MATH 3070 Lab Project 5

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- Problem 1 (Verzani problem 4.7)
- Problem 2 (Verzani problem 4.10)
- Problem 3 (Verzani problem 4.11)
- Problem 4

Remember: I expect to see commentary either in the text, in the code with comments created using #, or (preferably) both! Failing to do so may result in lost points!

Problem 1 (Verzani problem 4.7)

Use the <code>subset()</code> function to return a data frame made from the <code>Cars93</code> (MASS) data frame consisting only of <code>non-USA</code> cars in origin, with 4 cylinders and a maximum price of \$15,000 or less.

```
# Your code here
library (MASS)
View(Cars93)
## Error in check for XQuartz(): X11 library is missing: install XQuartz from xquartz.macosforge.org
subset(Cars93, select = c(Origin, Cylinders, Max.Price), Origin == "non-USA" &
   Cylinders == 4 & Max.Price <= 15)
    Origin Cylinders Max.Price
## 40 non-USA
             4 13.5
## 44 non-USA
                   4
                  4
                        11.0
## 45 non-USA
                  4
                        11.0
## 46 non-USA
## 53 non-USA
                  4
                         9.1
## 54 non-USA
                  4
## 62 non-USA
## 64 non-USA
                  4
                        14.9
## 81 non-USA
                  4
                        11.3
## 01 ...
## 84 non-USA
                  4
                        11.8
                  4
## 88 non-USA
                         9.5
```

Problem 2 (Verzani problem 4.10)

Find the standard deviation of each variable in the mtcars data set.

```
# Your code here
View(mtcars)

## Error in check_for_XQuartz(): X11 library is missing: install XQuartz from xquartz.macosforge.org

sapply(mtcars, sd)

## mpg cyl disp hp drat wt
## 6.0269481 1.7859216 123.9386938 68.5628685 0.5346787 0.9784574
## qsec vs am gear carb
## 1.7869432 0.5040161 0.4989909 0.7378041 1.6152000
```

Problem 3 (Verzani problem 4.11)

Find the standard deviation for each numeric variable in Cars 93 (MASS).

```
# Your code here
library (MASS)
# View(Cars93)
sapply(Cars93[sapply(Cars93, is.numeric)], sd)
```

```
Min.Price
                           Price Max.Price
                        9.659430
##
         8.746029
                                         11.030457
         MPG.city
                      MPG.highway
                                       EngineSize
##
         5.619812
                        5.331726
                                         1.037363
##
                           RPM
##
       Horsepower
                                     Rev.per.mile
        52.374410
                       596.731690
##
                                      496.506525
                                          Length
## Fuel.tank.capacity
                       Passengers
                                       14.602382
##
         3.279370
                         1.038979
##
                                      Turn.circle
   ### 8.819674 3.778986

Rear.seat.room Luggage.room Weight

NA NA 589.896510
        Wheelbase
                           Width
##
##
##
```

Problem 4

You can find data describing various statistics on 2012 Olympic participating nations such as population and medal counts in the commaseparated value file located here: http://introcs.cs.princeton.edu/java/data/olympic-medals2012.csv Load this dataset into R in a data frame and do the following:

 Create a new data frame containing only the country's ISO code (a three-letter code for the country; USA is the United States of America, and DZA Algeria), name, population, and counts for gold, silver, and bronze. This data frame should be called olympic2012.

##	ISO	Country.name	pop.2010	Gold	Silver	Bronz	ze
## 1	AFG	Afghanistan	34,385,000	0	0		1
## 2	ALB	Albania	3,205,000	0	0		0
## 3	DZA	Algeria	35,468,000	1	0		0
## 4	ASM	American Samoa	68,420	0	0		0
## 5	AND	Andorra	84,864	0	0		0
## 6	AGO	Angola	19,082,000	0	0		0
## 7	ATG	Antigua and Barbuda	88,000	0	0		0
## 8	ARG	Argentina	40,412,000	1	1		2
## 9	ARM	Armenia	3,092,000	0	1		2
## 10	ABW	Aruba	108,000	0	0		0
## 11	AUS	Australia	22,299,000	7	16		12
## 12	AUT	Austria	8,390,000	0	0		0
## 13	AZE	Azerbaijan	9,054,000	2	2		6
## 14	BHS	Bahamas	343,000	1	0		0
## 15	BHR	Bahrain	1,262,000	0	0		1
## 16	BGD	Bangladesh	148,692,000	0	0		0
## 17	BRB	Barbados	274,000	0	0		0
## 18	BLR	Belarus	9,490,000	2	5		5
## 19	BEL	Belgium	10,896,000	0	1		2
## 20	BLZ	Belize	345,000	0	0		0
## 21	BEN	Benin	8,850,000	0	0		0
## 22	BMU	Bermuda	64,600	0	0		0
## 23	BTN	Bhutan	726,000	0	0		0
## 24	BOL	Bolivia	9,929,000	0	0		0
## 25	BIH	Bosnia and Herzegovina	3,760,000	0	0		0
## 26	BWA	Botswana	2,007,000	0	1		0
## 27	BRA	Brazil	194,946,000	3	5		9
## 28	VGB	British Virgin Islands	88,000	0	0		0
## 29	BRN	Brunei	399,000	0	0		0
## 30	BGR	Bulgaria	7,534,000	0	1		1
## 31	BFA	Burkina Faso	16,468,000	0	0		0
"" ^^		-	47 060 000	^	^		^

