**Chapter 8 Exercises: Solutions**

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| . \*Chapter 8 Exercises: Solutions  . slogit happy i.sex edu age satfin, dim(1)  Iteration 0: log likelihood = -1868.5338 (not concave)  Iteration 1: log likelihood = -1800.5251  Iteration 2: log likelihood = -1788.9765  Iteration 3: log likelihood = -1787.229  Iteration 4: log likelihood = -1787.1675  Iteration 5: log likelihood = -1787.1673  Iteration 6: log likelihood = -1787.1673  Stereotype logistic regression Number of obs = 1953  Wald chi2(4) = 155.67  Log likelihood = -1787.1673 Prob > chi2 = 0.0000  ( 1) [phi1\_1]\_cons = 1  ------------------------------------------------------------------------------  happy | Coef. Std. Err. z P>|z| [95% Conf. Interval]  -------------+----------------------------------------------------------------  sex |  female | -.1474703 .1546011 -0.95 0.340 -.450483 .1555423  educ | -.0696261 .0258345 -2.70 0.007 -.1202609 -.0189914  age | .0125722 .0044598 2.82 0.005 .0038312 .0213133  satfin | 1.345758 .1146136 11.74 0.000 1.121119 1.570396  -------------+----------------------------------------------------------------  /phi1\_1 | 1 (constrained)  /phi1\_2 | .6442312 .047332 13.61 0.000 .5514622 .7370002  /phi1\_3 | 0 (base outcome)  -------------+----------------------------------------------------------------  /theta1 | 3.238436 .5290532 6.12 0.000 2.201511 4.275361  /theta2 | 3.096816 .3603994 8.59 0.000 2.390446 3.803186  /theta3 | 0 (base outcome)  ------------------------------------------------------------------------------  (happy="not too happy" is the base outcome) |

2. Wald χ2(4) = 155.67, *p* < .001, which indicates that the full model with four predictors provided a better fit than the null model with no independent variables in predicting the ordinal response variable.

3. Scale parameters: 1 and .644.

4. The logit coefficient for age is .013, *z* = 2.82, *p* < .001, and the 95% CI is [.004, .021]; the logit coefficient for satfin is 1.346, *z* = 11.74, *p* < .001, and the 95% CI is [1.121, 1.570].

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| . listcoef, expand  slogit (N=1953): Factor change in odds  Odds of: not too happy vs 1  -------------------------------------------------------------------------  | b z P>|z| e^b e^bStdX SDofX  -------------+-----------------------------------------------------------  sex |  female | -0.1475 -0.954 0.340 0.863 0.929 0.498  educ | -0.0696 -2.695 0.007 0.933 0.805 3.123  age | 0.0126 2.819 0.005 1.013 1.249 17.677  satfin | 1.3458 11.742 0.000 3.841 2.748 0.751  -------------+-----------------------------------------------------------  phi |  phi1\_1 | 1.0000 . . . . .  phi1\_2 | 0.6442 13.611 0.000 . . .  -------------+-----------------------------------------------------------  theta |  theta1 | 3.2384 6.121 0.000 . . .  theta2 | 3.0968 8.593 0.000 . . .  -------------------------------------------------------------------------  slogit (N=1953): Factor change in the odds of happy  Variable: 2.sex (sd=0.498)  -------------------------------------------------------------------------------  | b z P>|z| e^b e^bStdX  -----------------------------+-------------------------------------------------  1 vs pretty happy | 0.0525 0.939 0.348 1.054 1.026  1 vs not too happ | 0.1475 0.954 0.340 1.159 1.076  pretty happy vs 1 | -0.0525 -0.939 0.348 0.949 0.974  pretty happy vs not too happ | 0.0950 0.956 0.339 1.100 1.048  not too happ vs 1 | -0.1475 -0.954 0.340 0.863 0.929  not too happ vs pretty happy | -0.0950 -0.956 0.339 0.909 0.954  -------------------------------------------------------------------------------  Variable: educ (sd=3.123)  -------------------------------------------------------------------------------  | b z P>|z| e^b e^bStdX  -----------------------------+-------------------------------------------------  1 vs pretty happy | 0.0248 2.793 0.005 1.025 1.080  1 vs not too happ | 0.0696 2.695 0.007 1.072 1.243  pretty happy vs 1 | -0.0248 -2.793 0.005 0.976 0.926  pretty happy vs not too happ | 0.0449 2.515 0.012 1.046 1.150  not too happ vs 1 | -0.0696 -2.695 0.007 0.933 0.805  not too happ vs pretty happy | -0.0449 -2.515 0.012 0.956 0.869  -------------------------------------------------------------------------------  Variable: age (sd=17.677)  -------------------------------------------------------------------------------  | b z P>|z| e^b e^bStdX  -----------------------------+-------------------------------------------------  1 vs pretty happy | -0.0045 -2.684 0.007 0.996 0.924  1 vs not too happ | -0.0126 -2.819 0.005 0.988 0.801  pretty happy vs 1 | 0.0045 2.684 0.007 1.004 1.082  pretty happy vs not too happ | -0.0081 -2.733 0.006 0.992 0.867  not too happ vs 1 | 0.0126 2.819 0.005 1.013 1.249  not too happ vs pretty happy | 0.0081 2.733 0.006 1.008 1.154  -------------------------------------------------------------------------------  Variable: satfin (sd=0.751)  -------------------------------------------------------------------------------  | b z P>|z| e^b e^bStdX  -----------------------------+-------------------------------------------------  1 vs pretty happy | -0.4788 -6.390 0.000 0.620 0.698  1 vs not too happ | -1.3458 -11.742 0.000 0.260 0.364  pretty happy vs 1 | 0.4788 6.390 0.000 1.614 1.433  pretty happy vs not too happ | -0.8670 -8.803 0.000 0.420 0.521  not too happ vs 1 | 1.3458 11.742 0.000 3.841 2.748  not too happ vs pretty happy | 0.8670 8.803 0.000 2.380 1.918  ------------------------------------------------------------------------------- |

The odds ratio for satfin comparing category 3 with category 1 is 3.841, and the odds ratio comparing category 3 with category 2 is 2.380. They indicate that higher dissatisfaction with financial situation increases the odds of being not too happy versus being very happy and the odds of not too happy versus being pretty happy.