chegina crowing BIOS LEG HW#5 Due 12/4/17 Step1: Run proc logistic model y=time timex group parameter estimate -2.509 intercept 0.249 time time\* grp 0,266 step 2: ppoc nlmixed set 9=25 up parameters from proc loopstic and given G=[01] SE Estimate (a) parameter 0.478 Bo 4.32 0.173 B 1 -0.0957 B2 0.356 -6.942 NOTE sigma estimates (SE) \*used in sims 3.73 (1.59) sigma " 0,986 (0.356) S Va part -0.0453(0.318) sigmazil sigma 22 (b) interpret Bo, B1, B2 Bo represents time = 0 logit for placebo &1 the difference in time o (baseline) logit due to time The difference in logit due to time for treated patients.

(ης) = β0 + bi+ (p+ bi2) +time + (β2) time group · Pracebo t= 0 => logit = pot bil

E[700] = 0.949

· placebo += 3 => c,1097+ = B o + bil+ (B1+bi2)\* 3 E[Y08] = 0.848

· placebo t=6 = 1000+ = 80 + bil + (B1 + biz) + 6 E[70,0] = 0.719

· Active t=0 => lognt = Bo + bij E[71,0] = 0,949

· Active t= 3 =D 1090+ = Bo + bij + (Bi+biz) 3 + Bz = 3 E [ 7, 3] - 0.621

· Active +=6 = 1097+ = Bo+bi1+(\beta1+bi2) 6+\beta2\*6 E[7,16] = 0.384

(d) Find/compute the marginal currelation matrix for placebo at t=0,3,6

ne Knon

P40.0 = 16,0733

E [6,3] = 6.848

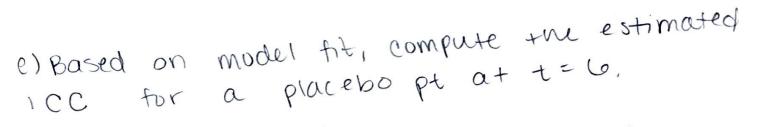
ELY0107=0.719

CON (700, Y03) = 0.0104 =D COV(Y00, Y06) = 0.00718 COV(403,400) = 0.0864

101(1/00) = 0.0481 => VON (Y03) = 0,129 Var (You) = 0.202

Emcontinued.

= correlation:



$$P(-\frac{bi2}{\sqrt{922}}) = \overline{\Phi}(\frac{\beta^2}{\sqrt{922}}) =$$

$$P(-\frac{bi2}{\sqrt{922}}, \frac{\beta^2}{\sqrt{922}}) = \overline{\Phi}(\frac{\beta^2}{\sqrt{922}}) = \overline{\Phi}$$

For placebo 
$$\hat{\theta} = \overline{\Phi} \left( \frac{\beta_2}{\sqrt{322}} \right)$$

$$P(-\frac{bi2}{\sqrt{922}}) = \overline{\Phi}(\frac{\beta^2}{\sqrt{922}}) = \overline{\theta}$$

$$\overline{P}(-\frac{bi2}{\sqrt{922}}) = \overline{\Phi}(\frac{\beta^2}{\sqrt{922}}) = \overline{\theta}(\frac{\beta^2}{\sqrt{922}}) = \overline{\theta}(\frac{\beta^2}{\sqrt$$

# large - sample dist

$$\chi_1^2 = 6.03$$

$$\chi_2^2 = 9.21$$
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 $M_i$ :  $V_{ij} = E [Y_{ij} | b_{i}] = (\beta_i + b_{i}) + (\beta_2 + b_{i}) \times i_j$ 

M2: Nij = E[Tij | bi] = (B, + bi,) + B2 xij

-210gl=1528,2

-210gl =1531.5

1531,5-1528.2=3.3 = test statistic 15

Note p-value = 1/2 P & x 7

3+73727

Since the test statistic 3.3 is less than the calculated  $x_1^2 + x_2^2$  we reject tho.