Appendix for The structure and reliability of the Health of the Nation Outcome Scale(s)

Parallel analysis was undertaken with the raw data programme from https://people.ok.ubc.ca/brioconn/nfactors/nfactors.html.

The eigenvalues of the components are in Table 1.

Table 1: Eigenvalues of Health of the Nation Outcome Scales

data and parallel data with Confidence Interval.

Component 1	HONOS	95% CI
1	3.86	1.03
2	1.51	1.02
3	1.10	1.02
4	0.90	1.01
5	0.89	1.01

Ordinal reliability analysis was carried out with R and using the Psych package. Ordinal alpha for the 12 item scale for the first sample was 0.86, and for the 4 item scale it was 0.79, with similar results to two decimal places for the second sample.

Confirmatory factor analysis was carried out with the Lavaan package in R. (For details see Rosseel Y. Lavaan: An R package for structural equation modelling. Journal of Statistics Software 2012; 48: 1–36). Both the 12 item McClelland, Trimble, Fox, Stevenson and Bell (see references) model and the 6 item Lovaglio and Monzani model also contained error covariance and this was specified in the tested models. These are available on request. HoNOS data is not continuous and should be treated as categorical data. Accordingly the estimation method used was diagonally weighted least squares with correction to means and variances (WLSMV), which has been argued to the best estimator for categorical data (Brown, T.A. (2006). Confirmatory factor analysis for applied research. NY: Guilford Press).

We adopted a fit criterion of under .06 for the Root Mean Square Error of Approximation (RMSEA) and of over .95 for the Comparative Fit Index (CFI). The McClelland model had an acceptable CFI of .95 but an RMSEA of .106. The Lovaglio and Monzani model had an acceptable CFI of .98 but an RMSEA of .102. The latter model is superior but not acceptable. The four item model containing items 9-12 had no error covariance specified. This model had an acceptable CFI of .99 and an RMSEA of .045 with a 90% CI of .039 to .051. The model fitted the second sample just as well to two decimal places. We also tested for model invariance using the Lavaan procedure and found that there was no significant difference between the fit of the models to the two samples (ΔX^2 (7) = 6.98, p = .43). Thus showing that the model applies to a new data set.

Lastly we tested the fit of a one factor 12 item model of HoNOS on the combined data from both groups. This model was not surprisingly a relatively poor fit to the data with a CFI of .93 and an RMSEA of .12 with a 90% CI of .118 to .121. It was, however significantly better than a model in which all items were considered to be independent of each other ΔX^2 (12) = 391111.7, p < .00001.