

## **Online Resource**

**JOURNAL: Quality of Life Research (2014)**

# **Experience-based VAS values for EQ-5D-3L health states in a national general population health survey in China**

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**Supplementary Table S1** Observed health states (number of observations in each health state  $\geq 5$ )

| <b>Profile</b> | <b>n</b> | <b>Mean</b> | <b>SD</b> | <b>Min</b> | <b>Max</b> | <b>Profile</b> | <b>n</b> | <b>Mean</b> | <b>SD</b> | <b>Min</b> | <b>Max</b> |
|----------------|----------|-------------|-----------|------------|------------|----------------|----------|-------------|-----------|------------|------------|
| <b>11111</b>   | 105,033  | 82.6        | 11.9      | 0          | 100        | <b>12122</b>   | 24       | 59.0        | 15.7      | 20         | 85         |
| <b>11121</b>   | 3,789    | 69.1        | 13.3      | 0          | 100        | <b>11311</b>   | 23       | 65.9        | 17.2      | 40         | 90         |
| <b>11112</b>   | 2,220    | 70.8        | 14.4      | 0          | 100        | <b>33321</b>   | 22       | 38.9        | 23.3      | 0          | 85         |
| <b>11122</b>   | 1,676    | 63.0        | 14.0      | 6          | 100        | <b>21321</b>   | 21       | 52.9        | 13.8      | 30         | 90         |
| <b>22222</b>   | 1,275    | 54.7        | 14.5      | 4          | 100        | <b>12212</b>   | 19       | 56.8        | 13.8      | 30         | 80         |
| <b>21111</b>   | 676      | 69.6        | 14.3      | 1          | 100        | <b>23332</b>   | 19       | 47.4        | 14.5      | 20         | 80         |
| <b>22221</b>   | 599      | 60.2        | 13.4      | 20         | 90         | <b>23311</b>   | 17       | 49.4        | 24.1      | 0          | 100        |
| <b>21121</b>   | 567      | 65.1        | 13.3      | 0          | 100        | <b>21232</b>   | 15       | 50.7        | 10.3      | 30         | 70         |
| <b>21221</b>   | 403      | 60.2        | 13.9      | 20         | 99         | <b>22332</b>   | 15       | 39.7        | 15.6      | 10         | 60         |
| <b>21222</b>   | 345      | 55.1        | 13.9      | 10         | 85         | <b>21311</b>   | 14       | 65.0        | 17.0      | 30         | 100        |
| <b>11222</b>   | 316      | 58.3        | 14.0      | 5          | 95         | <b>33311</b>   | 14       | 58.6        | 26.5      | 0          | 90         |
| <b>22211</b>   | 299      | 63.7        | 15.4      | 3          | 100        | <b>12112</b>   | 13       | 63.1        | 16.0      | 40         | 90         |
| <b>11221</b>   | 296      | 62.4        | 14.1      | 30         | 90         | <b>22312</b>   | 13       | 49.6        | 21.1      | 10         | 80         |
| <b>11211</b>   | 294      | 69.2        | 12.7      | 15         | 100        | <b>23221</b>   | 13       | 52.7        | 15.4      | 30         | 80         |
| <b>21122</b>   | 270      | 59.4        | 14.3      | 0          | 90         | <b>22112</b>   | 12       | 59.6        | 12.5      | 40         | 80         |
| <b>21211</b>   | 215      | 64.8        | 13.5      | 10         | 100        | <b>22323</b>   | 12       | 34.2        | 14.4      | 10         | 60         |
| <b>22322</b>   | 129      | 48.3        | 16.4      | 10         | 80         | <b>23222</b>   | 12       | 47.5        | 12.2      | 30         | 70         |
| <b>12222</b>   | 111      | 59.0        | 15.0      | 20         | 90         | <b>32333</b>   | 12       | 31.7        | 17.0      | 10         | 60         |
| <b>11113</b>   | 99       | 63.0        | 19.2      | 10         | 100        | <b>11321</b>   | 11       | 59.5        | 9.6       | 40         | 70         |
| <b>33333</b>   | 91       | 34.0        | 17.9      | 0          | 80         | <b>21223</b>   | 11       | 44.5        | 13.7      | 30         | 70         |
| <b>22212</b>   | 88       | 57.3        | 13.9      | 30         | 90         | <b>32321</b>   | 11       | 53.6        | 21.1      | 20         | 80         |
| <b>12221</b>   | 87       | 63.3        | 11.8      | 30         | 90         | <b>11133</b>   | 10       | 49.0        | 19.1      | 10         | 70         |
| <b>33322</b>   | 82       | 39.9        | 18.5      | 0          | 80         | <b>21132</b>   | 10       | 55.0        | 16.5      | 20         | 80         |
| <b>11212</b>   | 76       | 61.6        | 15.1      | 10         | 90         | <b>22333</b>   | 10       | 40.0        | 18.3      | 10         | 70         |
| <b>12211</b>   | 76       | 67.1        | 12.3      | 30         | 100        | <b>32221</b>   | 10       | 58.0        | 19.9      | 30         | 90         |
| <b>12111</b>   | 74       | 73.8        | 15.2      | 20         | 100        | <b>33323</b>   | 10       | 32.0        | 11.4      | 10         | 50         |
| <b>22121</b>   | 62       | 62.4        | 14.0      | 30         | 90         | <b>33331</b>   | 10       | 40.0        | 16.3      | 10         | 60         |
| <b>21112</b>   | 57       | 60.8        | 16.9      | 0          | 90         | <b>21231</b>   | 9        | 47.8        | 10.9      | 30         | 60         |
| <b>21212</b>   | 57       | 58.1        | 13.3      | 20         | 85         | <b>22231</b>   | 9        | 48.9        | 19.0      | 10         | 70         |
| <b>23322</b>   | 56       | 44.6        | 15.1      | 10         | 75         | <b>11322</b>   | 8        | 53.1        | 9.6       | 40         | 70         |
| <b>21322</b>   | 50       | 48.7        | 13.4      | 20         | 70         | <b>12223</b>   | 8        | 51.3        | 11.3      | 30         | 60         |
| <b>33332</b>   | 46       | 33.4        | 15.5      | 10         | 86         | <b>33312</b>   | 8        | 45.0        | 17.7      | 20         | 70         |
| <b>11123</b>   | 45       | 49.3        | 18.4      | 0          | 80         | <b>11232</b>   | 7        | 62.9        | 11.1      | 40         | 70         |
| <b>22111</b>   | 45       | 67.5        | 16.6      | 3          | 90         | <b>13322</b>   | 7        | 52.9        | 12.5      | 30         | 60         |
| <b>22122</b>   | 45       | 60.1        | 14.6      | 30         | 95         | <b>23312</b>   | 7        | 52.9        | 17.0      | 30         | 70         |
| <b>22321</b>   | 45       | 50.7        | 17.2      | 10         | 80         | <b>32332</b>   | 7        | 35.7        | 11.3      | 20         | 50         |
| <b>11131</b>   | 44       | 62.3        | 16.3      | 30         | 90         | <b>13111</b>   | 6        | 78.3        | 21.4      | 40         | 100        |
| <b>22223</b>   | 39       | 38.8        | 15.6      | 3          | 80         | <b>21123</b>   | 6        | 43.3        | 12.1      | 20         | 50         |
| <b>22232</b>   | 37       | 48.1        | 12.4      | 30         | 70         | <b>21131</b>   | 6        | 64.2        | 9.2       | 50         | 75         |
| <b>32322</b>   | 37       | 47.3        | 15.6      | 10         | 80         | <b>23323</b>   | 6        | 35.0        | 10.5      | 20         | 50         |
| <b>22311</b>   | 33       | 58.0        | 12.7      | 30         | 90         | <b>32311</b>   | 6        | 60.8        | 18.0      | 30         | 80         |
| <b>12121</b>   | 32       | 68.8        | 12.7      | 40         | 90         | <b>11233</b>   | 5        | 44.0        | 8.9       | 30         | 50         |
| <b>32222</b>   | 31       | 54.7        | 13.7      | 20         | 80         | <b>12322</b>   | 5        | 62.0        | 19.2      | 40         | 90         |
| <b>11132</b>   | 29       | 54.0        | 18.6      | 20         | 90         | <b>21312</b>   | 5        | 56.0        | 18.2      | 30         | 80         |
| <b>22233</b>   | 26       | 41.5        | 15.2      | 10         | 70         | <b>22213</b>   | 5        | 56.0        | 11.4      | 40         | 70         |
| <b>23333</b>   | 26       | 37.3        | 20.7      | 0          | 80         | <b>33222</b>   | 5        | 62.0        | 11.0      | 50         | 70         |
| <b>23321</b>   | 25       | 41.2        | 15.6      | 20         | 70         |                |          |             |           |            |            |

