Name: _____
Lecture Time (10, 11, or 12): _____

Quiz 11 Remote

Statistics 0200 Spring 2012 Dr. Nancy Pfenning

1. (10 pts.) For a sample of 10 jobs, hourly earnings (in dollars) for government workers were regressed on hourly earnings for private industry workers with the same type of job. Interval estimates were requested for government earnings when private industry earnings equal $20.

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The regression equation is
government = 1.86 + 1.19 private
Predictor        Coef     SE Coef           T        P
Constant        1.864       5.379       0.35    0.738
private        1.1853      0.2865       4.14    0.003
S = 4.85        R-Sq = 68.2%     R-Sq(adj) = 64.2%
Predicted Values for New Observations
New Obs     Fit     SE Fit          95.0% CI              95.0% PI
1         25.57       1.64   (   21.80,   29.34)  (   13.78,   37.36)
New Obs   private
1            20.0
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   (a) A job that earns below-average pay in private industry also tends to earn below-average pay in the government; likewise, if a job pays well in private industry it also tends to pay well in the government. This is confirmed by the fact that
   (i) the intercept is positive (ii) the slope is negative (iii) the intercept is negative (iv) the slope is positive

   (b) The correlation is
   (i) -83 (ii) -68 (iii) -0.83 (iv) -0.68 (v) $+0.68$ (vi) $+0.83$ (vii) $+68$ (viii) $+83$

   (c) Report typical error size, if we use private industry pay to predict government pay: _____

   (d) Which of these is our regression null hypothesis?
   (i) $H_0 : b_0 = 0$ (ii) $H_0 : b_1 = 0$ (iii) $H_0 : \beta_0 = 0$ (iv) $H_0 : \beta_1 = 0$

   (e) The P-value and the value of R-Sq together tell us that there is
   (i) extremely strong evidence of an extremely strong relationship
   (ii) moderately strong evidence of an extremely strong relationship
   (iii) extremely strong evidence of a moderately strong relationship
   (iv) moderately strong evidence of a moderately strong relationship

   (f) The slope of the regression line for the relationship between private industry and government pay for *all* jobs is (i) 1.19 (ii) unknown, but almost surely negative (iii) unknown, but almost surely positive (iv) unknown, and it could easily be positive or negative

(g) Would a confidence interval for the slope contain zero? (i) yes (ii) no

(h) Interval estimates were requested for the pay of a government worker with the same job for which a private industry worker earns \$20 per hour. What does the output suggest about a goverment worker with such a job earning \$30 per hour?
(i) This is almost identical to the predicted value.
(ii) This is a bit on the high side, but within the interval estimate.
(iii) This is high, and outside of the interval estimate.

(i) Which **two** the following are true about the C.I. in general?

i. It estimates the mean of all responses to a given explanatory value.

ii. It estimates an individual response to a given explanatory value.

iii. For large samples and x close to $\bar{x}$, it is approximately $\hat{y} \pm 2s$.

iv. For large samples and x close to $\bar{x}$, it is approximately $\hat{y} \pm 2\frac{s}{\sqrt{n}}$.