# APPENDIX A

## Populations of Greek Counties

| County | Year | | | | | | |
|---|---|---|---|---|---|---|---|
| | **1987** | **1988** | **1989** | **1990** | **1991*** | **1992** | **1993** |
| AITOLOAKARNANIA | 223913 | 224380 | 224631 | 224870 | 228180 | 228250 | 228370 |
| ARGOLIDA | 94021 | 94109 | 94204 | 94220 | 97636 | 97635 | 97628 |
| ARKADIA | 105935 | 105609 | 105175 | 104768 | 105309 | 104869 | 104363 |
| ARTA | 81056 | 81095 | 81015 | 80886 | 78719 | 78420 | 78224 |
| ATTIKH | 3460720 | 3468905 | 3475400 | 3481443 | 3523407 | 3529627 | 3534240 |
| AXAIA | 286243 | 287257 | 288249 | 289078 | 300078 | 300920 | 301629 |
| BOIOTIA | 118688 | 118780 | 118763 | 118758 | 134108 | 134091 | 134134 |
| DODEKANNHSA | 150575 | 151493 | 152177 | 153005 | 163476 | 164110 | 164893 |
| DRAMA | 95025 | 94854 | 94566 | 94439 | 96554 | 96256 | 96097 |
| EBROS | 149671 | 149525 | 149277 | 148922 | 143752 | 143483 | 143257 |
| EYBOIA | 191838 | 191944 | 191995 | 191925 | 208408 | 208360 | 208305 |
| EYRYTANIA | 25900 | 25791 | 25677 | 25551 | 24307 | 24252 | 24144 |
| FLORINA | 53140 | 53191 | 53233 | 53262 | 53147 | 53094 | 53043 |
| FOKIDA | 42928 | 42725 | 42479 | 42203 | 44183 | 43887 | 43632 |
| FTHIOTIDA | 162472 | 162284 | 162030 | 161669 | 171274 | 170736 | 170293 |
| GREBENA | 36222 | 36140 | 36043 | 35938 | 36797 | 36670 | 36529 |
| HLEIA | 159565 | 159290 | 158912 | 158427 | 179429 | 178947 | 178476 |
| HMATHIA | 137522 | 137879 | 138200 | 138458 | 139934 | 140178 | 140453 |
| HRAKLEIO | 253392 | 254626 | 255664 | 256876 | 264906 | 265956 | 266763 |
| IOANNINA | 149235 | 149251 | 149213 | 149062 | 158193 | 157984 | 157766 |
| KABALA | 135618 | 135450 | 135142 | 135027 | 135937 | 135729 | 135435 |
| KARDITSA | 125729 | 125772 | 125752 | 125608 | 126854 | 126645 | 126342 |
| KASTORIA | 54765 | 55023 | 55126 | 55208 | 52685 | 52714 | 52731 |
| KEFALLHNIA | 30183 | 29993 | 29819 | 29627 | 32474 | 32297 | 32152 |
| KERKYRA | 99140 | 98967 | 98744 | 98559 | 107592 | 107422 | 107431 |
| KILKIS | 80467 | 80142 | 79791 | 79540 | 81710 | 81423 | 81070 |
| KORINTHIA | 123910 | 123922 | 123862 | 123653 | 141823 | 141624 | 141418 |
| KOZANH | 152340 | 152942 | 153413 | 153770 | 150386 | 150667 | 150873 |
| KYKLADES | 88795 | 88774 | 88672 | 88527 | 94005 | 93958 | 93874 |
| LAKONIA | 91313 | 90949 | 90612 | 90176 | 95696 | 95272 | 94748 |
| LARISA | 262309 | 263338 | 263981 | 264695 | 270612 | 271127 | 271649 |
| LASITHI | 70217 | 70128 | 70076 | 70023 | 71279 | 71219 | 71187 |
| LESBOS | 101946 | 101485 | 100921 | 100451 | 105082 | 104469 | 103947 |
| LEYKADA | 21325 | 21239 | 21114 | 20997 | 21111 | 20987 | 20877 |
| MAGNHSIA | 184617 | 184798 | 184775 | 184901 | 198434 | 198443 | 198305 |
| MESSHNIA | 157722 | 157255 | 156717 | 156043 | 166964 | 166244 | 165619 |
| PELLA | 135166 | 135380 | 135669 | 135838 | 138761 | 138852 | 139075 |
| PIERIA | 108843 | 109042 | 109222 | 109466 | 116763 | 116910 | 117080 |