### Supplementary Table S2 Estimated and rescaled VAS values for EQ-5D health states

**Based on Model 3 (individual-level data)**

| EQ-5D | Estimated value | Rescaled value | EQ-5D | Estimated value | Rescaled value | EQ-5D | Estimated value | Rescaled value |
|-------|-----------------|----------------|-------|-----------------|----------------|-------|-----------------|----------------|
| 11111 | 82.39           | 1.00           | 21111 | 76.00           | 0.92           | 31111 | 74.26           | 0.90           |
| 11112 | 74.00           | 0.89           | 21112 | 67.61           | 0.81           | 31112 | 65.86           | 0.79           |
| 11113 | 65.76           | 0.79           | 21113 | 59.37           | 0.70           | 31113 | 57.63           | 0.68           |
| 11121 | 71.33           | 0.86           | 21121 | 64.94           | 0.78           | 31121 | 63.19           | 0.75           |
| 11122 | 62.93           | 0.75           | 21122 | 56.54           | 0.67           | 31122 | 54.80           | 0.65           |
| 11123 | 54.70           | 0.64           | 21123 | 48.31           | 0.56           | 31123 | 46.56           | 0.54           |
| 11131 | 68.41           | 0.82           | 21131 | 62.02           | 0.74           | 31131 | 60.28           | 0.72           |
| 11132 | 60.02           | 0.71           | 21132 | 53.63           | 0.63           | 31132 | 51.88           | 0.61           |
| 11133 | 51.78           | 0.61           | 21133 | 45.39           | 0.52           | 31133 | 43.65           | 0.50           |
| 11211 | 76.50           | 0.92           | 21211 | 70.11           | 0.84           | 31211 | 68.37           | 0.82           |
| 11212 | 68.11           | 0.82           | 21212 | 61.72           | 0.73           | 31212 | 59.98           | 0.71           |
| 11213 | 59.87           | 0.71           | 21213 | 53.48           | 0.63           | 31213 | 51.74           | 0.61           |
| 11221 | 65.44           | 0.78           | 21221 | 59.05           | 0.70           | 31221 | 57.31           | 0.68           |
| 11222 | 57.04           | 0.67           | 21222 | 50.65           | 0.59           | 31222 | 48.91           | 0.57           |
| 11223 | 48.81           | 0.57           | 21223 | 42.42           | 0.49           | 31223 | 40.67           | 0.46           |
| 11231 | 62.52           | 0.74           | 21231 | 56.13           | 0.66           | 31231 | 54.39           | 0.64           |
| 11232 | 54.13           | 0.64           | 21232 | 47.74           | 0.56           | 31232 | 46.00           | 0.53           |
| 11233 | 45.89           | 0.53           | 21233 | 39.50           | 0.45           | 31233 | 37.76           | 0.43           |
| 11311 | 71.18           | 0.86           | 21311 | 64.79           | 0.77           | 31311 | 63.04           | 0.75           |
| 11312 | 62.78           | 0.75           | 21312 | 56.39           | 0.67           | 31312 | 54.65           | 0.64           |
| 11313 | 54.55           | 0.64           | 21313 | 48.16           | 0.56           | 31313 | 46.41           | 0.54           |
| 11321 | 60.11           | 0.71           | 21321 | 53.72           | 0.63           | 31321 | 51.98           | 0.61           |
| 11322 | 51.72           | 0.61           | 21322 | 45.33           | 0.52           | 31322 | 43.58           | 0.50           |
| 11323 | 43.48           | 0.50           | 21323 | 37.09           | 0.42           | 31323 | 35.35           | 0.40           |
| 11331 | 57.20           | 0.68           | 21331 | 50.81           | 0.59           | 31331 | 49.06           | 0.57           |
| 11332 | 48.80           | 0.57           | 21332 | 42.41           | 0.49           | 31332 | 40.67           | 0.46           |
| 11333 | 40.57           | 0.46           | 21333 | 34.18           | 0.38           | 31333 | 32.43           | 0.36           |
| 12111 | 82.39           | 1.00           | 22111 | 76.00           | 0.92           | 32111 | 74.26           | 0.90           |
| 12112 | 74.00           | 0.89           | 22112 | 67.61           | 0.81           | 32112 | 65.86           | 0.79           |
| 12113 | 65.76           | 0.79           | 22113 | 59.37           | 0.70           | 32113 | 57.63           | 0.68           |
| 12121 | 71.33           | 0.86           | 22121 | 64.94           | 0.78           | 32121 | 63.19           | 0.75           |
| 12122 | 62.93           | 0.75           | 22122 | 56.54           | 0.67           | 32122 | 54.80           | 0.65           |
| 12123 | 54.70           | 0.64           | 22123 | 48.31           | 0.56           | 32123 | 46.56           | 0.54           |
| 12131 | 68.41           | 0.82           | 22131 | 62.02           | 0.74           | 32131 | 60.28           | 0.72           |
| 12132 | 60.02           | 0.71           | 22132 | 53.63           | 0.63           | 32132 | 51.88           | 0.61           |
| 12133 | 51.78           | 0.61           | 22133 | 45.39           | 0.52           | 32133 | 43.65           | 0.50           |
| 12211 | 76.50           | 0.92           | 22211 | 70.11           | 0.84           | 32211 | 68.37           | 0.82           |
| 12212 | 68.11           | 0.82           | 22212 | 61.72           | 0.73           | 32212 | 59.98           | 0.71           |
| 12213 | 59.87           | 0.71           | 22213 | 53.48           | 0.63           | 32213 | 51.74           | 0.61           |
