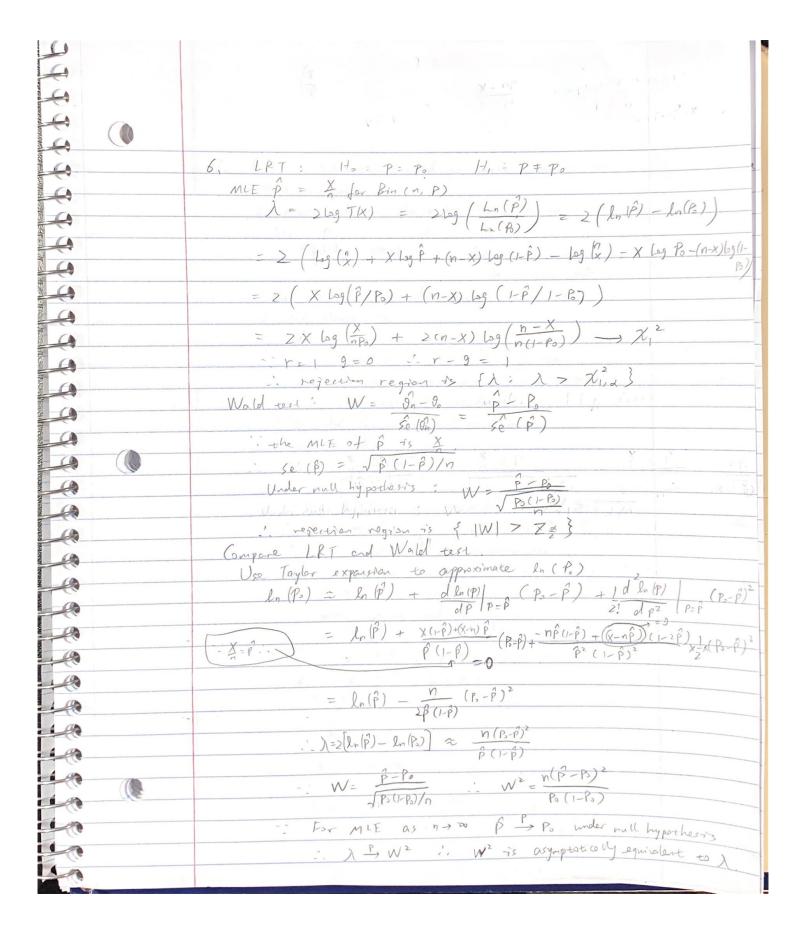


STAT 201B Homework 3 by Hanze Yao

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Q5 (b) \\ lambda0 <-1 \\ n <-20 \\ alpha <-0.05 \\ B <-10000 \# Run Wald test 10000 times. \\ W <- rep(0, B) \\ for (i in 1:B) {X <- rpois(n, lambda0) \# Generate n random variables iid poisson distribution. } W[i] <- (mean(X) - lambda0) / sqrt(mean(X) / n) \\ } \\ num_rejection <- sum(abs(W) > qnorm(1 - alpha / 2)) \\ type_one_error_rate <- num_rejection / B \\ > num_rejection \\ [1] 495 \\ > type_one_error_rate \\ [1] 0.0495 \\ \\
```



For this question, I need to test whether the holiday can postpore people's death, so define I as the probability of people die after the holiday Ho: 0= + H1: 0 > 2 (holiday no effect) (boliday has effect, then people afternore after whiday >0 2 } Because non consider this as a promoval distribution 4 · Use World test W = 6n - 00 = x - \(\frac{1}{2}\) (under null hypscheris) Se (ôn) (Vz(+z)/n => should be se (00) -Where X is rondom variable that represents the number of people dre after the holiday. Then the observed hald test whe is: = = 1,712 V= (1- 1)/1819 -H1: 0 > 1 but not 0 + 2 . W > 0 This is a one-side '. p-value = Po-1 (W/>IWI) = Po-1 (W>W) wald test is asymptotically normal 1- \$ (1.712) = 0.093 (\$ is the CPF of N(0,1)) 1 0.073 is the smallest level at which we can reject Ho with w observed i. The rull hypothesis can be rejected 1 at level 0.05. -X1 -- X 200 f(x; F) = Be-BX (x>0, F>0) XI -- Xn Zid Exp (B) E(X) = 1 MLE for E(X) is Xn :- MLE for B 10 $\frac{1}{2} \cdot \frac{1}{2} = 2 \log T(X) = 2 \log \frac{\ln(R)}{\ln(R)} = 2 (\ln(R) - \ln(R))$ -: ln(F) = leg (TI Be- BX;) = n log B - B = X; A = 2 (-n log Xn -n - nlog Po + Po Xi Xi) = 2n(P. Xn - log F. Xn -1) -> X2 Find X1, or such that P (N < X1, d) = 1-d, then reject mill hypothesis