APPENDIX

Table A.: Median and Confidence Intervals of Parameter Estimates in the Joint RP-SP Logit Model (when λ is fixed at -1)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| True $β$ | True $b$  | True  | Median UseQuality $\hat{β}$ | Median Non-useQuality $\hat{b}$ | Median Scaling Factor $\hat{σ}$ |
| 0.2 | 0.05 | 2 | 0.2086[0.1873,0.2318] | 0.0328[-0.0138,0.0717] | 2.1099[2.0056,2.2218] |
| 0.2 | 0.1 | 2 | 0.2101[0.1895,0.2332] | 0.0791[0.0335, 0.1200] | 2.0231[1.9238, 2.1390] |
| 0.2 | 0.2  | 2 | 0.1845[0.1621, 0.2105] | 0.0898[0.0363, 0.2010] | 1.8579[1.7242, 1.9908] |
| 0.2 | 0.3  | 2 | 0.1712[0.1445, 0.2005] | 0.1957 [0.1064, 0.3073] | 1.8516[1.6938, 2.0196] |
| 0.2 | 0.4  | 2 | 0.1685[0.1326, 0.2020] | 0.3975[0.1926, 0.5972] | 1.8934[1.6979, 2.1245] |

\* All runs with sample set at N=2,000 using R=1,000 replications with 90% confidence intervals in brackets

\* True $γ$ is -0.02 for all cases and well estimated throughout different parameter specification.

\* True λ is -1 for all cases.

\* A full set of site alternative specific constants (ASCs) for 38 sites were included in the joint RP-SP logit model.

Table A.: Bias of Structural Estimators (when λ is fixed at -1)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| True $β$ | True$b$  | True$$σ$$ | Bias ( $\hat{β})$ | Bias ($\hat{b}$) | Bias ($\hat{σ}$) |
| 0.2 | 0.05 | 2 | 0.01 | -0.02 | 0.11 |
| 0.2 | 0.1 | 2 | 0.01 | -0.02 | 0.02 |
| 0.2 | 0.2  | 2 | -0.02 | -0.11 | -0.14 |
| 0.2 | 0.3  | 2 | -0.03 | -0.10 | -0.15 |
| 0.2 | 0.4  | 2 | -0.03 | 0.00 | -0.11 |

Table A.:Median and Confidence Intervals of Parameter Estimates in the Joint RP-SP Logit Model (when λ is estimated and equal to -1)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| True $β$ | True$b$ | True$$σ$$ | Median UseQuality $\hat{β}$ | Median Non-useQuality $\hat{b}$ | Median Scaling Factor $\hat{σ}$ | Distance Decay $\hat{λ}$ |
| 0.2 | 0.05 | 2 | 0.1866[0.1623, 0.2275] | 0.0058[-0.2182, 0.0508] | 2.0553[1.9320, 2.1751] | -0.5281[-0.4654, 0.1706] |
| 0.2 | 0.1 | 2 | 0.1909[0.1694, 0.2253] | 0.0259[0.0016, 0.1001] | 1.9647[1.8480, 2.0866] | -0.6470[-0.9882, -0.7268] |
| 0.2 | 0.2  | 2 | 0.1845[0.1620, 0.2105] | 0.0899[0.0361, 0.2010] | 1.8579[1.7348, 1.9906] | -0.7968[-0.9530, -0.4572] |
| 0.2 | 0.3  | 2 | 0.1713[0.1444, 0.2005] | 0.1956[0.1063, 0.3073] | 1.8524[1.6936, 2.0196] | -0.8736[-0.9775, -0.8903] |
| 0.2 | 0.4  | 2 | 0.1685[0.1326, 0.2020] | 0.3975[0.1928, 0.5975] | 1.8935[1.6979, 2.1250] | -0.9585[-1.0939, -0.8677] |

\* All runs with sample set at N=2,000 using R=1,000 replications with 90% confidence intervals in brackets

\* True $γ$ is -0.02 for all cases and well estimated throughout different parameter specification.

\* True λ is -1 for all cases.