| 12221 | 65.44           | 0.78           | 22221 | 59.05           | 0.70           | 32221 | 57.31           | 0.68           |
| 12222 | 57.04           | 0.67           | 22222 | 50.65           | 0.59           | 32222 | 48.91           | 0.57           |
| 12223 | 48.81           | 0.57           | 22223 | 42.42           | 0.49           | 32223 | 40.67           | 0.46           |
| 12231 | 62.52           | 0.74           | 22231 | 56.13           | 0.66           | 32231 | 54.39           | 0.64           |
| 12232 | 54.13           | 0.64           | 22232 | 47.74           | 0.56           | 32232 | 46.00           | 0.53           |
| 12233 | 45.89           | 0.53           | 22233 | 39.50           | 0.45           | 32233 | 37.76           | 0.43           |
| 12311 | 71.18           | 0.86           | 22311 | 64.79           | 0.77           | 32311 | 63.04           | 0.75           |
| 12312 | 62.78           | 0.75           | 22312 | 56.39           | 0.67           | 32312 | 54.65           | 0.64           |
| 12313 | 54.55           | 0.64           | 22313 | 48.16           | 0.56           | 32313 | 46.41           | 0.54           |
| 12321 | 60.11           | 0.71           | 22321 | 53.72           | 0.63           | 32321 | 51.98           | 0.61           |
| 12322 | 51.72           | 0.61           | 22322 | 45.33           | 0.52           | 32322 | 43.58           | 0.50           |
| 12323 | 43.48           | 0.50           | 22323 | 37.09           | 0.42           | 32323 | 35.35           | 0.40           |
| 12331 | 57.20           | 0.68           | 22331 | 50.81           | 0.59           | 32331 | 49.06           | 0.57           |
| 12332 | 48.80           | 0.57           | 22332 | 42.41           | 0.49           | 32332 | 40.67           | 0.46           |
| 12333 | 40.57           | 0.46           | 22333 | 34.18           | 0.38           | 32333 | 32.43           | 0.36           |
| 13111 | 79.18           | 0.96           | 23111 | 72.79           | 0.88           | 33111 | 71.05           | 0.85           |
| 13112 | 70.78           | 0.85           | 23112 | 64.39           | 0.77           | 33112 | 62.65           | 0.75           |
| 13113 | 62.55           | 0.75           | 23113 | 56.16           | 0.66           | 33113 | 54.42           | 0.64           |
| 13121 | 68.11           | 0.82           | 23121 | 61.72           | 0.73           | 33121 | 59.98           | 0.71           |
| 13122 | 59.72           | 0.71           | 23122 | 53.33           | 0.63           | 33122 | 51.59           | 0.60           |
| 13123 | 51.48           | 0.60           | 23123 | 45.09           | 0.52           | 33123 | 43.35           | 0.50           |
| 13131 | 65.20           | 0.78           | 23131 | 58.81           | 0.70           | 33131 | 57.07           | 0.67           |
| 13132 | 56.80           | 0.67           | 23132 | 50.41           | 0.59           | 33132 | 48.67           | 0.57           |
| 13133 | 48.57           | 0.57           | 23133 | 42.18           | 0.48           | 33133 | 40.44           | 0.46           |
| 13211 | 73.29           | 0.88           | 23211 | 66.90           | 0.80           | 33211 | 65.16           | 0.78           |
| 13212 | 64.90           | 0.78           | 23212 | 58.51           | 0.69           | 33212 | 56.76           | 0.67           |
| 13213 | 56.66           | 0.67           | 23213 | 50.27           | 0.59           | 33213 | 48.53           | 0.57           |
| 13221 | 62.23           | 0.74           | 23221 | 55.84           | 0.66           | 33221 | 54.09           | 0.64           |
| 13222 | 53.83           | 0.63           | 23222 | 47.44           | 0.55           | 33222 | 45.70           | 0.53           |
| 13223 | 45.59           | 0.53           | 23223 | 39.21           | 0.45           | 33223 | 37.46           | 0.42           |
| 13231 | 59.31           | 0.70           | 23231 | 52.92           | 0.62           | 33231 | 51.18           | 0.60           |
| 13232 | 50.92           | 0.60           | 23232 | 44.53           | 0.51           | 33232 | 42.78           | 0.49           |
| 13233 | 42.68           | 0.49           | 23233 | 36.29           | 0.41           | 33233 | 34.55           | 0.39           |
| 13311 | 67.96           | 0.81           | 23311 | 61.57           | 0.73           | 33311 | 59.83           | 0.71           |
| 13312 | 59.57           | 0.71           | 23312 | 53.18           | 0.62           | 33312 | 51.44           | 0.60           |
| 13313 | 51.33           | 0.60           | 23313 | 44.94           | 0.52           | 33313 | 43.20           | 0.50           |
| 13321 | 56.90           | 0.67           | 23321 | 50.51           | 0.59           | 33321 | 48.77           | 0.57           |
| 13322 | 48.50           | 0.56           | 23322 | 42.11           | 0.48           | 33322 | 40.37           | 0.46           |
| 13323 | 40.27           | 0.46           | 23323 | 33.88           | 0.38           | 33323 | 32.14           | 0.35           |
| 13331 | 53.98           | 0.64           | 23331 | 47.60           | 0.55           | 33331 | 45.85           | 0.53           |
| 13332 | 45.59           | 0.53           | 23332 | 39.20           | 0.45           | 33332 | 37.46           | 0.42           |
| 13333 | 37.35           | 0.42           | 23333 | 30.96           | 0.34           | 33333 | 29.22           | 0.32           |

