

# ENS 495 Fall 2017 Independent Data Analysis: Example Outline

```
## Loading required package: magrittr
##
## Attaching package: 'cowplot'
## The following object is masked from 'package:ggpubr':
##
##     get_legend
## The following object is masked from 'package:ggplot2':
##
##     ggsave
## Loading required package: stats4
```

**TITLE:** Relationship between Pileated Woodpecker (*Dryocopus pileatus*) abundance and forest cover in Pennsylvania: An analysis using USGS Breeding Bird Survey data

## **ABSTRACT**

I found a significant positive relationship between Pileated Woodpecker abundance on BBS routes and both mixed and deciduous forest cover. The relationship was mixed for, however, was much steeper and had a better fit to the data.

## **INTRODUCTION**

[your paper does not need an introduction]

## **METHODS**

[your paper does not need to have any field methods]

## **STATISTICAL METHODS**

The relationship between forest cover and the abundance of Pileated Woodpecker on each BBS route was modeled using linear regression in R (R Core Team 2017). Models were evaluated using hypothesis tests and AIC.

## **RESULTS**

### **Hypothesis testing**

There was a significant relationship between the number of Pileated Woodpeckers observed on a BBS route and both the percentage of deciduous forest cover ( $F = 10.61$ ,  $P = 0.0014$ ) and mixed forest cover ( $F = 44.55$ ,  $P < 0.0001$ ). Both relationships were positive but the slope of the mixed forest regression was much

steeper (slope = 16.12, SE = 2.4) than the deciduous forest regression (slope = 1.58, SE = 0.48). Moreover, the mixed forest regression had a larger  $R^2$  than the deciduous forest model (mixed forest  $R^2 = 0.24$ ; deciduous forest  $R^2 = 0.066$ ) and also a much lower AIC value (deciduous versus mixed delta AIC = 28.7)

## DISCUSSION

[your paper does not need a discussion]

## ACKNOWLEDGEMENT

[skip]

