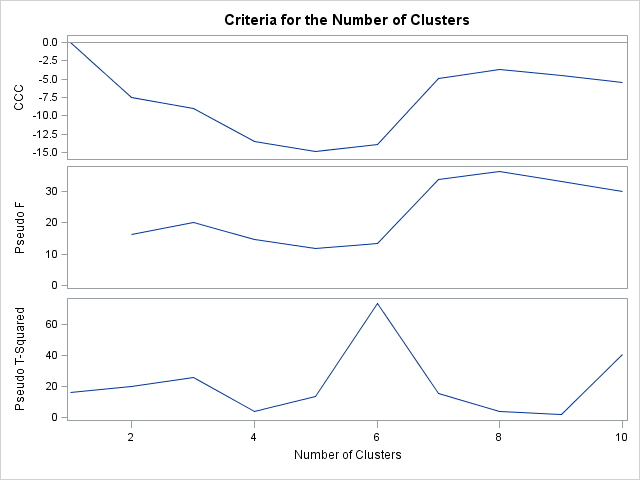
Centroid Hierarchical Cluster Analysis

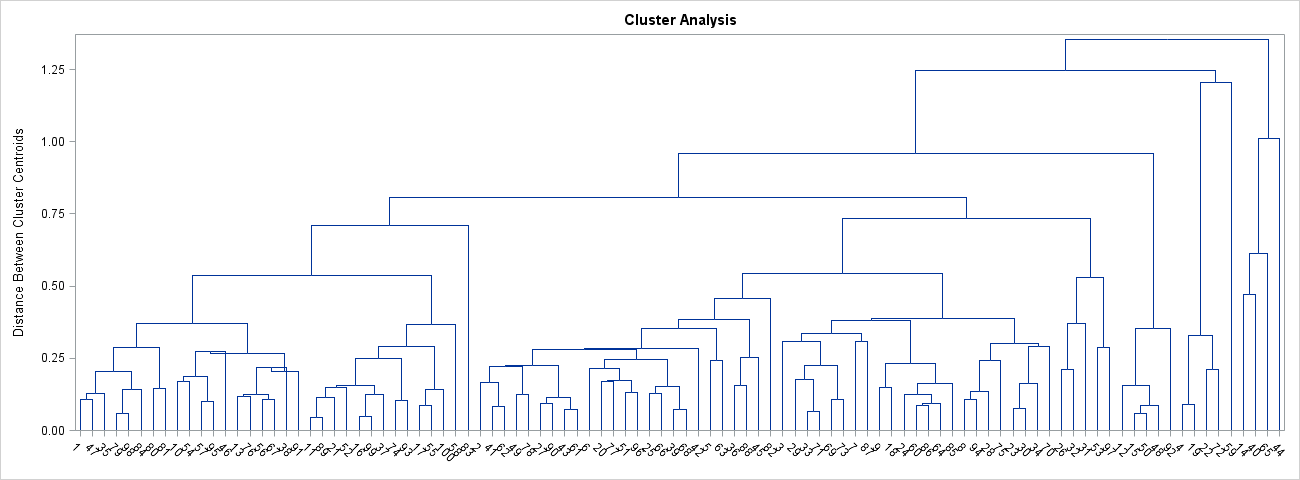
| **Eigenvalues of the Covariance Matrix** | | | | |
| --- | --- | --- | --- | --- |
|  | **Eigenvalue** | **Difference** | **Proportion** | **Cumulative** |
| **1** | 2.02913563 | 1.01910937 | 0.5073 | 0.5073 |
| **2** | 1.01002626 | 0.11486008 | 0.2525 | 0.7598 |
| **3** | 0.89516618 | 0.82949426 | 0.2238 | 0.9836 |
| **4** | 0.06567193 |  | 0.0164 | 1.0000 |

|  |  |
| --- | --- |
| **Root-Mean-Square Total-Sample Standard Deviation** | 1 |

|  |  |
| --- | --- |
| **Root-Mean-Square Distance Between Observations** | 2.828427 |

