**Chapter 7 Exercises: Solutions**

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| . recode fechld (1=4) (2=3) (3=2) (4=1), gen(fechldr)  (1292 differences between fechld and fechldr)  . mlogit fechldr educ kidjob sibs, baseoutcome(1)  Iteration 0: log likelihood = -1496.315  Iteration 1: log likelihood = -1449.8946  Iteration 2: log likelihood = -1449.0287  Iteration 3: log likelihood = -1449.0284  Iteration 4: log likelihood = -1449.0284  Multinomial logistic regression Number of obs = 1253  LR chi2(9) = 94.57  Prob > chi2 = 0.0000  Log likelihood = -1449.0284 Pseudo R2 = 0.0316  ------------------------------------------------------------------------------  fechldr | Coef. Std. Err. z P>|z| [95% Conf. Interval]  -------------+----------------------------------------------------------------  1 | (base outcome)  -------------+----------------------------------------------------------------  2 |  educ | .036626 .0461624 0.79 0.428 -.0538507 .1271026  kidjob | -.0808444 .1285033 -0.63 0.529 -.3327063 .1710174  sibs | .0782665 .0480465 1.63 0.103 -.015903 .172436  \_cons | .9505439 .7664491 1.24 0.215 -.5516687 2.452756  -------------+----------------------------------------------------------------  3 |  educ | .1221729 .0446823 2.73 0.006 .0345972 .2097487  kidjob | .1029414 .1225835 0.84 0.401 -.1373178 .3432006  sibs | .0053936 .0472823 0.11 0.909 -.0872781 .0980653  \_cons | .25854 .7462249 0.35 0.729 -1.204034 1.721114  -------------+----------------------------------------------------------------  4 |  educ | .1885399 .0472078 3.99 0.000 .0960143 .2810655  kidjob | .3919263 .1288612 3.04 0.002 .1393629 .6444896  sibs | -.012815 .0495753 -0.26 0.796 -.1099808 .0843508  \_cons | -2.119619 .8030863 -2.64 0.008 -3.69364 -.5455992  ------------------------------------------------------------------------------ |

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| . constraint 1 [3]educ=2\*[2]educ  . constraint 2 [4]educ=3\*[2]educ  . constraint 3 [3]kidjob=2\*[2]kidjob  . constraint 4 [4]kidjob=3\*[2]kidjob  . constraint 5 [3]sibs=2\*[2]sibs  . constraint 6 [4]sibs=3\*[2]sibs  . \*Fitting a multiple-predictor model  . mlogit fechldr educ kidjob sibs, baseoutcome(1) constraint (1/6)  Iteration 0: log likelihood = -1496.315  Iteration 1: log likelihood = -1458.2587  Iteration 2: log likelihood = -1457.3032  Iteration 3: log likelihood = -1457.3008  Iteration 4: log likelihood = -1457.3008  Multinomial logistic regression Number of obs = 1253  Wald chi2(3) = 71.57  Log likelihood = -1457.3008 Prob > chi2 = 0.0000  ( 1) - 2\*[2]educ + [3]educ = 0  ( 2) - 3\*[2]educ + [4]educ = 0  ( 3) - 2\*[2]kidjob + [3]kidjob = 0  ( 4) - 3\*[2]kidjob + [4]kidjob = 0  ( 5) - 2\*[2]sibs + [3]sibs = 0  ( 6) - 3\*[2]sibs + [4]sibs = 0  ------------------------------------------------------------------------------  fechldr | Coef. Std. Err. z P>|z| [95% Conf. Interval]  -------------+----------------------------------------------------------------  1 | (base outcome)  -------------+----------------------------------------------------------------  2 |  educ | .0687506 .0122406 5.62 0.000 .0447595 .0927417  kidjob | .1849428 .0330838 5.59 0.000 .1200997 .2497858  sibs | -.0289373 .0113703 -2.54 0.011 -.0512228 -.0066519  \_cons | .1978679 .234348 0.84 0.398 -.2614457 .6571814  -------------+----------------------------------------------------------------  3 |  educ | .1375012 .0244812 5.62 0.000 .0895189 .1854834  kidjob | .3698855 .0661676 5.59 0.000 .2401994 .4995716  sibs | -.0578746 .0227407 -2.54 0.011 -.1024455 -.0133037  \_cons | -.4616378 .4150628 -1.11 0.266 -1.275146 .3518703  -------------+----------------------------------------------------------------  4 |  educ | .2062518 .0367218 5.62 0.000 .1342784 .2782251  kidjob | .5548283 .0992514 5.59 0.000 .3602992 .7493575  sibs | -.086812 .034111 -2.54 0.011 -.1536683 -.0199556  \_cons | -2.484251 .6290724 -3.95 0.000 -3.717211 -1.251292  ------------------------------------------------------------------------------ |

3. Based on the estimated coefficients, the three equations for the model can be expressed as follows:

ln= +educ + .185kidjob – .029sibs

ln= +educ + .370kidjob – .058sibs

ln= +educ + .555kidjob – .087sibs

4. The intercepts for the AC model are .198, –.66, and –2.022, respectively. The logit coefficients for educ, kidjob, and sibs for the AC model are .198, .069, and –.029, respectively.

5. See the output.

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| . listcoef, adjacent  mlogit (N=1253): Factor change in the odds of fechldr  Variable: educ (sd=3.030)  -------------------------------------------------------------------------------  | b z P>|z| e^b e^bStdX  -----------------------------+-------------------------------------------------  1 vs 2 | -0.0688 -5.617 0.000 0.934 0.812  2 vs 1 | 0.0688 5.617 0.000 1.071 1.232  2 vs 3 | -0.0688 -5.617 0.000 0.934 0.812  3 vs 2 | 0.0688 5.617 0.000 1.071 1.232  3 vs 4 | -0.0688 -5.617 0.000 0.934 0.812  4 vs 3 | 0.0688 5.617 0.000 1.071 1.232  -------------------------------------------------------------------------------  Variable: kidjob (sd=1.086)  -------------------------------------------------------------------------------  | b z P>|z| e^b e^bStdX  -----------------------------+-------------------------------------------------  1 vs 2 | -0.1849 -5.590 0.000 0.831 0.818  2 vs 1 | 0.1849 5.590 0.000 1.203 1.222  2 vs 3 | -0.1849 -5.590 0.000 0.831 0.818  3 vs 2 | 0.1849 5.590 0.000 1.203 1.222  3 vs 4 | -0.1849 -5.590 0.000 0.831 0.818  4 vs 3 | 0.1849 5.590 0.000 1.203 1.222  -------------------------------------------------------------------------------  Variable: sibs (sd=3.145)  -------------------------------------------------------------------------------  | b z P>|z| e^b e^bStdX  -----------------------------+-------------------------------------------------  1 vs 2 | 0.0289 2.545 0.011 1.029 1.095  2 vs 1 | -0.0289 -2.545 0.011 0.971 0.913  2 vs 3 | 0.0289 2.545 0.011 1.029 1.095  3 vs 2 | -0.0289 -2.545 0.011 0.971 0.913  3 vs 4 | 0.0289 2.545 0.011 1.029 1.095  4 vs 3 | -0.0289 -2.545 0.011 0.971 0.913  ------------------------------------------------------------------------------- |