## FIGURES

Figure 1

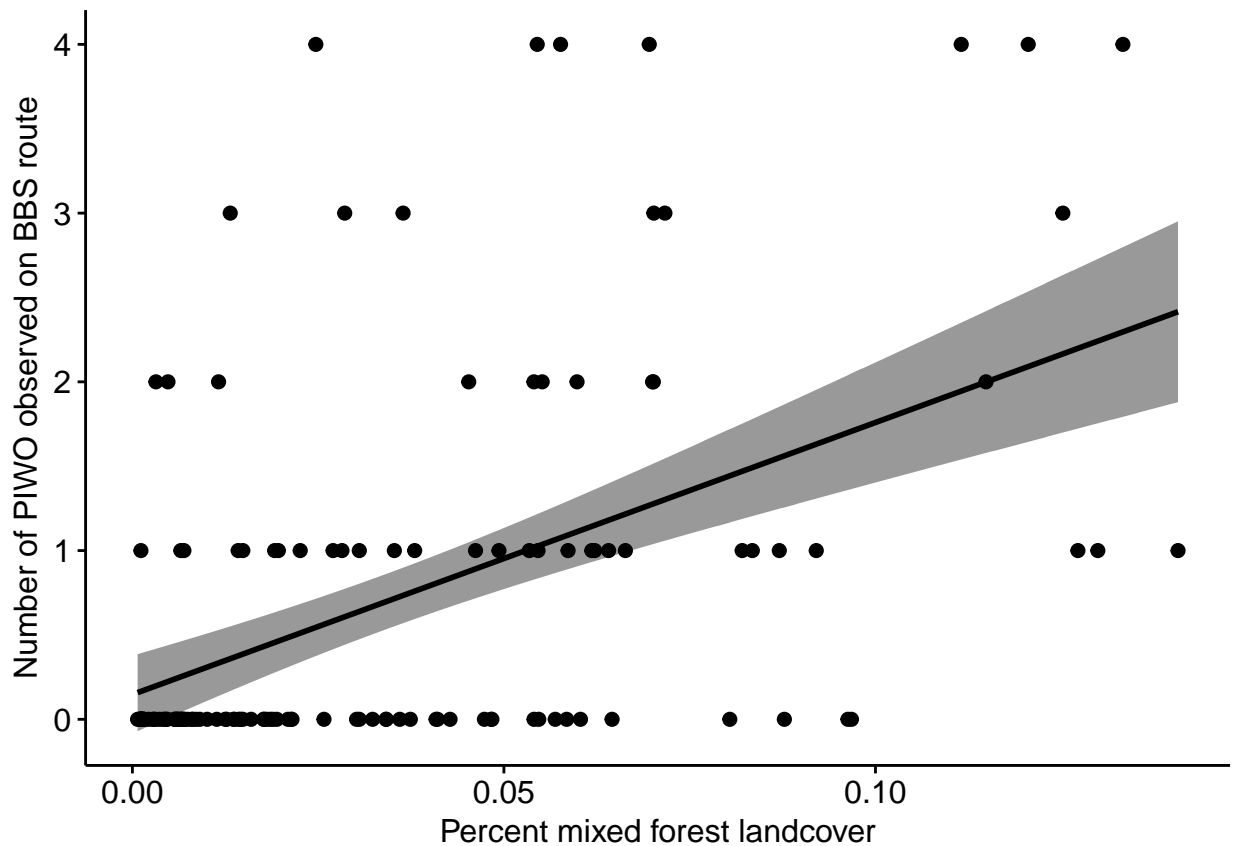


Figure 1 caption

Relationship between the percent of mixed forest cover around a BBS route and the number of Pileated Woodpeckers (*Dryocopus pileatus*) observed. Error band = 95% confidence interval.

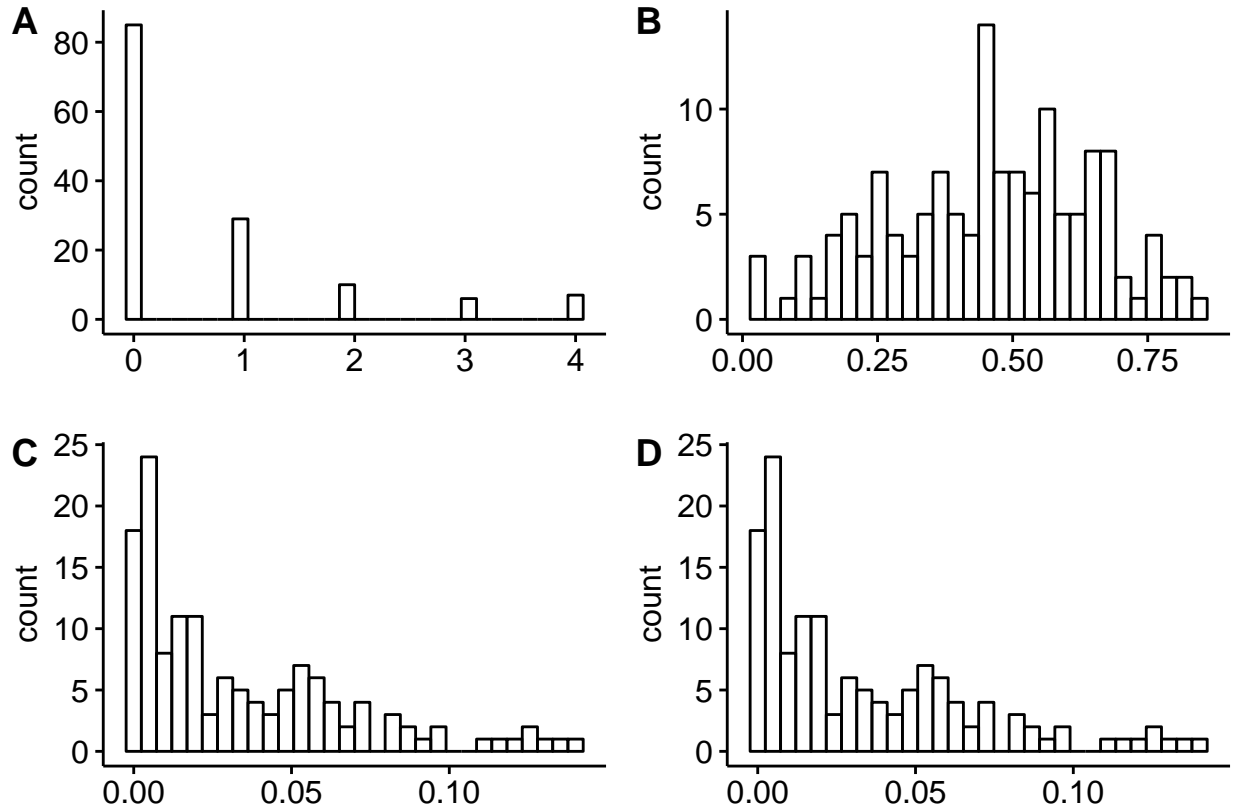
## APPENDICES

### Appendix 1: Data dictionary

[Paste your data dictionary as a table into your paper]