##	32	MMR	Burma	47,963,000	U	U	U
##	33	BDI	Burundi	8,382,000	0	0	0
##	34	KHM	Cambodia	14,139,000	0	0	0
	35			19,599,000	0	0	0
##		CMR	Cameroon				
##	36	CAN	Canada	34,126,000	1	5	12
##	37	CPV	Cape Verde	496,000	0	0	0
##	38	CYM	Cayman Islands	56,230	0	0	0
##	39	CAF	Central African Republic	4,401,000	0	0	0
##	40	TCD	Chad	11,227,000	0	0	0
##	41	CHL	Chile	17,113,688	0	0	0
##	42	CHN	China	1,338,300,000	38	27	23
##	43	COL	Colombia	46,295,000	1	3	4
##	44	COM	Comoros	735,000	0	0	0
##	45	COG	Congo-Brazzaville	4,043,000	0	0	0
##	46	COK	Cook Islands	20,000	0	0	0
##	47	CRI	Costa Rica	4,659,000	0	0	0
##	48	HRV	Croatia	4,418,000	3	1	2
##	49	CUB	Cuba	11,258,000	5	3	6
##	50	CYP	Cyprus	659 , 350	0	1	0
##	51	CZE	Czech Republic	10,520,000	4	3	3
##	52	COD	Democratic Republic of Congo	65,965,000	0	0	0
##	53	DNK	Denmark	5,547,000	2	4	3
##	54	DJI	Djibouti	889,000	0	0	0
			_				
##	55	DMA	Dominica	68,000	0	0	0
##	56	DOM	Dominican Republic	9,927,000	1	1	0
##	57	TLS	East Timor	1,124,000	0	0	0
##	58	ECU	Ecuador	14,465,000	0	0	0
##	59	EGY	Egypt	81,121,000	0	2	0
##	60	SLV	El Salvador	6,193,000	0	0	0
##	61	GNQ	Equatorial Guinea	700,000	0	0	0
	62		-	5,254,000	0	0	0
##		ERI	Eritrea				
##	63	EST	Estonia	1,340,000	0	1	1
##	64	ETH	Ethiopia	82,950,000	3	1	3
##	65	FJI	Fiji	860,000	0	0	0
##	66	FIN	Finland	5,364,000	0	1	2
##	67	FRA	France	64,895,000	11	11	12
##	68	GAB	Gabon	1,505,000	0	1	0
##	69	GMB	Gambia	1,729,000	0	0	0
##	70	GEO	Georgia		1	3	3
			9	4,452,000			
##	71	DEU	Germany	81,777,000	11	19	14
##	72	GHA	Ghana	24,392,000	0	0	0
##	73	GRC	Greece	11,316,000	0	0	2
##	74	GRD	Grenada	104,000	1	0	0
##	75	GUM	Guam	179,000	0	0	0
##	76	GTM	Guatemala	14,389,000	0	1	0
##	77	GIN	Guinea	9,982,000	0	0	0
##	78	GNB	Guinea-Bissau	1,515,000	0	0	0
	79	GUY	Guyana	755,000	0	0	0
##	80	HTI	Haiti	9,993,000	0	0	0
##	81	HND	Honduras	7,600,000	0	0	0
##	82	HKG	Hong Kong	7,068,000	0	0	1
##	83	HUN	Hungary	10,000,000	8	4	5
	84	ISL	Iceland	318,000	0	0	0
	85			•	0	2	4
		IND		1,224,615,000			
##	86	IDN	Indonesia	239,870,000	0	1	1
##	87	IRN	Iran	73,973,000	4	5	3
##	88	IRQ	Iraq	32,031,000	0	0	0
##	89	IRL	Ireland	4,475,000	1	1	3
##	90	ISR	Israel	7,624,000	0	0	0
##	91	ITA	Italy	60,483,000	8	9	11
##	92	CIV	Ivory Coast	19,738,000	0	0	0
##		JAM	Jamaica	2,702,000	4	4	4
##	94	JPN	Japan	127,451,000	7	14	17
##	95	JOR	Jordan	6,047,000	0	0	0
##	96	KAZ	Kazakhstan	16,323,000	7	1	5
##	97	KEN	Kenya	40,513,000	2	4	5
##	98	KIR	Kiribati	100,000	0	0	0
##	99	KWT	Kuwait	2,736,000	0	0	1
	100		Kyrgyzstan	5,448,000	0	0	0
	101			6,201,000	0	0	0
			Laos				
	102		Latvia	2,239,000	1	0	1
##	103		Lebanon	4,227,000	0	0	0
##	104	LSO	Lesotho	2,171,000	0	0	0

