

Workshop 9.5a: ANCOVA

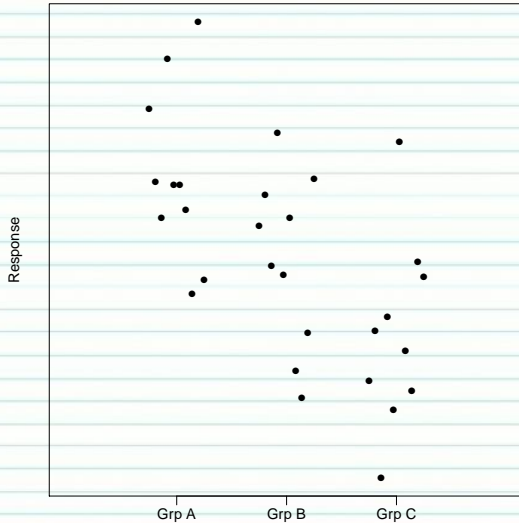
Murray Logan

14 Jun 2015

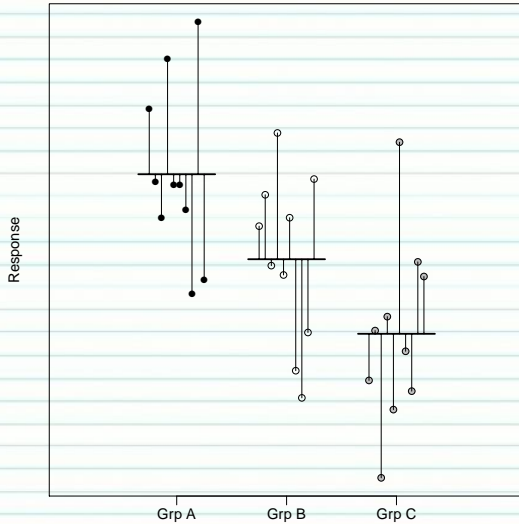
Section 1

Analysis of Covariance

Analysis of Covariance (ANCOVA)

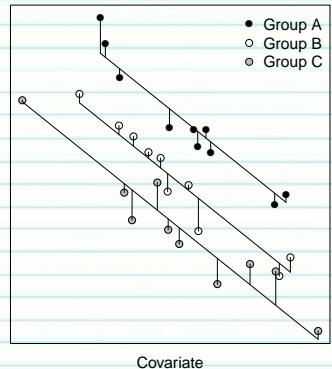
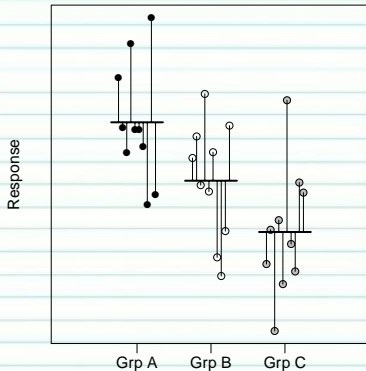


Analysis of Covariance (ANCOVA)

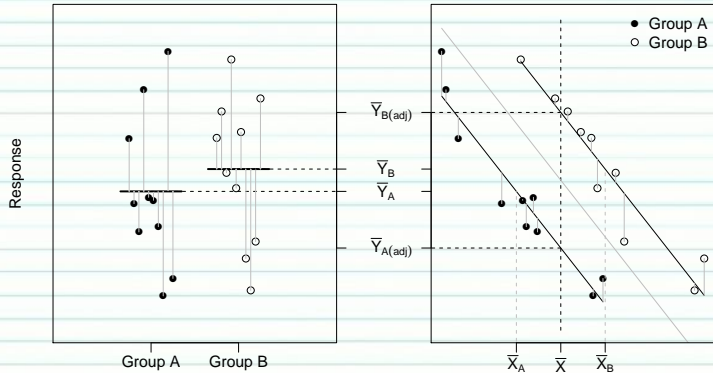


Analysis of Covariance (ANCOVA)

- add continuous covariate
- reduce unexplained variance
- increase power of test



Analysis of Covariance (ANCOVA)

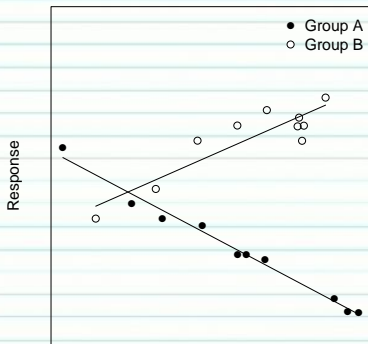


Analysis of Covariance (ANCOVA)

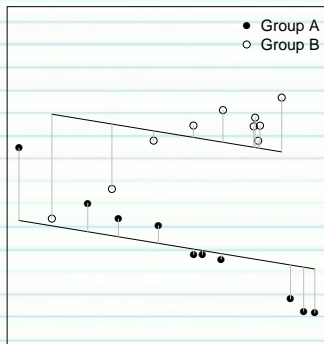
ASSUMPTIONS

1. Normality (residuals)
2. Homogeneity of variance (residuals)
3. Independence
4. Homogeneity of slopes

Homogeneity of Slopes



Covariate



Covariate

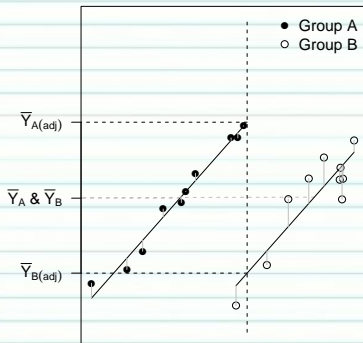
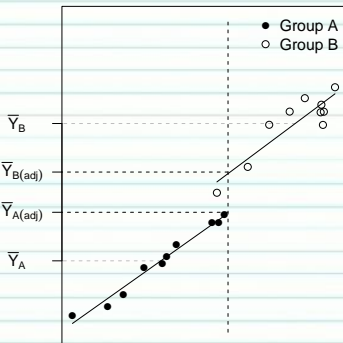
- no interaction effects

Analysis of Covariance (ANCOVA)

ASSUMPTIONS

1. Normality (residuals)
2. Homogeneity of variance (residuals)
3. Independence
4. Homogeneity of slopes
5. Similar covariate range

Covariate range



Analysis of Covariance (ANCOVA)

DESIGN BALANCE

- ANCOVA designs are inherently imbalanced
- Need to use Type II or III SS

Analysis of Covariance (ANCOVA)

OFFSETS

- Standardize the response for a covariate
- Does not cost a degree of freedom

Section 2

Worked Examples

Worked Examples

```
> partridge <- read.csv('../data/partridge1.csv', strip.white=T)
> head(partridge)
```

	TREATMENT	THORAX	LONGEV
1	Preg8	0.64	35
2	Preg8	0.68	37
3	Preg8	0.68	49
4	Preg8	0.72	46
5	Preg8	0.72	63
6	Preg8	0.76	39