to be continued

continued

| Based on Model 1M1 (aggregated data) |                 |                |       |                 |                |       |                 |                |
|--------------------------------------|-----------------|----------------|-------|-----------------|----------------|-------|-----------------|----------------|
| EQ-5D                                | Estimated value | Rescaled value | EQ-5D | Estimated value | Rescaled value | EQ-5D | Estimated value | Rescaled value |
| 11111                                | 74.12           | 1.00           | 21111 | 69.63           | 0.94           | 31111 | 68.24           | 0.92           |
| 11112                                | 69.00           | 0.93           | 21112 | 64.51           | 0.86           | 31112 | 63.12           | 0.84           |
| 11113                                | 61.73           | 0.82           | 21113 | 57.24           | 0.76           | 31113 | 55.85           | 0.74           |
| 11121                                | 67.77           | 0.91           | 21121 | 63.28           | 0.84           | 31121 | 61.89           | 0.82           |
| 11122                                | 62.64           | 0.84           | 21122 | 58.15           | 0.77           | 31122 | 56.76           | 0.75           |
| 11123                                | 55.38           | 0.73           | 21123 | 50.89           | 0.67           | 31123 | 49.49           | 0.65           |
| 11131                                | 64.28           | 0.86           | 21131 | 59.79           | 0.79           | 31131 | 58.39           | 0.77           |
| 11132                                | 59.15           | 0.78           | 21132 | 54.66           | 0.72           | 31132 | 53.27           | 0.70           |
| 11133                                | 51.88           | 0.68           | 21133 | 47.39           | 0.62           | 31133 | 46.00           | 0.60           |
| 11211                                | 69.27           | 0.93           | 21211 | 64.78           | 0.87           | 31211 | 63.39           | 0.85           |
| 11212                                | 64.15           | 0.86           | 21212 | 59.66           | 0.79           | 31212 | 58.26           | 0.77           |
| 11213                                | 56.88           | 0.75           | 21213 | 52.39           | 0.69           | 31213 | 51.00           | 0.67           |
| 11221                                | 62.92           | 0.84           | 21221 | 58.43           | 0.77           | 31221 | 57.04           | 0.75           |
| 11222                                | 57.79           | 0.77           | 21222 | 53.30           | 0.70           | 31222 | 51.91           | 0.68           |
| 11223                                | 50.52           | 0.66           | 21223 | 46.03           | 0.60           | 31223 | 44.64           | 0.58           |
| 11231                                | 59.42           | 0.79           | 21231 | 54.93           | 0.72           | 31231 | 53.54           | 0.70           |
| 11232                                | 54.30           | 0.72           | 21232 | 49.81           | 0.65           | 31232 | 48.42           | 0.63           |
| 11233                                | 47.03           | 0.61           | 21233 | 42.54           | 0.55           | 31233 | 41.15           | 0.53           |
| 11311                                | 64.33           | 0.86           | 21311 | 59.84           | 0.79           | 31311 | 58.45           | 0.77           |
| 11312                                | 59.21           | 0.79           | 21312 | 54.72           | 0.72           | 31312 | 53.32           | 0.70           |
| 11313                                | 51.94           | 0.68           | 21313 | 47.45           | 0.62           | 31313 | 46.06           | 0.60           |
| 11321                                | 57.98           | 0.77           | 21321 | 53.49           | 0.70           | 31321 | 52.10           | 0.68           |
| 11322                                | 52.85           | 0.69           | 21322 | 48.36           | 0.63           | 31322 | 46.97           | 0.61           |
| 11323                                | 45.59           | 0.59           | 21323 | 41.10           | 0.53           | 31323 | 39.70           | 0.51           |
| 11331                                | 54.49           | 0.72           | 21331 | 50.00           | 0.65           | 31331 | 48.60           | 0.63           |
| 11332                                | 49.36           | 0.64           | 21332 | 44.87           | 0.58           | 31332 | 43.48           | 0.56           |
| 11333                                | 42.09           | 0.54           | 21333 | 37.60           | 0.48           | 31333 | 36.21           | 0.46           |
| 12111                                | 74.91           | 1.01           | 22111 | 70.42           | 0.95           | 32111 | 69.02           | 0.93           |
| 12112                                | 69.78           | 0.94           | 22112 | 65.29           | 0.87           | 32112 | 63.90           | 0.85           |
| 12113                                | 62.51           | 0.83           | 22113 | 58.02           | 0.77           | 32113 | 56.63           | 0.75           |
| 12121                                | 68.55           | 0.92           | 22121 | 64.06           | 0.86           | 32121 | 62.67           | 0.84           |
| 12122                                | 63.42           | 0.85           | 22122 | 58.93           | 0.78           | 32122 | 57.54           | 0.76           |
| 12123                                | 56.16           | 0.74           | 22123 | 51.67           | 0.68           | 32123 | 50.28           | 0.66           |
| 12131                                | 65.06           | 0.87           | 22131 | 60.57           | 0.81           | 32131 | 59.18           | 0.79           |
| 12132                                | 59.93           | 0.80           | 22132 | 55.44           | 0.73           | 32132 | 54.05           | 0.71           |
| 12133                                | 52.66           | 0.69           | 22133 | 48.17           | 0.63           | 32133 | 46.78           | 0.61           |
| 12211                                | 70.05           | 0.94           | 22211 | 65.56           | 0.88           | 32211 | 64.17           | 0.86           |
| 12212                                | 64.93           | 0.87           | 22212 | 60.44           | 0.80           | 32212 | 59.05           | 0.78           |
| 12213                                | 57.66           | 0.76           | 22213 | 53.17           | 0.70           | 32213 | 51.78           | 0.68           |