## 105 LBR	Liberia	3,994,000	0	0	0
## 106 LBY	Libya	6,355,000	0	0	0
## 107 LIE	Liechtenstein	36,032	0	0	0
## 108 LTU	Lithuania	3,287,000	2	1	2
## 109 LUX	Luxembourg	507,000	0	0	0
## 110 MKD	Macedonia	2,060,000	0	0	0
## 111 MDG	Madagascar	20,714,000	0	0	0
## 112 MWI	Malawi	14,901,000	0	0	0
## 113 MYS	Malaysia	28,401,000	0	1	1
## 114 MDV	Maldives	316,000	0	0	0
		•			
## 115 MLI	Mali	15,370,000	0	0	0
## 116 MLT	Malta	416,000	0	0	0
## 117 MHL	Marshall Islands	54,038	0	0	0
## 118 MRT	Mauritania	3,460,000	0	0	0
## 119 MUS	Mauritius	1,281,000	0	0	0
## 120 MEX	Mexico	113,423,000	1	3	3
## 121 FSM	Micronesia	111,000	0	0	0
		•			
## 122 MDA	Moldova	3,562,000	0	0	2
## 123 MCO	Monaco	35,407	0	0	0
## 124 MNG	Mongolia	2,756,000	0	2	3
## 125 MNE	Montenegro	632,000	0	1	0
## 126 MAR	Morocco	31,951,000	0	0	1
## 127 MOZ	Mozambique	23,390,000	0	0	0
## 128 NAM	Namibia	2,283,000	0	0	0
## 129 NRU	Nauru	10,372	0	0	0
## 130 NPL	Nepal	29,959,000	0	0	0
## 131 NLD	Netherlands	16,616,000	6	6	8
## 132 NZL	New Zealand	4,368,000	6	2	5
## 133 NIC	Nicaragua	5,789,000	0	0	0
## 134 NER	Niger	15,512,000	0	0	0
## 135 NGA	Nigeria	158,423,000	0	0	0
	North Korea		4	0	2
		24,589,122			
## 137 NOR	Norway	4,889,000	2	1	1
## 138 OMN	Oman	2,783,000	0	0	0
## 139 PAK	Pakistan	173,593,000	0	0	0
## 140 PLW	Palau	20,472	0	0	0
## 141 PSE	Palestine	4,152,000	0	0	0
## 142 PAN	Panama	3,517,000	0	0	0
			0	0	
	Papua New Guinea	6,858,000			0
## 144 PRY	Paraguay	6,454,000	0	0	0
## 145 PER	Peru	29,076,000	0	0	0
## 146 PHL	Philippines	93,261,000	0	0	0
## 147 POL	Poland	38,184,000	2	2	6
## 148 PRT	Portugal	10,638,000	0	1	0
## 149 PRI	Puerto Rico	3,978,000	0	1	1
		1,759,000			
## 150 QAT	Qatar		0	0	2
## 151 ROU	Romania	21,438,000	2	5	2
## 152 RUS	Russia	141,750,000	24	26	32
## 153 RWA	Rwanda	10,624,000	0	0	0
## 154 KNA	Saint Kitts and Nevis	52,000	0	0	0
## 155 LCA	Saint Lucia	174,000	0	0	0
	Saint Vincent and the Grenadines	109,000	0	0	0
				0	
## 157 WSM	Samoa	184,000	0		0
## 158 SMR	San Marino	31,534	0	0	0
## 159 STP	Sao Tome and Principe	165,000	0	0	0
## 160 SAU	Saudi Arabia			0	1
	Saudi Alabia	27,448,000	0		
## 161 SEN	Saudi Arabia Senegal	27,448,000 12,434,000	0	0	0
	Senegal	12,434,000			
## 162 SRB	Senegal Serbia	12,434,000 7,291,000	0 1	1	2
## 162 SRB ## 163 SYC	Senegal Serbia Seychelles	12,434,000 7,291,000 87,000	0 1 0	1 0	2
## 162 SRB ## 163 SYC ## 164 SLE	Senegal Serbia Seychelles Sierra Leone	12,434,000 7,291,000 87,000 5,867,000	0 1 0 0	1 0 0	2 0 0
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP	Senegal Serbia Seychelles Sierra Leone Singapore	12,434,000 7,291,000 87,000 5,867,000 5,077,000	0 1 0 0	1 0 0 0	2 0 0 2
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK	Senegal Serbia Seychelles Sierra Leone	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000	0 1 0 0	1 0 0 0 1	2 0 0 2 3
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP	Senegal Serbia Seychelles Sierra Leone Singapore	12,434,000 7,291,000 87,000 5,867,000 5,077,000	0 1 0 0	1 0 0 0	2 0 0 2
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000	0 1 0 0 0	1 0 0 0 1	2 0 0 2 3
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK ## 167 SVN	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000 2,049,000 538,000	0 1 0 0 0 0	1 0 0 0 1 1	2 0 0 2 3 2
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK ## 167 SVN ## 168 SLB ## 169 SOM	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000 2,049,000 538,000 9,331,000	0 1 0 0 0 0 1 0	1 0 0 0 1 1 0	2 0 0 2 3 2 0
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK ## 167 SVN ## 168 SLB ## 169 SOM ## 170 ZAF	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia South Africa	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000 2,049,000 538,000 9,331,000 49,991,000	0 1 0 0 0 0 1 0 0 3	1 0 0 0 1 1 0 0	2 0 0 2 3 2 0 0
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK ## 167 SVN ## 168 SLB ## 169 SOM ## 170 ZAF ## 171 KOR	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia South Africa South Korea	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000 2,049,000 538,000 9,331,000 49,991,000 48,875,000	0 1 0 0 0 0 1 0 0 3 13	1 0 0 0 1 1 0 0 2 8	2 0 0 2 3 2 0 0 1 7
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK ## 167 SVN ## 168 SLB ## 169 SOM ## 170 ZAF ## 171 KOR ## 172 ESP	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia South Africa South Korea Spain	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000 2,049,000 538,000 9,331,000 49,991,000 48,875,000 46,071,000	0 1 0 0 0 0 1 0 0 0 3 13 3	1 0 0 0 1 1 0 0 2 8	2 0 0 2 3 2 0 0 1 7
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK ## 167 SVN ## 168 SLB ## 169 SOM ## 170 ZAF ## 171 KOR	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia South Africa South Korea	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000 2,049,000 538,000 9,331,000 49,991,000 48,875,000	0 1 0 0 0 0 1 0 0 3 13	1 0 0 0 1 1 0 0 2 8	2 0 0 2 3 2 0 0 1 7
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK ## 167 SVN ## 168 SLB ## 169 SOM ## 170 ZAF ## 171 KOR ## 172 ESP	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia South Africa South Korea Spain	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000 2,049,000 538,000 9,331,000 49,991,000 48,875,000 46,071,000	0 1 0 0 0 0 1 0 0 0 3 13 3	1 0 0 0 1 1 0 0 2 8	2 0 0 2 3 2 0 0 1 7
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK ## 167 SVN ## 168 SLB ## 169 SOM ## 170 ZAF ## 171 KOR ## 172 ESP ## 173 LKA	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia South Africa South Korea Spain Sri Lanka	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000 2,049,000 538,000 9,331,000 49,991,000 48,875,000 46,071,000 20,860,000 43,552,000	0 1 0 0 0 0 1 0 0 3 13 3	1 0 0 0 1 1 0 0 2 8 10	2 0 0 2 3 2 0 0 1 7 4
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK ## 167 SVN ## 168 SLB ## 169 SOM ## 170 ZAF ## 171 KOR ## 172 ESP ## 173 LKA ## 174 SDN ## 175 SUR	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia South Africa South Korea Spain Sri Lanka Sudan Surinam	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000 2,049,000 538,000 9,331,000 49,991,000 48,875,000 46,071,000 20,860,000 43,552,000 525,000	0 1 0 0 0 0 1 0 0 3 13 3 0	1 0 0 0 1 1 0 0 2 8 10 0	2 0 0 2 3 2 0 0 1 7 4 0 0
## 162 SRB ## 163 SYC ## 164 SLE ## 165 SGP ## 166 SVK ## 167 SVN ## 168 SLB ## 169 SOM ## 170 ZAF ## 171 KOR ## 172 ESP ## 173 LKA ## 174 SDN	Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia South Africa South Korea Spain Sri Lanka	12,434,000 7,291,000 87,000 5,867,000 5,077,000 5,430,000 2,049,000 538,000 9,331,000 49,991,000 48,875,000 46,071,000 20,860,000 43,552,000	0 1 0 0 0 0 1 0 0 3 13 3 0	1 0 0 0 1 1 0 0 2 8 10 0	2 0 0 2 3 2 0 0 1 7 4 0

