

Sweave Example: Winter Olympic Medals

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December 1, 2010

Abstract

This is a simple example of a Sweave generated report. Copies and explanation of the source code used to generate the report can be found found at <http://jeromyanglim.blogspot.com/>.

1 Dataset

The Olympic Medals data frame includes 2311 medals from 1924 to 2006. The data was sourced from the Guardian Datablog.

2 Analyses

2.1 Total Medals by Year

In general over the years the number of Winter Olympic medals awarded has increased. In order to model this relationship, year was converted to ordinal position. A three parameter power function seemed plausible, $y = ax^b + c$, where y is total medals awarded and x is the ordinal position of the olympics starting at one. The best fitting least square parameters were estimated to be $0.202x^{2.297} + 50.987$. Figure 1 displays the data and the fit of the model. The model predicts that 2010, 2014, and 2018 would have 271, 295, and 322 medals respectively.

2.2 Gender Ratio by Year

Figure 2 shows the number of medals won by males and females by year. Table 1 shows the proportion of medals awarded to females by year. It shows a generally similar pattern for males and females. Medals increase gradually until around the late 1980s after which the rate of increase accelerates. However, females started from a much smaller base. Thus, both the absolute difference and the percentage difference has decreased over time to the point where in 2006 0.46% of medals were won by females.

2.3 Which countries have won the most medals?

NOR has won the most medals with 280 (12.12%). Table 2 shows the top 10.

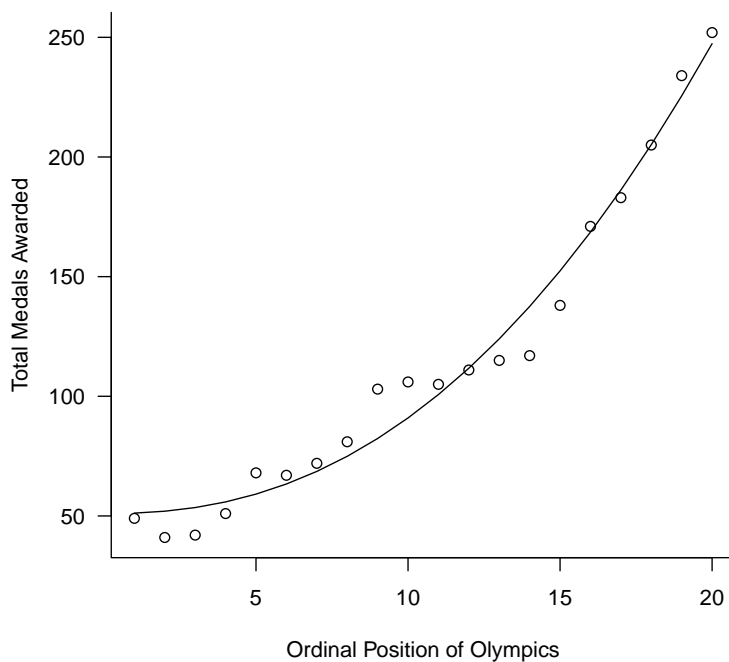


Figure 1: Total medals awarded by ordinal position of Olympics with predicted three parameter power function fit displayed.

2.4 Countries with highest proportion of gold?

Looking only at countries which have won more than 50 medals in the dataset, Figure 3 shows the proportion of medals won which were gold, silver, or bronze.

2.5 How many different countries have won medals by year?

Figure 4 shows the total number of countries winning medals by year.

2.6 Which Countries have won a medal at every Olympics?

The following countries have won medals at every Winter Olympics: AUT, CAN, FIN, NOR, SWE, USA.

