

$$\chi^2 = 2 \left(\frac{L_a}{L_0} \right) \rightarrow 2(l_a - l_0)$$

$$L = \left(\frac{\alpha \theta^\alpha}{(x_i + \theta)^{\alpha+1}} \right)^{200} = \frac{\alpha^{200} \theta^{200\alpha}}{\prod (x_i + \theta)^{\alpha+1}}$$

$$l = 200 \ln \alpha + 200\alpha \ln \theta - (\alpha+1) \sum (x_i + \theta)$$

$$l_0 = 200 \ln(1.5) + 200(1.5) \ln(7.8) - 2.5(607.64)$$

$$l_a = -817.92 \quad l_0 = -821.77$$

$$\chi^2 = 2(-817.92 - (-821.77)) = 7.7$$

$$H_0: \text{Pareto} \sim (1.5, 7.8)$$

$$H_a: \text{Pareto} \sim (1.4, 7.6)$$

$$df = 2 - 0$$

$$df = 2$$

reject at .025% level
but not 1%.