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## 178 C	HE	Switzerland	7,826,000	2	2	0
## 179 S	YR	Syria	20,447,000	0	0	0
## 180 T	WN	Taiwan	23,174,528	0	1	1
## 181 T	JK	Tajikistan	6,879,000	0	0	1
## 182 T	ZA	Tanzania	44,841,000	0	0	0
## 183 T	HA	Thailand	69,122,000	0	2	1
## 184 T	GO	Togo	6,028,000	0	0	0
## 185 T	ON	Tonga	104,000	0	0	0
## 186 T	TO	Trinidad and Tobago	1,341,000	1	0	3
## 187 T	UN	Tunisia	10,549,000	1	1	1
## 188 T	UR	Turkey	72,752,000	2	2	1
## 189 T	KM	Turkmenistan	5,042,000	0	0	0
## 190 T	UV	Tuvalu	9,827	0	0	0
## 191 U	GA	Uganda	33,424,000	1	0	0
## 192 G	BR	UK	62,232,000	29	17	19
## 193 U	KR	Ukraine	45,871,000	6	5	9
## 194 A	RE	United Arab Emirates	7,512,000	0	0	0
## 195 U	RY	Uruguay	3,357,000	0	0	0
## 196 U	SA	US	309,349,000	46	29	29
## 197 U	ZB	Uzbekistan	28,228,000	1	0	3
## 198 V	UT	Vanuatu	240,000	0	0	0
## 199 V	EN	Venezuela	28,834,000	1	0	0
## 200 V	NM	Vietnam	86,928,000	0	0	0
## 201 V	IR	Virgin Islands	110,000	0	0	0
## 202 Y	EM	Yemen	24,053,000	0	0	0
## 203 Z	MB	Zambia	12,927,000	0	0	0
## 204 Z	WE	Zimbabwe	12,571,000	0	0	0