| 12221                                | 63.70           | 0.85           | 22221 | 59.21           | 0.79           | 32221 | 57.82           | 0.77           |
| 12222                                | 58.57           | 0.78           | 22222 | 54.08           | 0.71           | 32222 | 52.69           | 0.69           |
| 12223                                | 51.31           | 0.67           | 22223 | 46.82           | 0.61           | 32223 | 45.42           | 0.59           |
| 12231                                | 60.21           | 0.80           | 22231 | 55.72           | 0.74           | 32231 | 54.32           | 0.72           |
| 12232                                | 55.08           | 0.73           | 22232 | 50.59           | 0.66           | 32232 | 49.20           | 0.64           |
| 12233                                | 47.81           | 0.62           | 22233 | 43.32           | 0.56           | 32233 | 41.93           | 0.54           |
| 12311                                | 65.11           | 0.87           | 22311 | 60.62           | 0.81           | 32311 | 59.23           | 0.79           |
| 12312                                | 59.99           | 0.80           | 22312 | 55.50           | 0.73           | 32312 | 54.11           | 0.71           |
| 12313                                | 52.72           | 0.69           | 22313 | 48.23           | 0.63           | 32313 | 46.84           | 0.61           |
| 12321                                | 58.76           | 0.78           | 22321 | 54.27           | 0.71           | 32321 | 52.88           | 0.69           |
| 12322                                | 53.63           | 0.71           | 22322 | 49.14           | 0.64           | 32322 | 47.75           | 0.62           |
| 12323                                | 46.37           | 0.60           | 22323 | 41.88           | 0.54           | 32323 | 40.49           | 0.52           |
| 12331                                | 55.27           | 0.73           | 22331 | 50.78           | 0.66           | 32331 | 49.38           | 0.64           |
| 12332                                | 50.14           | 0.66           | 22332 | 45.65           | 0.59           | 32332 | 44.26           | 0.57           |
| 12333                                | 42.87           | 0.55           | 22333 | 38.38           | 0.49           | 32333 | 36.99           | 0.47           |
| 13111                                | 67.14           | 0.90           | 23111 | 62.65           | 0.84           | 33111 | 61.26           | 0.82           |
| 13112                                | 62.01           | 0.83           | 23112 | 57.52           | 0.76           | 33112 | 56.13           | 0.74           |
| 13113                                | 54.74           | 0.72           | 23113 | 50.25           | 0.66           | 33113 | 48.86           | 0.64           |
| 13121                                | 60.78           | 0.81           | 23121 | 56.29           | 0.74           | 33121 | 54.90           | 0.72           |
| 13122                                | 55.66           | 0.73           | 23122 | 51.17           | 0.67           | 33122 | 49.77           | 0.65           |
| 13123                                | 48.39           | 0.63           | 23123 | 43.90           | 0.57           | 33123 | 42.51           | 0.55           |
| 13131                                | 57.29           | 0.76           | 23131 | 52.80           | 0.69           | 33131 | 51.41           | 0.67           |
| 13132                                | 52.16           | 0.68           | 23132 | 47.67           | 0.62           | 33132 | 46.28           | 0.60           |
| 13133                                | 44.90           | 0.58           | 23133 | 40.41           | 0.52           | 33133 | 39.01           | 0.50           |
| 13211                                | 62.29           | 0.83           | 23211 | 57.80           | 0.77           | 33211 | 56.41           | 0.75           |
| 13212                                | 57.16           | 0.76           | 23212 | 52.67           | 0.69           | 33212 | 51.28           | 0.67           |
| 13213                                | 49.89           | 0.65           | 23213 | 45.40           | 0.59           | 33213 | 44.01           | 0.57           |
| 13221                                | 55.93           | 0.74           | 23221 | 51.44           | 0.67           | 33221 | 50.05           | 0.65           |
| 13222                                | 50.80           | 0.67           | 23222 | 46.31           | 0.60           | 33222 | 44.92           | 0.58           |
| 13223                                | 43.54           | 0.56           | 23223 | 39.05           | 0.50           | 33223 | 37.66           | 0.48           |
| 13231                                | 52.44           | 0.69           | 23231 | 47.95           | 0.62           | 33231 | 46.56           | 0.60           |
| 13232                                | 47.31           | 0.61           | 23232 | 42.82           | 0.55           | 33232 | 41.43           | 0.53           |
| 13233                                | 40.05           | 0.51           | 23233 | 35.56           | 0.45           | 33233 | 34.16           | 0.43           |
| 13311                                | 57.35           | 0.76           | 23311 | 52.86           | 0.69           | 33311 | 51.47           | 0.67           |
| 13312                                | 52.22           | 0.69           | 23312 | 47.73           | 0.62           | 33312 | 46.34           | 0.60           |
| 13313                                | 44.95           | 0.58           | 23313 | 40.46           | 0.52           | 33313 | 39.07           | 0.50           |
| 13321                                | 50.99           | 0.67           | 23321 | 46.50           | 0.60           | 33321 | 45.11           | 0.58           |
| 13322                                | 45.86           | 0.59           | 23322 | 41.37           | 0.53           | 33322 | 39.98           | 0.51           |
| 13323                                | 38.60           | 0.49           | 23323 | 34.11           | 0.43           | 33323 | 32.72           | 0.41           |
| 13331                                | 47.50           | 0.62           | 23331 | 43.01           | 0.55           | 33331 | 41.62           | 0.53           |
| 13332                                | 42.37           | 0.54           | 23332 | 37.88           | 0.48           | 33332 | 36.49           | 0.46           |
| 13333                                | 35.11           | 0.44           | 23333 | 30.62           | 0.38           | 33333 | 29.22           | 0.36           |

