SOLUTIONS TO ODD-NUMBERED EXERCISES

Chapter 14

14.1 **(b)** $t = -2.06$. $P = 0.047$, which is some evidence that low-progress readers score lower. **(c)** $W = 36$ and $P = 0.0473$.

14.3 **(b)** Mean = 27.5. Standard deviation = 4.787. **(c)** $z = 2.19$ or 2.09 with correction. $P = 0.0183$.

14.5 $W = 30$ and $P = 0.34$.

14.7 $W = 159$. $P = 0.0298$.

14.9 $W = 32267.5$ and $P = 0.0003$.

14.11 **(a)** $X^2 = 3.955$ with df = 4 and $P = 0.413$. **(b)** $W = 56{,}370$ and $P \approx 0.5$.

14.13 $W^+ = 10$ and $P = 0.05$.

14.15 $W^+ = 138.5$ and $P = 0.002$.

14.17 $W^+ = 1552.2$ and $P < 0.001$.

14.19 $W^+ = 31$ and $P = 0.556$.

14.21 $W^+ = 56.5$ and $P = 0.004$.

14.23 **(c)** $H = 10.66$ and $P = 0.005$.

14.25 **(c)** $H = 16.95$ with df = 3. $P \approx 0.001$.

14.27 The Kruskal-Wallis test is for comparing several groups, not comparing several variables.

14.29 **(b)** $X^2 = 18.510$, df = 4, and $P = 0.001$. Reject H_0. **(c)** $H = 12.72$, df = 2, $P = 0.002$. Adjusted for ties, $H = 14.43$, $P = 0.001$. Either way, reject H_0.

14.31 **(b)** $t = -3.33$, df = 35, and $P = 0.0021$. **(c)** Sum of ranks = 447 and $P = 0.0028$.

14.33 **(b)** $H = 8$, df = 2, and $P = 0.018$.

14.35 $H = 9.85$, df = 2, and $P = 0.007$.

14.37 Only L-G and G-B are significant.

Chapter 15

15.1 **(a)** 0.31677. **(b)** 0.46364. **(c)** 0.68323. **(d)** 2.15683.

15.3 **(a)** Proportion = 0.8022. Odds = 4.05556. **(b)** Proportion = 0.68807. Odds = 2.20588. **(c)** Ratio = 1.83852.

15.5 **(a)** −0.0471 to 1.26497. **(b)** 0.95404 to 3.54299.

15.7 **(a)** Proportion = 0.01648. Odds = 0.01675. **(b)** Proportion = 0.00785. Odds = 0.00791. **(c)** Odds ratio = 2.118.

15.9 **(a)** 0.2452 to 1.2558. **(b)** $X^2 = 8.47$. P is between 0.0025 and 0.005.

15.11 **(a)** Estimated log odds ratio = 2.118. β_1 from 1.28 to 3.51.

15.13 **(c)** Interval for the odds: 1.7176 to 8.6701.

15.15 $y = -0.0282 + 1.89515x$.

15.17 $y = -1.8040 + 1.1354x$.

15.19 $y = -10.7799 + 6.3319x$.

15.21 **(a)** $X^2 = 33.65$ with df = 3. **(b)** log(odds) = −6.053 + 0.3710 HSM + 0.2489 HSS + 0.03605 HSE. 95% intervals for slope are 0.1158 to 0.6262, −0.0010 to 0.4988, and −0.2095 to 0.2816. **(c)** Only the coefficient of HSM is different from 0.

15.23 **(a)** $X^2 = 23.0$ with df = 3. **(b)** $X^2 = 3.6$ with df = 2. **(c)** For modeling the odds of HIGPA, high school grades (specifically HSM and to a lesser extent HSS) are useful, while SAT scores are not.

15.25 **(a)** log(odds) = $3.4761 + 0.4157x$. $X^2 = 2.16$ with df = 1. Interval is 0.1392 to 0.9706. **(b)** log(odds) = −6.930 + 1.009 Hospital − 0.09132 Condition. Interval is 0.30 to 25.12.