2. What proportion of countries earned no medals? Answer this using olympic2012.

Your code here
olympic2012

##	ISO	Country.name	pop.2010	Gold	Silver	Bronze
## 1	AFG	Afghanistan	34,385,000	0	0	1
## 2	ALB	Albania	3,205,000	0	0	(
## 3	DZA	Algeria	35,468,000	1	0	(
## 4	ASM	American Samoa	68,420	0	0	(
## 5	AND	Andorra	84,864	0	0	(
## 6	AGO	Angola	19,082,000	0	0	(
## 7	ATG	Antigua and Barbuda	88,000	0	0	(
## 8	ARG	Argentina	40,412,000	1	1	2
## 9	ARM	Armenia	3,092,000	0	1	2
## 1	0 ABW	Aruba	108,000	0	0	(
## 1	1 AUS	Australia	22,299,000	7	16	12
## 1	2 AUT	Austria	8,390,000	0	0	(
## 1	3 AZE	Azerbaijan	9,054,000	2	2	(
## 1		Bahamas	343,000	1	0	(
## 1	5 BHR	Bahrain	1,262,000	0	0	1
## 1	6 BGD	Bangladesh	148,692,000	0	0	(
## 1	7 BRB		274,000	0	0	(
## 1			9,490,000	2	5	
## 1			10,896,000	0	1	2
## 2			345,000	0	0	(
## 2			8,850,000	0	0	(
## 2			64,600	0	0	(
## 2			726,000	0	0	(
## 2			9,929,000	0	0	(
## 2			3,760,000	0	0	(
## 2			2,007,000	0	1	(
## 2			194,946,000	3	5	(
## 2				0	0	(
			88,000			
## 2			399,000	0	0	(
## 3		3	7,534,000	0	1	1
## 3			16,468,000	0	0	(
## 3			47,963,000	0	0	(
## 3			8,382,000	0	0	(
## 3			14,139,000	0	0	(
## 3		Cameroon	19,599,000	0	0	(
## 3		Canada	34,126,000	1	5	12
## 3		Cape Verde	496,000	0	0	(

