

## 0.1 Measures 2

### 0.1.1 Cook's Distance

- For variance components  $\gamma$

Diagnostic tool for variance components

$$C_{\theta i} = ((\hat{\theta})_{[i]} - \hat{\theta})^T \text{cov}(\hat{\theta})^{-1} ((\hat{\theta})_{[i]} - \hat{\theta})$$

### 0.1.2 Variance Ratio

- For fixed effect parameters  $\beta$ .

### 0.1.3 Cook-Weisberg statistic

- For fixed effect parameters  $\beta$ .

### 0.1.4 Andrews-Pregibon statistic

- For fixed effect parameters  $\beta$ .

The Andrews-Pregibon statistic  $AP_i$  is a measure of influence based on the volume of the confidence ellipsoid. The larger this statistic is for observation  $i$ , the stronger the influence that observation will have on the model fit.

## 0.2 Computation and Notation

with  $\mathbf{V}$  unknown, a standard practice for estimating  $\mathbf{X}\beta$  is to estimate the variance components  $\sigma_j^2$ , compute an estimate for  $\mathbf{V}$  and then compute the projector matrix  $A$ ,  $\mathbf{X}\hat{\beta} = A\mathbf{Y}$ .

? remarks that  $\mathbf{D}$  is a block diagonal with the  $i$ -th block being  $u\mathbf{I}$

## 0.3 Measures 2

### 0.3.1 Cook's Distance

- For variance components  $\gamma$

Diagnostic tool for variance components

$$C_{\theta i} = ((\hat{\theta})_{[i]} - \hat{\theta})^T \text{cov}(\hat{\theta})^{-1} ((\hat{\theta})_{[i]} - \hat{\theta})$$

### 0.3.2 Variance Ratio

- For fixed effect parameters  $\beta$ .

### 0.3.3 Cook-Weisberg statistic

- For fixed effect parameters  $\beta$ .

### 0.3.4 Andrews-Pregibon statistic

- For fixed effect parameters  $\beta$ .

The Andrews-Pregibon statistic  $AP_i$  is a measure of influence based on the volume of the confidence ellipsoid. The larger this statistic is for observation  $i$ , the stronger the influence that observation will have on the model fit.