Table A.: Bias of Structural Estimators (when λ is estimated and equal to -1)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| True $β$ | True$b$  | True$$σ$$ | Bias ( $\hat{β})$ | Bias ($\hat{b}$) | Bias ($\hat{σ}$) | Bias ($\hat{λ}$) |
| 0.2 | 0.05 | 2 | -0.01 | -0.04 | 0.06 | 0.47 |
| 0.2 | 0.1 | 2 | -0.01 | -0.07 | -0.04 | 0.36 |
| 0.2 | 0.2  | 2 | -0.02 | -0.11 | -0.14 | 0.20 |
| 0.2 | 0.3  | 2 | -0.03 | -0.10 | -0.15 | 0.13 |
| 0.2 | 0.4  | 2 | -0.03 | 0.00 | -0.11 | 0.04 |

Table A.: Median Use, Non-use, and Total WTP Estimates and
Median Ratio of Non-use WTP to Total WTP ($’s) (when λ is fixed at -1)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| True $β$ | True$b$ | True$$σ$$ | True$$λ$$ | Median UseWTP ($) | Median Non-useWTP ($) | Median Total WTP ($) | Median Ratio (Non-use /Total) |
| 0.2 | 0.05 | 2 | -1 | 29.7[0.0, 49.6](10.8, 40.5) | 5.9[0.9, 14.2](3.6, 8.8) | 35.5[1.1, 57.8](15.7, 48.3) | 0.17 |
| 0.2 | 0.1 | 2 | -1 | 29.7[0.0, 49.6](10.8, 40.5) | 11.8[1.8, 28.5](7.3, 17.6) | 41.4[2.2, 72.0](20.2, 56.2) | 0.28 |
| 0.2 | 0.2  | 2 | -1 | 29.7[0.0, 49.6](10.8, 40.5) | 23.7[3.7, 57.0](14.6, 28.8) | 53.2[4.1, 101.3](28.8, 72.9) | 0.44 |
| 0.2 | 0.3  | 2 | -1 | 29.7[0.0, 49.6](10.8, 40.5) | 35.5[5.5, 85.4](21.8, 52.7) | 65.0[5.9, 130.6](36.7, 89.9) | 0.55 |
| 0.2 | 0.4  | 2 | -1 | 29.7[0.0, 49.6](10.8, 40.5) | 47.3[7.3, 113.9](29.1, 70.2) | 77.7[7.4, 159.9](45.8, 107.5) | 0.61 |

\*N=2000, R=1000. Minimum and maximum values of WTP are reported in the square bracket to capture the variability among the simulated people since each person in the simulation had a random draw of the change in quality. 90% confidence interval in the round bracket. Also note that the WTP estimates were calculated based on true values of parameters in the joint RP-SP models.

Table A.: Median Use, Non-use, and Total WTP Estimates and
Median Ratio of Non-use WTP to Total WTP ($’s) (when λ is estimated and equal to -1)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| True $β$ | True$b$  | True$$σ$$ | True$$λ$$ | Median UseWTP ($) | Median Non-useWTP ($) | Median Total WTP ($) | Median Ratio (Non-use /Total) |
| 0.2 | 0.05 | 2 | -1 | 31.5[0.0, 53.3](11.8, 43.2) | 3.9[0.6, 9.7](2.4, 5.7) | 35.4[1.1, 57.8](15.7, 48.3) | 0.11 |
| 0.2 | 0.1 | 2 | -1 | 31.8[0.0, 53.8](31.8, 43.7) | 9.4[1.4, 23.5](5.7, 13.9) | 41.2[1.8, 69.2](19.3, 56.1) | 0.23 |
| 0.2 | 0.2  | 2 | -1 | 27.0[0.0, 46.6](10.0, 37.4) | 24.6[3.6, 61.4](14.9, 36.3) | 51.9[4.0, 97.8](29.0, 70.6) | 0.47 |
| 0.2 | 0.3  | 2 | -1 | 27.0[0.0, 46.6](10.0, 37.4) | 36.1[5.3, 90.2](21.8, 53.2) | 63.6[5.7, 126.1](37.8, 87.3) | 0.57 |
| 0.2 | 0.4  | 2 | -1 | 25.88[0.0, 44.8](9.6, 35.9) | 75.3[11.0, 188.2](45.6, 111.1) | 101.3[11.5, 219.3](64.0, 141.4) | 0.74 |

\*N=2000, R=1000. Minimum and maximum values of WTP are reported in the square bracket to capture the variability among the simulated people since each person in the simulation had a random draw of the change in quality. 90% confidence interval in the round bracket. Note that the WTP estimates were calculated based on median values of parameter estimates in the joint RP-SP models, which mutes the underlying variation that would be seen if I calculate WTP for each of the 2000 people for the 1000 runs (authors can provide this if desired).