## 38	CYM	Cayman Islands	56,230	0	0	0
## 39	CAF	Central African Republic	4,401,000	0	0	0
## 40	TCD	Chad	11,227,000	0	0	0
## 41	CHL	Chile	17,113,688	0	0	0
## 42	CHN	Colombia	1,338,300,000	38 1	27 3	23
## 44	COL	Comoros	735,000	0	0	0
## 45	COM	Congo-Brazzaville	4,043,000	0	0	0
## 46	COK	Cook Islands	20,000	0	0	0
## 47	CRI	Costa Rica	4,659,000	0	0	0
## 48	HRV	Croatia	4,418,000	3	1	2
## 49	CUB	Cuba	11,258,000	5	3	6
## 50	CYP	Cyprus	659,350	0	1	0
## 51	CZE	Czech Republic	10,520,000	4	3	3
## 52	COD	Democratic Republic of Congo	65,965,000	0	0	0
## 53	DNK	Denmark	5,547,000	2	4	3
## 54	DJI	Djibouti	889,000	0	0	0
## 55	DMA	Dominica	68,000	0	0	0
## 56	DOM	Dominican Republic	9,927,000	1	1	0
## 57	TLS	East Timor	1,124,000	0	0	0
## 58	ECU	Ecuador	14,465,000	0	0	0
## 59	EGY	Egypt	81,121,000	0	2	0
## 60	SLV	El Salvador	6,193,000	0	0	0
## 61	GNQ ERI	Equatorial Guinea Eritrea	700,000 5,254,000	0	0	0
## 62	EST	Estonia	1,340,000	0	1	1
## 64	ETH	Estonia	82,950,000	3	1	3
## 65	FJI	Fiji	860,000	0	0	0
## 66	FIN	Finland	5,364,000	0	1	2
## 67	FRA	France	64,895,000	11	11	12
## 68	GAB	Gabon	1,505,000	0	1	0
## 69	GMB	Gambia	1,729,000	0	0	0
## 70	GEO	Georgia	4,452,000	1	3	3
## 71	DEU	Germany	81,777,000	11	19	14
## 72	GHA	Ghana	24,392,000	0	0	0
## 73	GRC	Greece	11,316,000	0	0	2
## 74	GRD	Grenada	104,000	1	0	0
## 75	GUM	Guam	179,000	0	0	0
## 76	GTM	Guatemala	14,389,000	0	1	0
## 77	GIN	Guinea	9,982,000	0	0	0
## 78	GNB	Guinea-Bissau	1,515,000	0	0	0
## 79	GUY	Guyana Haiti	755,000 9,993,000	0	0	0
## 81	HTI HND	Honduras	7,600,000	0	0	0
## 82	HKG	Hong Kong		0	0	1
## 83	HUN	Hungary		8	4	5
## 84	ISL	Iceland		0	0	0
## 85	IND		1,224,615,000	0	2	4
## 86	IDN	Indonesia	239,870,000	0	1	1
## 87	IRN	Iran	73,973,000	4	5	3
## 88	IRQ	Iraq	32,031,000	0	0	0
## 89	IRL	Ireland	4,475,000	1	1	3
## 90	ISR	Israel	7,624,000	0	0	0
## 91	ITA	Italy		8	9	11
## 92	CIV	Ivory Coast	19,738,000	0	0	0
## 93	JAM	Jamaica	2,702,000	4	4	4
## 94	JPN	Japan		7	14	17
## 95	JOR	Jordan		0	0	0
## 96	KAZ	Kazakhstan		7	1	5
## 97	KEN KIR	Kenya Kiribati	40,513,000	2	4 0	5 0
## 99	KWT	Kuwait	2,736,000	0	0	1
) KGZ	Kyrgyzstan	5,448,000	0	0	0
	LAO	Laos	6,201,000	0	0	0
	LVA	Latvia		1	0	1
	B LBN	Lebanon		0	0	0
	LSO	Lesotho	2,171,000	0	0	0
## 105	LBR	Liberia	3,994,000	0	0	0
## 106	LBY	Libya	6,355,000	0	0	0
## 107	LIE	Liechtenstein	36,032	0	0	0
## 108	B LTU	Lithuania	3,287,000	2	1	2
) LUX	Luxembourg	507,000	0	0	0
## 110) MKD	Macedonia	2,060,000	0	0	0

