## 0.1 CPJ's Three Propositions

## Proposition 1

$$oldsymbol{V}^{-1} = \left[egin{array}{cc} 
u^{ii} & \lambda_i' \ \lambda_i & \Lambda_{[i]} \end{array}
ight]$$

$$oldsymbol{V}_{[i]}^{-1} = oldsymbol{\Lambda}_{[i]} - rac{\lambda_i \lambda_i'}{\lambda_i}$$

## 0.1.1 Proposition 2

(i) 
$$\boldsymbol{X}_{[i]}^T \boldsymbol{V}_{[i]}^{-1} \boldsymbol{X}_{[i]} = \boldsymbol{X}' \boldsymbol{V}^{-1} \boldsymbol{X}$$

(ii) = 
$$(X'V^{-1}Y)^{-1}$$

(iii) 
$$oldsymbol{X}_{[i]}^T oldsymbol{V}_{[i]}^{-1} oldsymbol{Y}_{[i]} = oldsymbol{X}' oldsymbol{V}^{-1} oldsymbol{Y}$$

## 0.1.2 Proposition 3

This proposition is similar to the formula for the one-step Newtown Raphson estimate of the logistic regression coefficients given by Pregibon (1981) and discussed in Cook Weisberg.