### Split sample test

A split sample test was used to estimate the robustness of the final model. The total sample was randomly divided into two groups of equal size [16]. The estimations from one group were then used to predict values for health states in the other group.

The results from the split sample test are presented in Table S2. For health states with five or more observations, for models based on individual-level data, the SCC was 0.901 and MAD was 4.44. For models based on aggregated data, the SCC was 0.855 and MAD was 4.11. For both types of models, the results from the split sample test showed a smaller SCC and greater MAD. For health states with ten or more observations, for models based on individual-level data, the results from the split sample test were similar to that of the whole sample; for models based on aggregated data, the results for split sample test showed a smaller SCC and greater MAD.

**Supplementary Table S3** Spearman rank correlation coefficients (SCC) and mean absolute difference (MAD), for whole sample and split sample, respectively

|                  | n≥5          |      |              |      | n≥10         |      |              |      |
|------------------|--------------|------|--------------|------|--------------|------|--------------|------|
|                  | Whole Sample |      | Split sample |      | Whole Sample |      | Split sample |      |
|                  | SCC          | MAD  | SCC          | MAD  | SCC          | MAD  | SCC          | MAD  |
| <b>Model 3</b>   | 0.913        | 4.18 | 0.901        | 4.44 | 0.939        | 4.08 | 0.943        | 4.03 |
| <b>Model 1M5</b> | 0.928        | 3.10 | 0.855        | 4.11 | 0.951        | 2.64 | 0.923        | 3.42 |

### **Effect of socio-demographic factors on health state valuation**

By including age, sex, region, marital status, educational level, occupational status and income groups in the final model based on the individual-level data (Model 3), we investigated the effect of socio-demographic factors on health state valuation and the robustness of the model (Table S4). The classification of socio-demographic variables is described elsewhere [8, 9].