## 111 MDG	Madagascar	20,714,000	0	0	0
## 112 MWI	Malawi	14,901,000	0	0	0
## 113 MYS		28,401,000	0	1	1
	Malaysia				
## 114 MDV	Maldives	316,000	0	0	0
## 115 MLI	Mali	15,370,000	0	0	0
## 116 MLT	Malta	416,000	0	0	0
## 117 MHL	Marshall Islands	54,038	0	0	0
## 118 MRT	Mauritania	3,460,000	0	0	0
## 119 MUS	Mauritius	1,281,000	0	0	0
	Mexico	113,423,000	1	3	3
## 121 FSM	Micronesia	111,000	0	0	0
## 122 MDA	Moldova	3,562,000	0	0	2
## 123 MCO	Monaco	35,407	0	0	0
## 124 MNG	Mongolia	2,756,000	0	2	3
## 125 MNE	Montenegro	632,000	0	1	0
## 126 MAR	Morocco	31,951,000	0	0	1
## 127 MOZ	Mozambique	23,390,000	0	0	0
## 128 NAM	Namibia	2,283,000	0	0	0
## 129 NRU	Nauru	10,372	0	0	0
## 130 NPL	Nepal	29,959,000	0	0	0
## 131 NLD	Netherlands	16,616,000	6	6	8
## 132 NZL	New Zealand	4,368,000	6	2	5
## 133 NIC	Nicaragua	5,789,000	0	0	0
## 134 NER	Niger	15,512,000	0	0	0
## 135 NGA	Nigeria	158,423,000	0	0	0
## 136 PRK	North Korea	24,589,122	4	0	2
## 137 NOR	Norway	4,889,000	2	1	1
## 138 OMN	Oman	2,783,000	0	0	0
## 139 PAK	Pakistan	173,593,000	0	0	0
## 140 PLW	Palau	20,472	0	0	0
## 141 PSE	Palestine	4,152,000	0	0	0
## 142 PAN	Panama	3,517,000	0	0	0
## 143 PNG	Papua New Guinea	6,858,000	0	0	0
## 144 PRY	Paraguay	6,454,000	0	0	0
## 145 PER	Peru	29,076,000	0	0	0
## 146 PHL	Philippines	93,261,000	0	0	0
## 147 POL	Poland	38,184,000	2	2	6
## 148 PRT	Portugal	10,638,000	0	1	0
## 149 PRI	Puerto Rico	3,978,000	0	1	1
## 150 QAT	Qatar	1,759,000	0	0	2
## 151 ROU	Romania	21,438,000	2	5	2
## 152 RUS	Russia	141,750,000	24	26	32
## 153 RWA	Rwanda	10,624,000	0	0	0
	Saint Kitts and Nevis	52,000	0	0	0
## 155 LCA	Saint Lucia	174,000	0	0	0
## 156 VCT Saint	Vincent and the Grenadines	109,000	0	0	0
## 157 WSM	Samoa	184,000	0	0	0
## 158 SMR	San Marino	31,534	0	0	0
## 159 STP	Sao Tome and Principe	165,000	0	0	0
## 160 SAU	Saudi Arabia	27,448,000	0	0	1
			0	0	0
	Senegal	12,434,000			
## 162 SRB	Serbia	7,291,000	1	1	2
## 163 SYC	Seychelles	87,000	0	0	0
## 164 SLE	Sierra Leone	5,867,000	0	0	0
## 165 SGP	Singapore	5,077,000	0	0	2
## 166 SVK	Slovakia	5,430,000	0	1	3
## 167 SVN	Slovenia	2,049,000	1	1	2
## 168 SLB	Solomon Islands	538,000	0	0	0
## 169 SOM	Somalia	9,331,000	0	0	0
## 170 ZAF	South Africa	49,991,000	3	2	1
## 171 KOR	South Korea	48,875,000	13	8	7
## 172 ESP	Spain	46,071,000	3	10	4
## 173 LKA	Sri Lanka	20,860,000	0	0	0
## 174 SDN	Sudan	43,552,000	0	0	0
## 175 SUR	Surinam	525,000	0	0	0
## 176 SWZ	Crroniland	1,056,000	0	0	0
	Swaziland				
## 177 SWE	Sweden	9,378,000	1	4	3
		9,378,000 7,826,000	1 2	4 2	3
## 177 SWE	Sweden				
## 177 SWE ## 178 CHE ## 179 SYR	Sweden Switzerland Syria	7,826,000 20,447,000	2	2	0
## 177 SWE ## 178 CHE ## 179 SYR ## 180 TWN	Sweden Switzerland Syria Taiwan	7,826,000 20,447,000 23,174,528	2 0 0	2 0 1	0 0 1
## 177 SWE ## 178 CHE ## 179 SYR ## 180 TWN ## 181 TJK	Sweden Switzerland Syria Taiwan Tajikistan	7,826,000 20,447,000 23,174,528 6,879,000	2 0 0 0	2 0 1 0	0 0 1 1
## 177 SWE ## 178 CHE ## 179 SYR ## 180 TWN	Sweden Switzerland Syria Taiwan	7,826,000 20,447,000 23,174,528	2 0 0	2 0 1	0 0 1

```
· · / ± 2 2 / · · · ·
                                       6,028,000 0
## 184 TGO
                                Togo
## 185 TON
                                        104,000 0
                                                        0
                                                               0
                               Tonga
## 186 TTO
                  Trinidad and Tobago
                                       1,341,000 1
                                                        0
                                                               3
## 187 TUN
                                     10,549,000 1
                             Tunisia
## 188 TUR
                              Turkey 72,752,000 2
                                                        2
                                                              0
## 189 TKM
                         Turkmenistan
                                     5,042,000 0
                                                        0
                                                        0
## 190 TUV
                                        9,827 0
                              Tuvalu
                                                              0
## 191 UGA
                                     33,424,000
                                                 1
                                                        Ω
                                                              Ω
                              Uganda
                                     62,232,000 29
## 192 GBR
                                UK
                                                       17
                                                              19
                                     45,871,000
## 193 UKR
                              Ukraine
                                                   6
                                                        5
                                                              9
## 194 ARE
                  United Arab Emirates
                                        7,512,000
                                                   0
                                                         0
## 195 URY
                              Uruguay
                                        3,357,000
                                                   0
                                                         0
                                                              0
                                     309,349,000
## 196 USA
                               US
                                                 46
                                                        29
                                                              29
## 197 UZB
                           Uzbekistan
                                      28,228,000
                                                  1
                                                        0
                                                              .3
                                                 0
## 198 VUT
                                                        0
                                        240,000
                             Vanuatu
                                                 1
## 199 VEN
                                      28,834,000
                                                        0
                            Venezuela
## 200 VNM
                             Vietnam
                                     86,928,000
                                                0
                                                        0
## 201 VIR
                        Virgin Islands
                                        110,000 0
## 202 YEM
                              Yemen 24,053,000 0
                                                        0
                                                        ()
## 203 ZMB
                              Zambia 12,927,000 0
                                                              0
## 204 ZWE
                                                        0
                             Zimbabwe 12,571,000 0
                                                               0
```

```
nomedals <- subset(olympic2012, Gold == 0 & olympic2012$Silver == 0 & olympic2012$Bronze ==
0, selec = c(ISO, Country.name))
nomedals</pre>
```

```
##
    ISO
                            Country.name
## 2 ALB
                             Albania
## 4 ASM
                          American Samoa
## 5
     AND
                               Andorra
## 6
     AGO
                                  Angola
## 7
      ATG
                     Antigua and Barbuda
## 10
      ABW
                                  Aruba
## 12 AUT
                                 Austria
## 16 BGD
                              Bangladesh
## 17 BRB
                                Barbados
## 20 BLZ
                                 Belize
## 21 BEN
                                  Benin
## 22 BMU
                                 Bermuda
## 23 BTN
                                  Bhutan
## 24 BOL
                                 Bolivia
## 25 BIH
                  Bosnia and Herzegovina
## 28 VGB
                   British Virgin Islands
## 29 BRN
                                  Brunei
## 31
      BFA
                             Burkina Faso
## 32 MMR
                                  Burma
## 33 BDI
                                 Burundi
## 34 KHM
                                Cambodia
## 35 CMR
                                Cameroon
## 37 CPV
                              Cape Verde
                          Cayman Islands
## 38 CYM
## 39 CAF
                 Central African Republic
## 40 TCD
                                   Chad
## 41 CHL
                                   Chile
## 44 COM
                                 Comoros
## 45 COG
                        Congo-Brazzaville
## 46 COK
                            Cook Islands
## 47
     CRI
                              Costa Rica
## 52
      COD
             Democratic Republic of Congo
## 54 DJI
                                Djibouti
## 55 DMA
                                Dominica
## 57 TLS
                              East Timor
## 58 ECU
                                 Ecuador
## 60 SLV
                             El Salvador
## 61 GNQ
                       Equatorial Guinea
## 62 ERI
                                 Eritrea
## 65 FJI
                                   Fiji
## 69 GMB
                                  Gambia
## 72 GHA
                                  Ghana
## 75 GUM
                                   Guam
## 77 GIN
                                  Guinea
```

