

6. Bang-For-the-Buck Adjusted Scores

After assessing 30 often very different national healthcare systems, it became apparent the index tried to compare states with a significant spread of financial resources. The annual healthcare spending in PPP-adjusted (Purchasing Power Parity) U.S. dollars varies from around \$600 in Bulgaria and Romania to \$4,000 – \$5,000 in Norway, Switzerland and Luxembourg. Continental Western Europe and Nordic countries generally fall between \$2,500 and \$3,000. As an attempt to show these differences, the EHCI 2007 and Euro-Canada Index added a value-for-money adjusted score: the Bang-For-the-Buck adjusted score (BFB score).

6.1 BFB adjustment methodology

It is not obvious how to do such an adjustment. If scores were adjusted in proportion to healthcare spending per capita, all less affluent states would be elevated to the top of the scoring sheet.

This, however, would be decidedly unfair to the financially stronger states. Even if healthcare spending is PPP adjusted, it is obvious that even PPP dollars go a lot further in purchasing healthcare services in member states where the monthly salary of a nurse is €200 than in states where nurses' salaries exceed €3,500. For this reason, the PPP adjusted scores were calculated as follows:

Healthcare spending per capita in PPP dollars was taken from the WHO HfA database (latest available numbers, most frequently 2004) as illustrated in the table below:

Country	Total health expenditure, PPP\$ per capita	Square root
Austria	3,124	55,89
Belgium	3,044	55,17
Bulgaria*	648	25,46
Canada	3,326	57,67
Cyprus	1,437	37,90
Czech Republic	1,361	36,89
Denmark	2,881	53,67
Estonia	771	27,77
Finland	2,235	47,28
France	3,159	56,20
Germany	3,005	54,82
Greece	2,162	46,50
Hungary	1,323	36,37
Ireland	2,596	50,95
Italy	2,392	48,91
Latvia	734	27,10
Lithuania	786	28,04
Luxembourg	5,089	71,34
Malta	1,739	41,70
Netherlands	3,041	55,15
Norway	3,966	62,98
Poland	805	28,37
Portugal	1,813	42,58
Romania*)	566	23,79

Slovakia	777	27,87
Slovenia	1,801	42,44
Spain	2,094	45,76
Sweden	2,825	53,15
Switzerland	4,077	63,85
United Kingdom	2,546	50,46
Arithmetic mean		44,77