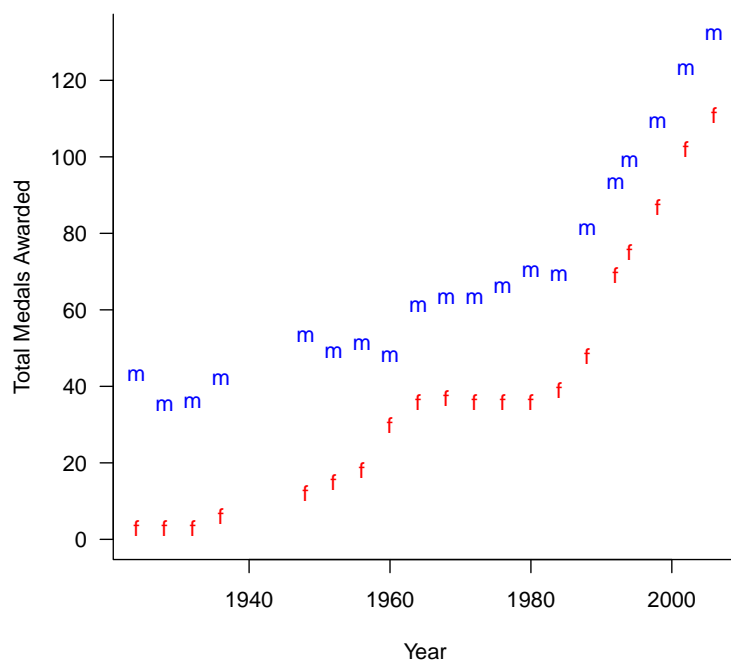


Figure 2: Total Medals Won by Gender and Year

Table 1: Proportion of Medals that were awarded to Females by Year

Year	Prop. Female
1924	0.07
1928	0.08
1932	0.08
1936	0.12
1948	0.18
1952	0.23
1956	0.26
1960	0.38
1964	0.37
1968	0.37
1972	0.36
1976	0.35
1980	0.34
1984	0.36
1988	0.37
1992	0.43
1994	0.43
1998	0.44
2002	0.45
2006	0.46

Table 2: Rankings of Medals Won by Country

Rank	Country	Total	%
1	NOR	280	12.12%
2	USA	216	9.35%
3	URS	194	8.39%
4	AUT	185	8.01%
5	GER	158	6.84%
6	FIN	151	6.53%
7	CAN	119	5.15%
8	SUI	118	5.11%
9	SWE	118	5.11%
10	GDR	110	4.76%

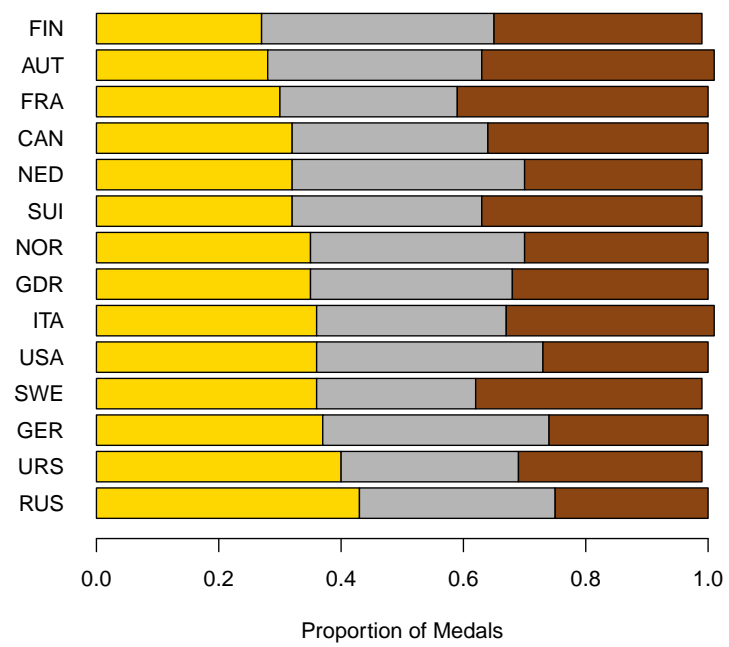


Figure 3: Proportion of medals won that were gold, silver or bronze.

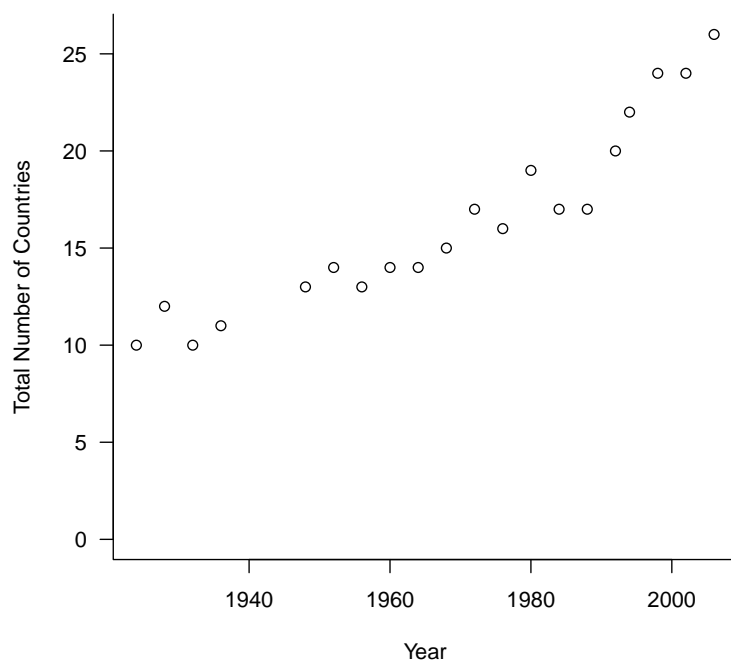


Figure 4: Total Number of Countries Winning Medals By Year