**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) = 155.67Log 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, expandslogit (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 1.0261 vs not too happ | 0.1475 0.954 0.340 1.159 1.076pretty happy vs 1 | -0.0525 -0.939 0.348 0.949 0.974pretty happy vs not too happ | 0.0950 0.956 0.339 1.100 1.048not too happ vs 1 | -0.1475 -0.954 0.340 0.863 0.929not 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 1.0801 vs not too happ | 0.0696 2.695 0.007 1.072 1.243pretty happy vs 1 | -0.0248 -2.793 0.005 0.976 0.926pretty happy vs not too happ | 0.0449 2.515 0.012 1.046 1.150not too happ vs 1 | -0.0696 -2.695 0.007 0.933 0.805not 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 0.9241 vs not too happ | -0.0126 -2.819 0.005 0.988 0.801pretty happy vs 1 | 0.0045 2.684 0.007 1.004 1.082pretty happy vs not too happ | -0.0081 -2.733 0.006 0.992 0.867not too happ vs 1 | 0.0126 2.819 0.005 1.013 1.249not 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 0.6981 vs not too happ | -1.3458 -11.742 0.000 0.260 0.364pretty happy vs 1 | 0.4788 6.390 0.000 1.614 1.433pretty happy vs not too happ | -0.8670 -8.803 0.000 0.420 0.521not too happ vs 1 | 1.3458 11.742 0.000 3.841 2.748not 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.