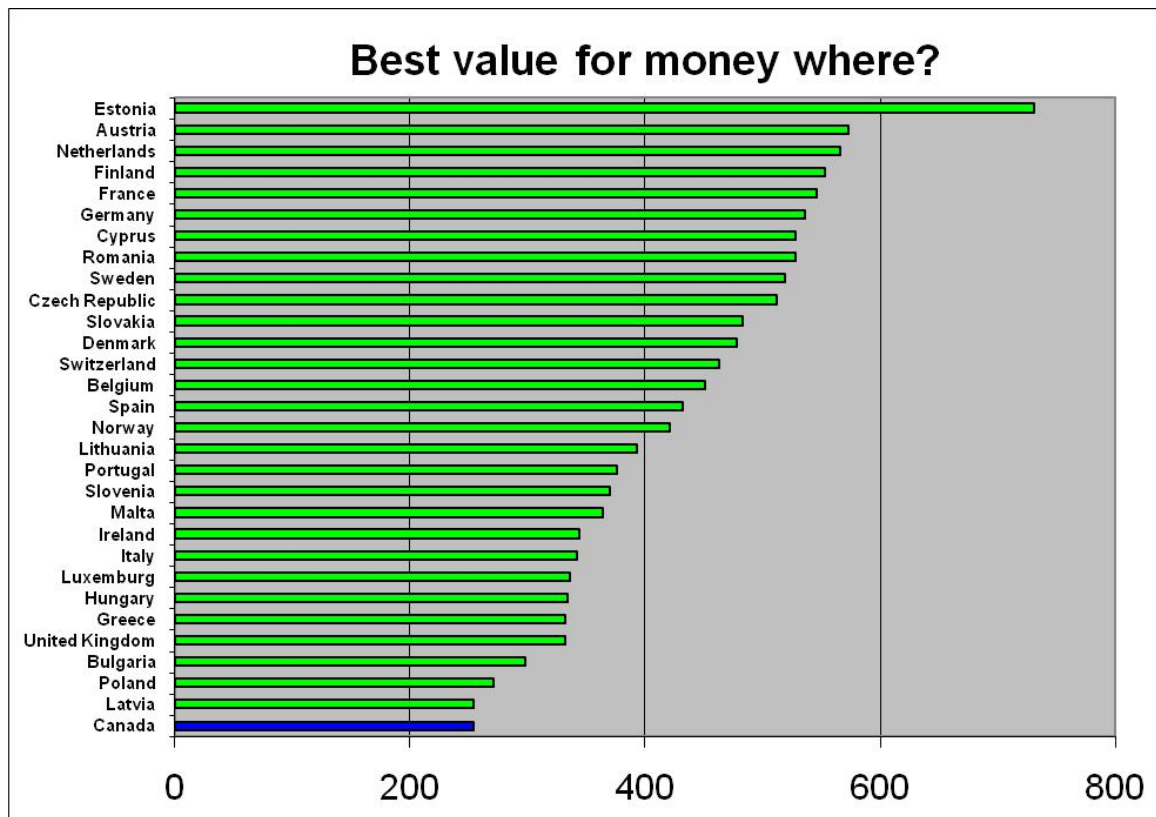
* For Bulgaria and Romania, the WHO HfA database (January 2007) seems to contain errors for healthcare spending. It is given as \$214 and \$314 respectively, which are unreasonably low numbers. The European Observatory HiT report (<http://www.euro.who.int/Document/E90023brief.pdf>) on Bulgaria quotes the WHO, giving the number \$648, also confirming the fact that this is slightly higher than the Romanian figure. The number for Romania was taken from a report from the Romanian MoH (http://www.euro.who.int/document/MPS/ROM_MPSEURO_countryprofiles.pdf), also quoting the WHO.

The square root of this number was calculated for each country. The reason for this was that domestically produced healthcare services are cheaper roughly in proportion to healthcare spending. The basic scores were divided by this square root. For this exercise, the basic scoring points of 3, 2 and 1 were replaced by 2, 1 and 0. In the basic index, the minimum score is 333 and the maximum is 1,000. Using 2, 1 and 0 does not change the relative positions of the 30 countries (or at least very marginally), but it is necessary for a value-for-money adjustment – otherwise, the 333 “free” bottom points have the effect of just catapulting the less affluent countries to the top of the list.

The score thus obtained was multiplied by the arithmetic mean of all the square roots (creating the effect that scores are normalized back to the same numerical value range as the original scores).

6.2 Results in the BFB score sheet

The outcome of the BFB exercise is shown in the table below. Even with the square root exercise described in the previous section, many less affluent nations are dramatically elevated in the scoring sheet.



The BFB scores, naturally, should be regarded as somewhat of an academic exercise. Not least, the method of adjusting the square root of healthcare spending certainly lacks scientific support. However, it does seem that the supreme winner in the BFB score, Estonia, is doing very well within its financial capacity. Naturally, it is easier to reform a country with 1.5-million people than one with more than 40 million – nevertheless, Estonian reform work since 1990 deserves admiration!

What the authors find interesting is seeing which countries top the list in the BFB scores and *also* do reasonably well in the original scores. Examples of such countries are Austria, the Netherlands, Finland, France and Germany.

Canada, which spends more on healthcare than any country in the index except Norway, Luxembourg and Switzerland, performs very poorly in four of the five matrix disciplines. When the quality of care delivered is compared with the cost of providing that care, Canada falls to the very bottom of the list in terms of value for money.