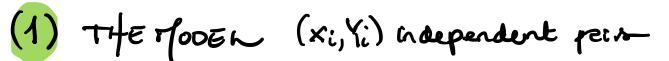
(6)



Yi=xtp+Ei -> GLM:1) Yin faxi) exp.fem E(Yi)= µ; Vo-(Yi)= 52 ε:~ N(0,02) that is Yi~ N(µi=xiTp, oi=o2)

Yi = Xip + Ziyi + Ei E: ~ N(0,02 I) 8:~N(0,a)

$$\mathcal{E}(Y_i) = \mu_i \quad \text{Voc}(Y_i) = 0$$
2) $\gamma_i = x_i^T \beta$
3) $\gamma_i = g(\mu_i)$

द्वापीतः 1) Yij lyi ~ f(yij lyi) exp. fem hij= E(Yij | Yi)

2)
$$\gamma_{ij} = x_{ij} + u_{ij} +$$

Underlying: Univeriete exponential (9+1)×(9+1) family

fy:)=exp(
$$\frac{y:0:-bloi}{\varphi}$$
w: + c($y:,w:,\varphi$)

E(Yi)=b'(61), v=(Yi)=b"(61). w

Cenonical line for Gut

· concare log-l. helihood and \cdot t(β)= $F(\beta)$

1) Yi ~ f(xi) mv. chafe a

3) g(mi)=ni

 $F(\beta) = Cou(S(\beta)) = X^T W X$

no Ru's so H(3)=F(3)

where $F(\beta)=E(H(\beta))=E(\frac{\partial^2 I}{\partial \beta^2 \beta^2})$

find & maximum

 $L(\beta) = \prod_{i=1}^{n} L_i(\beta)$ $\int_{i=1}^{n} g_i \theta_i = \int_{j=1}^{n} \beta_j \sum_{i=1}^{n} g_i x_{ij}$ a) $l(\beta) = \sum_{i=1}^{n} ln L_{i}(\beta) = \sum_{i=1}^{n} \frac{1}{p} ly(\theta_{i}^{i} - bl\theta_{i}))w_{i} + \sum_{i=1}^{n} cly_{i} \frac{1}{p} w_{i}) \sum_{i=1}^{n} \frac{(y_{i} - \mu_{i})x_{i}w_{i}}{p}$

$$(y_{i} \cdot \theta_{i}^{i} - b(\theta_{i})) w_{i} + \sum_{i=1}^{n} C(y_{i}, \phi_{i}, w_{i})$$

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b)
$$S(\beta) = \frac{1}{\beta\beta} = \frac{1}{\beta} \frac{(y_i - \mu_i) \times_i h'(p_i)}{V_{2r}(Y_i)} = X^T D \Sigma^{-1}(y - \mu_i) \Rightarrow Solve S(\beta) = 0$$

but not closed.

$$D = d_i c_{2j} (h'(p_i))$$

Solve for $i = 1$

I = diag (Ver(Yi))

 $\beta = \beta + F(\beta^{(t)})^{-1} S(\beta^{(t)}) = (X^T W(\beta^{(t)}) X)^{-1} X^T W(\beta^{(t)}) \ddot{y}^{(t)}$ $\tilde{y}_{c}^{(t)} = x_{c}^{T} \beta^{(t)} + \frac{y_{c} - h(x_{c}^{T} \beta^{(t)})}{h'(x_{c}^{T} \beta^{(t)})}$

Newton-Rephson: replace F with H.