

The HDI is a simple average of achieved well-being in three components: life expectancy (L), educational achievement (E) and GDP per capita (G). Comparisons arising from the HDI are dependent upon the weights used; any given ranking could change if different weights were employed. It is thus useful to know how robust HDI country ranks are to variation in the weights.

The robustness of the assumed weights can be tested. A given comparison between pairs of countries can be considered to be robust if the ranking is not reversed when alternative weights are used. In the table below, the ranking between Australia and Sweden is fully robust, in that the ranking is the same regardless of the weights used; the ranking between Canada and Ireland is not *fully* robust, although it *is* robust to smaller changes in the weights.

Overall, how robust are HDI ranks? When tests are applied to the 2004 HDI cross-country rankings, 70 percent of all possible country-pair comparisons are fully robust, meaning that the rankings would not be reversed at any non-negative weights that sum to 1. If weights are restricted to between 0.25 and 0.5 for each dimension, then 92 percent of all comparisons are robust. In other words, most rankings would not be affected by small changes in the relative weights of the three dimensions. At the same time, at some parts of the distribution, including among the top ten countries in 2004 (as shown in the Canada and Ireland example), the rankings are sensitive to changes in the weights of the underlying components.

### Robustness comparisons

	Weighted indices			HDI 2004 (H=L+E+G)
	Life expectancy (L)	Educational achievement (E)	GDP per capita (G)	
<b>1. Equal weights (0.33 L, E and G)</b>				
Australia	0.308	0.331	0.318	0.957
Sweden	0.307	0.327	0.316	0.951
Ireland	0.294	0.330	0.332	0.956
Canada	0.306	0.323	0.320	0.950
<b>2. Moderately changed weights (0.25 L and G; 0.5 E)</b>				
Australia	0.231	0.497	0.239	0.966
Sweden	0.231	0.491	0.237	0.959
Ireland	0.221	0.495	0.249	0.964
Canada	0.230	0.485	0.240	0.955
<b>3. Greatly changed weights (0.6 L, 0.3 E, 0.1 G)</b>				
Australia	0.555	0.298	0.095	0.948
Sweden	0.553	0.295	0.095	0.943
Canada	0.551	0.291	0.096	0.938
Ireland	0.529	0.297	0.010	0.926

Source: calculated based on table 1 in UNDP 2006a.

Source: Foster et al. 2008; UNDP 2006a.