

Appendix A: Robustness checks for *Subgroup decomposability of income-related inequality of health, with an application to Australia*

At the suggestion of a reviewer we have replicated the decomposition analysis using an independent and publically available data set that was collected as part of the [Medical Expenditure Panel Survey](#) in the United States.

We use only [MEPS HC-050: 2000 Full Year Consolidated Data File](#) (HC-050) and do not employ any sample weights. The survey consists of 25,096 persons. We have selected personal income rather than equivalent household income as income variable. Moreover, we have chosen a quality of life measure derived from the EQ-5D index, which differs from the health status variable of the HILDA data set. For the decomposition by employment status we have combined two categories (unemployed and not in the labour force) into one, as suggested by the reviewer.

We have chosen these variables to test the generalisability of our conclusions regarding the degree to which rank-dependent health inequality measures can be decomposed into within, between and residual components.

The variables used in this analysis include:

- AGE00X: Age at 31/12/2000
- EQU42: EQ-5D preference based index
- SEX: Gender of the respondent
- EMPST31: Employment status at the time of the survey
- TTLP00X: A person's total income

Table A.1: Comparison of decomposition by sex using the HILDA and MEPS surveys

| | HILDA* | | | | MEPS | | | |
|----------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| | R^{bou} | | L^{bou} | | R^{bou} | | L^{bou} | |
| | Values | % | Values | % | Values | % | Values | % |
| Within | 0.0325 | 49.47 | 0.0141 | 98.30 | 0.0518 | 46.14 | 0.0362 | 91.48 |
| Between | 0.0210 | 31.92 | 0.0002 | 1.70 | 0.0391 | 34.79 | 0.0034 | 8.52 |
| Residual | 0.0122 | 18.61 | -- | -- | 0.0214 | 19.07 | -- | -- |
| Total | 0.0657 | 100.00 | 0.0144 | 100.00 | 0.1123 | 100.00 | 0.0395 | 100.00 |

*Results match those reported in Table 3 of the main paper.

Table A.2: Comparison of decomposition by age group using the HILDA and MEPS surveys

| | HILDA* | | | | MEPS | | | |
|----------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| | R^{bou} | | L^{bou} | | R^{bou} | | L^{bou} | |
| | Values | % | Values | % | Values | % | Values | % |
| Within | 0.0084 | 12.85 | 0.0126 | 88.86 | 0.0191 | 16.96 | 0.0406 | 102.82 |
| Between | 0.0132 | 20.17 | 0.0018 | 11.14 | 0.0022 | 1.99 | -0.0011 | -2.82 |
| Residual | 0.0440 | 66.98 | -- | -- | 0.0910 | 81.04 | -- | -- |
| Total | 0.0657 | 100.00 | 0.0144 | 100.00 | 0.1123 | 100.00 | 0.0395 | 100.00 |

*Results match those reported in Table 5 of the main paper.

Table A.3: Comparison of decomposition by employment status using the HILDA and MEPS surveys

| | HILDA* | | | | MEPS | | | |
|----------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| | R^{bou} | | L^{bou} | | R^{bou} | | L^{bou} | |
| | Values | % | Values | % | Values | % | Values | % |
| Within | 0.0168 | 25.58 | 0.0080 | 55.83 | 0.0174 | 15.48 | 0.0128 | 32.33 |
| Between | 0.0638 | 97.08 | 0.0063 | 44.17 | 0.1303 | 115.97 | 0.0267 | 67.67 |
| Residual | -0.0149 | -22.66 | -- | -- | -0.0353 | -31.45 | -- | -- |
| Total | 0.0657 | 100.00 | 0.0144 | 100.00 | 0.1123 | 100.00 | 0.0395 | 100.00 |

*Unemployment and out of the labour force have been combined into one category to make it consistent with MEPS, so results do not match those reported in Table 7.

These additional analyses strengthen our conclusions:

- There is a striking divergence between the rank- and level-based decompositions.
- For the rank-based decompositions, there is always a residual term which is of substantial magnitude.

Since both the health variable and the measure of socio-economic status of the MEPS data set are different from those of the HILDA data set, this strongly suggests that the observed differences between the rank- and level-based decompositions are not due to the specific health and income variables chosen for the analysis, or to the specific nature of the data set.