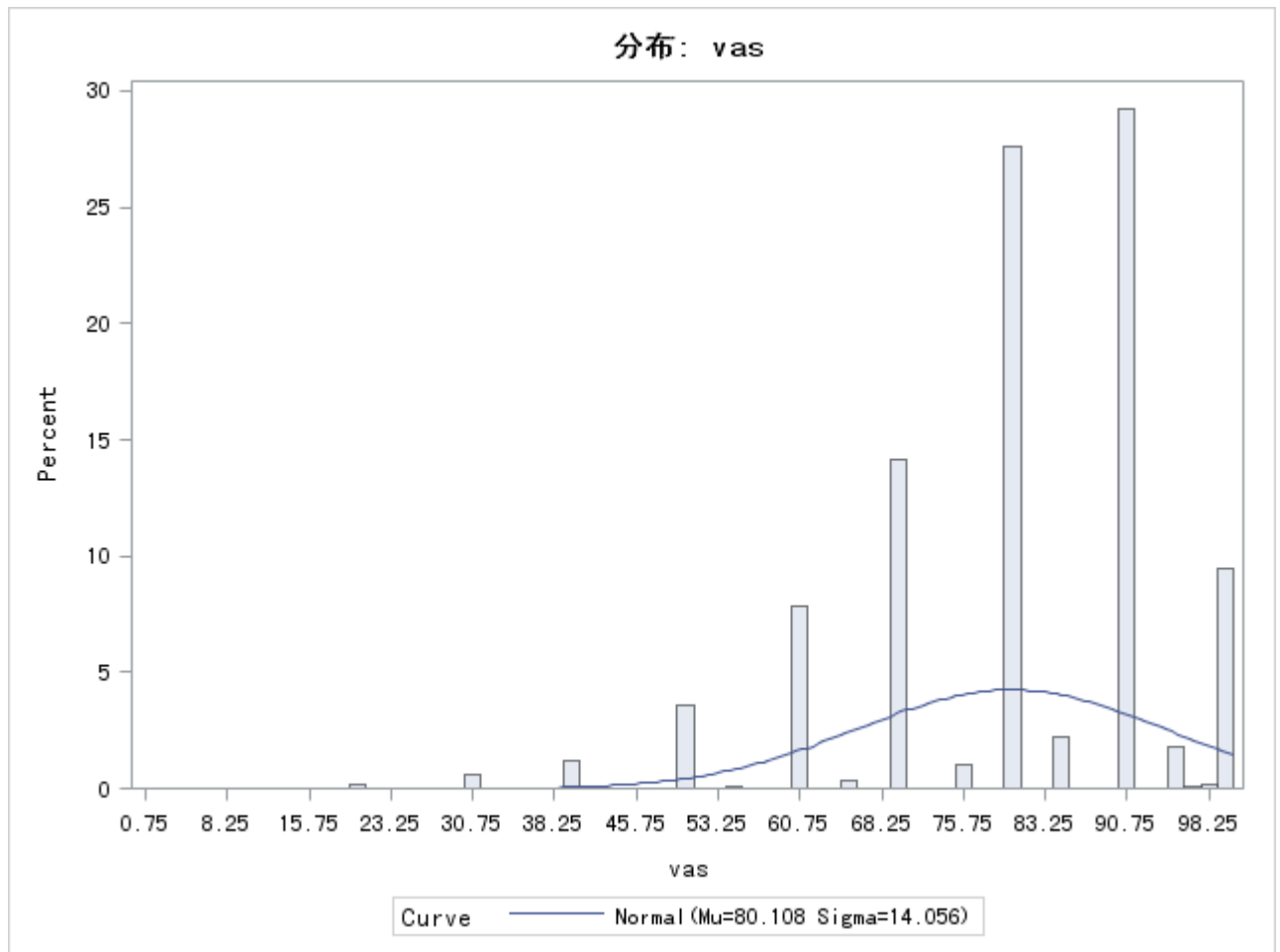
**Supplementary Table S4** Effect of age, sex, region and socio-economic characteristics on health state values (all results were statistically significant [ $p < 0.05$ ] except those shaded)

