

## STAT 217: Prediction Intervals and Confidence Intervals (4/6)

```
lm.chirp <- lm(chirps~temp, data=cricket)
summary(lm.chirp)

##
## Call:
## lm(formula = chirps ~ temp, data = cricket)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.5601 -0.5793  0.0313  0.5902  1.5326
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -0.3091     3.1086   -0.10  0.92230
## temp           0.2119     0.0387    5.47  0.00011
##
## Residual standard error: 0.972 on 13 degrees of freedom
## Multiple R-squared:  0.697, Adjusted R-squared:  0.674
## F-statistic: 30 on 1 and 13 DF, p-value: 0.000107
```

1. Write the hypotheses being tested in the intercept row.
2. Write the hypotheses being tested in the temp row.

```
confint(lm.chirp)

##              2.5 % 97.5 %
## (Intercept) -7.025  6.407
## temp         0.128  0.296
```

3. Interpret the 95% confidence interval for the slope coefficient.

```
predict(lm.chirp, newdata=data.frame(temp=84.3), interval="confidence", level=0.95)
```

```
##      fit  lwr  upr  
## 1 17.6 16.9 18.2
```

```
predict(lm.chirp, newdata=data.frame(temp=84.3), interval="prediction", level=0.95)
```

```
##      fit  lwr  upr  
## 1 17.6 15.4 19.8
```

4. Interpret the prediction interval for the predicted number of chirps at a temperature of 84.3.
  
  
  
  
  
  
  
  
  
  
5. Interpret the confidence interval for the estimated mean number of chirps at a temperature of 84.3.
  
  
  
  
  
  
  
  
  
  
6. Suppose someone told you that it was going to be 70 degrees tomorrow, and asked you how many chirps you think there will be. Which uncertainty interval will you report along with your estimate?