| County | Year | | | | | | |
|---|---|---|---|---|---|---|---|
| | **1987** | **1988** | **1989** | **1990** | **1991*** | **1992** | **1993** |
| PREBEZA | 57182 | 57441 | 57511 | 57502 | 58628 | 58645 | 58638 |
| RETHYMNO | 63683 | 63763 | 63818 | 63895 | 70095 | 70140 | 70174 |
| RODOPH | 110868 | 111193 | 111240 | 111293 | 103190 | 103200 | 103080 |
| SAMOS | 39428 | 39237 | 39013 | 38766 | 41965 | 41782 | 41545 |
| SERRES | 195998 | 195805 | 195340 | 194944 | 192828 | 192202 | 191480 |
| THESPROTIA | 42052 | 42076 | 42032 | 41997 | 44188 | 44115 | 44046 |
| THESSALONIKH | 898524 | 901614 | 904427 | 907482 | 946864 | 949931 | 953272 |
| TRIKALA | 136752 | 136861 | 136777 | 136794 | 138946 | 138865 | 138721 |
| XALKIDIKH | 79401 | 79511 | 79612 | 79640 | 92117 | 92096 | 92116 |
| XANIA | 127391 | 127569 | 127625 | 127723 | 133774 | 133720 | 133756 |
| XANTHI | 93254 | 93814 | 94343 | 94742 | 91063 | 91455 | 91862 |
| XIOS | 49497 | 49346 | 49146 | 49031 | 52184 | 52064 | 51852 |
| ZAKYNTHOS | 29870 | 29843 | 29840 | 29779 | 32557 | 32513 | 32520 |

* The populations of 1991 come from the census of 1991, whereas for the rest of the years they are estimations obtained by Virras (2001).

## Input File: 87guns.txt

```
38    223913
3     94021
5     105935
2     81056
100   3460720
17    286243
1     118688
7     150575
10    95025
0     149671
11    191838
0     25900
3     53140
2     42928
4     162472
0     36222
6     159565
4     137522
47    253392
0     149235
4     125729
2     54765
2     135618
2     30183
0     99140
5     80467
15    123910
2     152340
1     88795
10    91313
4     262309
1     70217
0     21325
1     101946
15    184617
7     157722
9     135166
6     108843
2     57182
22    63683
13    110868
3     39428
11    195998
4     42052
18    898524
1     136752
3     79401
71    127391
4     93254
0     49497
1     29870
```

## Output File: 87guns.res

```
This is the analysis for the data file: 87guns.txt
Maximum number of attempts
************** solution found **************
 Number of clusters found :      7
The clusters have parameters  :
  cluster    mixing     mean
           proportion
          1   0.05136   0.00000
          2   0.21941  18.16695
          3   0.25872  28.36011
          4   0.31290  57.82277
          5   0.06119  99.48101
          6   0.05867 169.22335
          7   0.03775 490.33675
 loglikelihood =         -145.361880632613804000
```