|  | Model 3A | Model 3B | Model 3C | Model 3D | Model 3E | Model 3F | Model 3G | Model 3H | Model 3I |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Intercept</b>                       | 89.39    | 90.04    | 89.40    | 90.18    | 87.67    | 89.75    | 88.46    | 88.04    | 86.54    |
| <b>Mobility</b>                        |          |          |          |          |          |          |          |          |          |
| Level 2                                | -4.25    | -4.27    | -4.19    | -4.25    | -4.27    | -4.20    | -4.18    | -4.17    | -4.10    |
| Level 3                                | -6.92    | -6.97    | -7.05    | -6.98    | -7.08    | -6.97    | -6.93    | -7.11    | -7.13    |
| <b>Self-care</b>                       |          |          |          |          |          |          |          |          |          |
| Level 3*                               | -2.62    | -2.64    | -2.72    | -2.62    | -2.78    | -2.56    | -2.82    | -2.67    | -2.73    |
| <b>Usual activities</b>                |          |          |          |          |          |          |          |          |          |
| Level 2                                | -4.49    | -4.51    | -4.49    | -4.50    | -4.38    | -4.40    | -4.38    | -4.31    | -4.29    |
| Level 3                                | -9.84    | -9.94    | -9.99    | -9.96    | -9.73    | -9.69    | -9.77    | -9.53    | -9.58    |
| <b>Pain/discomfort</b>                 |          |          |          |          |          |          |          |          |          |
| Level 2                                | -8.58    | -8.47    | -8.48    | -8.46    | -8.35    | -8.47    | -8.37    | -8.35    | -8.37    |
| Level 3                                | -12.09   | -11.91   | -11.93   | -11.93   | -11.81   | -11.90   | -11.99   | -11.77   | -11.81   |
| <b>Anxiety/depression</b>              |          |          |          |          |          |          |          |          |          |
| Level 2                                | -8.07    | -8.03    | -7.69    | -8.00    | -7.86    | -7.99    | -7.75    | -7.81    | -7.49    |
| Level 3                                | -16.75   | -16.75   | -16.20   | -16.71   | -16.56   | -16.64   | -16.30   | -16.49   | -15.97   |
| <b>Age group<sup>a</sup></b>           |          |          |          |          |          |          |          |          |          |
| 25-34                                  | -2.70    | -2.67    | -2.63    | -2.18    | -2.48    | -2.27    | -2.76    | -1.69    | -1.65    |
| 35-44                                  | -5.33    | -5.31    | -5.36    | -4.73    | -4.92    | -4.91    | -5.42    | -4.00    | -4.06    |
| 45-54                                  | -8.54    | -8.55    | -8.68    | -7.95    | -7.98    | -8.04    | -8.73    | -6.84    | -7.04    |
| 55-64                                  | -11.42   | -11.46   | -11.55   | -10.83   | -10.55   | -10.80   | -11.54   | -9.03    | -9.30    |
| 65-74                                  | -14.61   | -14.66   | -14.75   | -13.91   | -13.53   | -13.64   | -14.75   | -11.42   | -11.81   |
| 75-103                                 | -15.80   | -15.81   | -16.10   | -14.88   | -14.44   | -14.55   | -15.99   | -11.89   | -12.53   |
| <b>Sex<sup>b</sup></b>                 | –        | -1.27    | -1.30    | -1.20    | -0.98    | -1.13    | -1.30    | -0.70    | -0.76    |
| <b>Region</b>                          |          |          |          |          |          |          |          |          |          |
| Rural <sup>c</sup>                     | –        | –        | 0.87     | –        | –        | –        | –        | –        | 1.05     |
| Middle <sup>d</sup>                    | –        | –        | 3.06     | –        | –        | –        | –        | –        | 2.87     |
| Western                                | –        | –        | 1.07     | –        | –        | –        | –        | –        | 0.97     |
| <b>Marital status<sup>e</sup></b>      |          |          |          |          |          |          |          |          |          |
| Married                                | –        | –        | –        | -0.73    | –        | –        | –        | -0.76    | -0.72    |
| Divorced                               | –        | –        | –        | -2.37    | –        | –        | –        | -2.25    | -1.83    |
| Widowed                                | –        | –        | –        | -1.54    | –        | –        | –        | -1.10    | -1.01    |
| Other                                  | –        | –        | –        | -2.24    | –        | –        | –        | -2.07    | -1.64    |
| <b>Educational level<sup>f</sup></b>   |          |          |          |          |          |          |          |          |          |
| Primary school                         | –        | –        | –        | –        | 1.05     | –        | –        | 1.21     | 1.10     |
| Junior middle school                   | –        | –        | –        | –        | 2.38     | –        | –        | 2.81     | 2.52     |
| Senior middle school                   | –        | –        | –        | –        | 2.33     | –        | –        | 2.91     | 2.74     |
| College and above                      | –        | –        | –        | –        | 2.34     | –        | –        | 2.94     | 2.93     |
| Missing                                | –        | –        | –        | –        | 1.93     | –        | –        | 3.11     | 2.89     |
| <b>Occupational status<sup>g</sup></b> |          |          |          |          |          |          |          |          |          |
| Retired                                | –        | –        | –        | –        | –        | -0.91    | –        | -1.99    | -1.56    |
| Student                                | –        | –        | –        | –        | –        | 1.00     | –        | 0.62     | 0.57     |
| Unemployed                             | –        | –        | –        | –        | –        | -1.75    | –        | -1.82    | -1.71    |
| Missing                                | –        | –        | –        | –        | –        | -4.36    | –        | -4.10    | -3.83    |
| <b>Income groups<sup>h</sup></b>       |          |          |          |          |          |          |          |          |          |
| Second group                           | –        | –        | –        | –        | –        | –        | 1.46     | -0.36    | -0.35    |
| Third group                            | –        | –        | –        | –        | –        | –        | 1.76     | -0.61    | -0.73    |
| Fourth group                           | –        | –        | –        | –        | –        | –        | 2.79     | -1.95    | -1.99    |
| Fifth group (high)                     | –        | –        | –        | –        | –        | –        | 2.71     | -0.03    | -0.35    |
| <b>Observations</b>                    | 120,709  | 120,709  | 120,709  | 120,709  | 120,709  | 120,709  | 120,709  | 120,709  | 120,709  |
| <b>Adjusted R<sup>2</sup></b>          | 0.3401   | 0.3422   | 0.3494   | 0.3427   | 0.3453   | 0.3443   | 0.3475   | 0.3489   | 0.3568   |

\* Reference group: self-care on level 1 or 2

<sup>a</sup> Reference group: age group 18-24 years<sup>b</sup> Reference group: men<sup>c</sup> Reference group: urban<sup>d</sup> Reference group: eastern area<sup>e</sup> Reference group: single<sup>f</sup> Reference group: below primary school<sup>g</sup> Reference group: employed<sup>h</sup> Reference group: first group (low)

### Supplementary Figure S5 Distribution of VAS values





**Supplementary Figure S6** Distribution of VAS values after log transformation