| **Cluster History** | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Number of Clusters** | **Clusters Joined** | | **Freq** | **Semipartial R-Square** | **R-Square** | **Approximate Expected R-Square** | **Cubic Clustering Criterion** | **Pseudo F Statistic** | **Pseudo t-Squared** | **Norm Centroid Distance** | **Tie** |
| **10** | **CL14** | **CL15** | 48 | 0.0720 | .749 | .823 | -5.4 | 29.8 | 41.1 | 0.5456 |  |
| **9** | **CL13** | **OB65** | 3 | 0.0051 | .744 | .807 | -4.5 | 33.0 | 2.3 | 0.6141 |  |
| **8** | **CL11** | **OB83** | 33 | 0.0099 | .734 | .788 | -3.7 | 36.2 | 3.8 | 0.7114 |  |
| **7** | **CL10** | **CL12** | 53 | 0.0493 | .684 | .764 | -4.9 | 33.6 | 15.4 | 0.7337 |  |
| **6** | **CL8** | **CL7** | 86 | 0.2665 | .418 | .734 | -14 | 13.5 | 73.9 | 0.8054 |  |
| **5** | **CL6** | **CL21** | 91 | 0.0879 | .330 | .695 | -15 | 11.7 | 13.7 | 0.9595 |  |
| **4** | **CL9** | **OB44** | 4 | 0.0155 | .315 | .641 | -13 | 14.7 | 4.2 | 1.0109 |  |
| **3** | **CL24** | **OB59** | 5 | 0.0234 | .291 | .539 | -9.0 | 19.9 | 25.8 | 1.2044 |  |
| **2** | **CL5** | **CL3** | 96 | 0.1488 | .142 | .390 | -7.4 | 16.3 | 20.4 | 1.2467 |  |
| **1** | **CL2** | **CL4** | 100 | 0.1423 | .000 | .000 | 0.00 | . | 16.3 | 1.3544 |  |





|  |
| --- |
| The SAS System |

The CLUSTER Procedure

Ward's Minimum Variance Cluster Analysis

| **Eigenvalues of the Covariance Matrix** | | | | |
| --- | --- | --- | --- | --- |
|  | **Eigenvalue** | **Difference** | **Proportion** | **Cumulative** |
| **1** | 2.02913563 | 1.01910937 | 0.5073 | 0.5073 |
| **2** | 1.01002626 | 0.11486008 | 0.2525 | 0.7598 |
| **3** | 0.89516618 | 0.82949426 | 0.2238 | 0.9836 |
| **4** | 0.06567193 |  | 0.0164 | 1.0000 |

|  |  |
| --- | --- |
| **Root-Mean-Square Total-Sample Standard Deviation** | 1 |

|  |  |
| --- | --- |
| **Root-Mean-Square Distance Between Observations** | 2.828427 |

| **Cluster History** | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Number of Clusters** | **Clusters Joined** | | **Freq** | **Semipartial R-Square** | **R-Square** | **Approximate Expected R-Square** | **Cubic Clustering Criterion** | **Pseudo F Statistic** | **Pseudo t-Squared** | **Tie** |
| **10** | **CL27** | **CL12** | 14 | 0.0157 | .862 | .823 | 3.84 | 62.5 | 10.1 |  |
| **9** | **CL19** | **CL15** | 32 | 0.0219 | .840 | .807 | 2.99 | 59.8 | 19.9 |  |
| **8** | **CL17** | **OB59** | 4 | 0.0235 | .817 | .788 | 2.40 | 58.6 | 6.4 |  |
| **7** | **CL13** | **CL16** | 21 | 0.0248 | .792 | .764 | 2.13 | 59.0 | 16.7 |  |
| **6** | **CL8** | **CL14** | 9 | 0.0360 | .756 | .734 | 1.52 | 58.2 | 6.2 |  |
| **5** | **CL7** | **CL28** | 26 | 0.0407 | .715 | .695 | 1.30 | 59.7 | 17.6 |  |
| **4** | **CL11** | **CL10** | 33 | 0.0578 | .657 | .641 | 1.00 | 61.4 | 31.5 |  |
| **3** | **CL9** | **CL5** | 58 | 0.1230 | .534 | .539 | -.19 | 55.7 | 45.6 |  |
| **2** | **CL3** | **CL6** | 67 | 0.1810 | .353 | .390 | -1.3 | 53.6 | 33.5 |  |
| **1** | **CL4** | **CL2** | 100 | 0.3534 | .000 | .000 | 0.00 | . | 53.6 |  |