| obs | cluster 1 | cluster 2 | cluster 3 | cluster 4 | cluster 5 | cluster 6 | cluster 7 | |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.01067 | 0.98933 | 0.00000 | 6 |
| 2 | 0.00000 | 0.25991 | 0.44717 | 0.28719 | 0.00569 | 0.00004 | 0.00000 | 3 |
| 3 | 0.00000 | 0.08373 | 0.31090 | 0.58433 | 0.02087 | 0.00018 | 0.00000 | 4 |
| 4 | 0.00000 | 0.35089 | 0.44135 | 0.20370 | 0.00403 | 0.00004 | 0.00000 | 3 |
| 5 | 0.00000 | 0.00008 | 0.99992 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 3 |
| 6 | 0.00000 | 0.00016 | 0.02022 | 0.96691 | 0.01270 | 0.00000 | 0.00000 | 4 |
| 7 | 0.00000 | 0.62888 | 0.34527 | 0.02579 | 0.00006 | 0.00000 | 0.00000 | 2 |
| 8 | 0.00000 | 0.05269 | 0.30249 | 0.63437 | 0.01044 | 0.00001 | 0.00000 | 4 |
| 9 | 0.00000 | 0.00014 | 0.00527 | 0.48128 | 0.40821 | 0.10511 | 0.00000 | 4 |
| 10 | 0.73800 | 0.20790 | 0.05332 | 0.00078 | 0.00000 | 0.00000 | 0.00000 | 1 |
| 11 | 0.00000 | 0.00370 | 0.08286 | 0.89040 | 0.02302 | 0.00001 | 0.00000 | 4 |
| 12 | 0.13239 | 0.35334 | 0.31997 | 0.18042 | 0.01199 | 0.00189 | 0.00000 | 2 |
| 13 | 0.00000 | 0.10123 | 0.26419 | 0.56586 | 0.06159 | 0.00714 | 0.00000 | 4 |
| 14 | 0.00000 | 0.17305 | 0.32105 | 0.45566 | 0.04411 | 0.00613 | 0.00000 | 4 |
| 15 | 0.00000 | 0.38908 | 0.52010 | 0.09064 | 0.00018 | 0.00000 | 0.00000 | 3 |
| 16 | 0.17238 | 0.38139 | 0.31088 | 0.12933 | 0.00559 | 0.00043 | 0.00000 | 2 |
| 17 | 0.00000 | 0.14242 | 0.47791 | 0.37718 | 0.00248 | 0.00000 | 0.00000 | 3 |
| 18 | 0.00000 | 0.29816 | 0.51398 | 0.18682 | 0.00104 | 0.00000 | 0.00000 | 3 |
| 19 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00071 | 0.99929 | 0.00000 | 6 |
| 20 | 0.73628 | 0.20906 | 0.05385 | 0.00080 | 0.00000 | 0.00000 | 0.00000 | 1 |
| 21 | 0.00000 | 0.25295 | 0.49174 | 0.25300 | 0.00230 | 0.00000 | 0.00000 | 3 |
| 22 | 0.00000 | 0.22757 | 0.37420 | 0.37473 | 0.02215 | 0.00135 | 0.00000 | 4 |
| 23 | 0.00000 | 0.55927 | 0.40336 | 0.03730 | 0.00008 | 0.00000 | 0.00000 | 2 |
| 24 | 0.00000 | 0.11850 | 0.25034 | 0.51722 | 0.08514 | 0.02878 | 0.00001 | 4 |
| 25 | 0.49308 | 0.34785 | 0.14931 | 0.00973 | 0.00003 | 0.00000 | 0.00000 | 1 |
| 26 | 0.00000 | 0.03697 | 0.17796 | 0.70833 | 0.07310 | 0.00365 | 0.00000 | 4 |
| 27 | 0.00000 | 0.00000 | 0.00011 | 0.14889 | 0.57145 | 0.27955 | 0.00000 | 5 |
| 28 | 0.00000 | 0.60879 | 0.37027 | 0.02092 | 0.00002 | 0.00000 | 0.00000 | 2 |
| 29 | 0.00000 | 0.53194 | 0.39608 | 0.07138 | 0.00059 | 0.00000 | 0.00000 | 2 |
| 30 | 0.00000 | 0.00011 | 0.00421 | 0.42912 | 0.42484 | 0.14172 | 0.00000 | 4 |
| 31 | 0.00000 | 0.67223 | 0.32479 | 0.00299 | 0.00000 | 0.00000 | 0.00000 | 2 |
| 32 | 0.00000 | 0.45761 | 0.41177 | 0.12828 | 0.00232 | 0.00003 | 0.00000 | 2 |
| 33 | 0.11627 | 0.33719 | 0.31992 | 0.20642 | 0.01660 | 0.00360 | 0.00000 | 2 |
| 34 | 0.00000 | 0.57763 | 0.37614 | 0.04601 | 0.00022 | 0.00000 | 0.00000 | 2 |
| 35 | 0.00000 | 0.00002 | 0.00332 | 0.76184 | 0.23317 | 0.00165 | 0.00000 | 4 |
| 36 | 0.00000 | 0.06445 | 0.34399 | 0.58442 | 0.00714 | 0.00000 | 0.00000 | 4 |
| 37 | 0.00000 | 0.00380 | 0.06222 | 0.85415 | 0.07910 | 0.00073 | 0.00000 | 4 |
| 38 | 0.00000 | 0.03635 | 0.20455 | 0.71947 | 0.03917 | 0.00046 | 0.00000 | 4 |
| 39 | 0.00000 | 0.23897 | 0.38339 | 0.35754 | 0.01911 | 0.00098 | 0.00000 | 3 |

```
40   0.00000   0.00000   0.00000   0.00000   0.00006   0.07483   0.92512     7
41   0.00000   0.00000   0.00049   0.23971   0.53513   0.22466   0.00000     5
42   0.00000   0.06232   0.18706   0.60009   0.11563   0.03489   0.00000     4
43   0.00000   0.00433   0.09294   0.88351   0.01921   0.00001   0.00000     4
44   0.00000   0.02227   0.10161   0.61515   0.18281   0.07815   0.00000     4
45   0.00000   0.72654   0.27346   0.00000   0.00000   0.00000   0.00000     2
46   0.00000   0.67716   0.30926   0.01357   0.00002   0.00000   0.00000     2
47   0.00000   0.19829   0.39596   0.39122   0.01426   0.00026   0.00000     3
48   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   1.00000     7
49   0.00000   0.13402   0.36277   0.48589   0.01711   0.00021   0.00000     4
50   0.23078   0.40118   0.28563   0.08036   0.00200   0.00006   0.00000     2
51   0.00000   0.25589   0.34739   0.35529   0.03444   0.00700   0.00000     4


     cluster    1 contains      3 observations
     cluster    2 contains     13 observations
     cluster    3 contains      9 observations
     cluster    4 contains     20 observations
     cluster    5 contains      2 observations
     cluster    6 contains      2 observations
     cluster    7 contains      2 observations


     The entropy criterion has value  :   0.56215
```