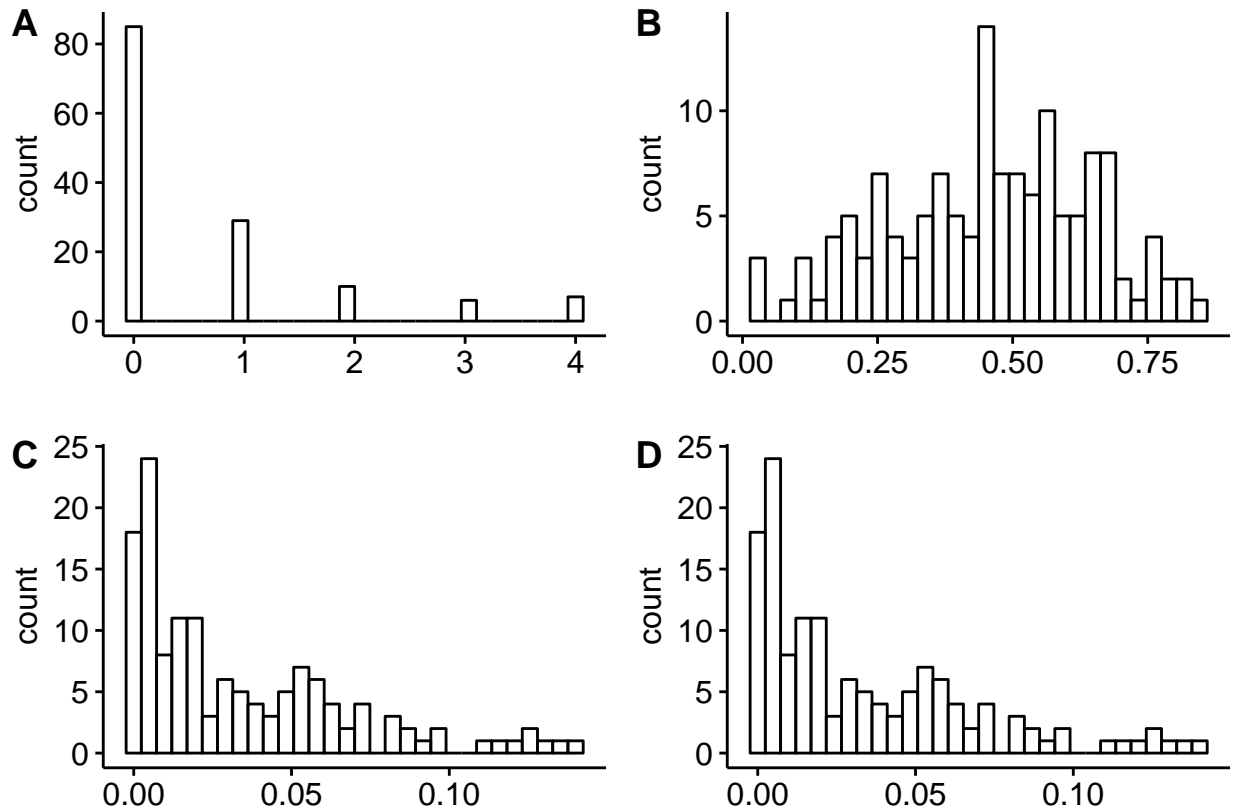
### Appendix 2: Exploratory graphs

#### Exploratory graphs: boxplots



Boxplots showing the distribution of the abundance of Pileated Woodpeckers on each BBS route (A) and the distribution of percent deciduous forest cover (B), confir forest cover (C) and mixed forest cover. Deciduous and mixed forest cover were modeld; confir is shown only for compariosns

#### Exploratory graphs: histograms



Histograms showing the distribution of the abundance of Pileated Woodpeckers on each BBS route (A) and the distribution of percent deciduous forest cover (B), conifer forest cover (C) and mixed forest cover. Deciduous and mixed forest cover were modeled; conifer is shown only for comparisons

## SUPPLEMENTAL FILES

### Supplemental File 1: Raw data file:

Raw data is contained in Brouwer\_NL\_Piwo\_vs\_forest\_cover.csv

### Supplemental file 2: Data analysis script

All code to reproduce these analyses is in the script file Brouwer\_NL\_analysis\_script\_Piwo\_vs\_forest\_cover.R