	##	78	GNB	Guinea-Bissau
	##	79	GUY	Guyana
	##	80	HTI	Haiti
	##	81	HND	Honduras
	##	84	ISL	Iceland
	##	88	IRQ	Iraq
	##	90	ISR	Israel
	##	92	CIV	Ivory Coast
	##	95	JOR	Jordan
	##	98	KIR	Kiribati
	##	100	KGZ	Kyrgyzstan
	##	101	LAO	Laos
	##	103	LBN	Lebanon
	##	104	LSO	Lesotho
	##	105	LBR	Liberia
	##	106	LBY	Libya
	##	107	LIE	Liechtenstein
	##	109	LUX	Luxembourg
	##	110	MKD	Macedonia
	##	111	MDG	Madagascar
	##	112	MWI	Malawi
	##	114	MDV	Maldives
	##	115	MLI	Mali
	##	116	MLT	Malta
	##	117	MHL	Marshall Islands
	##	118	MRT	Mauritania
	##	119	MUS	Mauritius
	##	121	FSM	Micronesia
	##	123	MCO	Monaco
	##	127	MOZ	Mozambique
	##	128	NAM	Namibia
	##	129	NRU	Nauru
	##	130	NPL	Nepal
	##	133	NIC	Nicaragua
	##	134	NER	Niger
	##	135	NGA	Nigeria
	##	138	OMN	Oman
	##	139	PAK	Pakistan
	##	140	PLW	Palau
	##	141	PSE	Palestine
	##		PAN	Panama
	##	143	PNG	Papua New Guinea
	##	144 145	PRY	Paraguay
	##	145	PER PHL	Peru
	##	153	RWA	Philippines Rwanda
	##	154	KNA	Saint Kitts and Nevis
	##	155	LCA	Saint Lucia
	##	156	VCT	Saint Vincent and the Grenadines
	##	157	WSM	Samoa
	##	158	SMR	San Marino
	##	159	STP	Sao Tome and Principe
	##	161	SEN	Senegal
	##	163	SYC	Seychelles
	##	164	SLE	Sierra Leone
	##	168	SLB	Solomon Islands
	##	169	SOM	Somalia
	##	173	LKA	Sri Lanka
	##	174	SDN	Sudan
	##	175	SUR	Surinam
	##	176	SWZ	Swaziland
	##	179	SYR	Syria
	##	182	TZA	Tanzania
	##	184	TGO	Togo
	##	185	TON	Tonga
	##	189	TKM	Turkmenistan
	##	190	TUV	Tuvalu
	##	194	ARE	United Arab Emirates
	##	195	URY	Uruguay
	##	198	VUT	Vanuatu
	##	200	VNM	Vietnam
	##	201	VIR	Virgin Islands
1	##	202	YEM	Yemen

203 ZMB Zambia ## 204 ZWE Zimbabwe

nrow(nomedals)/nrow(olympic2012)

[1] 0.5833333