May 10, 2004

STATISTICS 608: “Typos” in handwritten notes and a few additional comments. The majority of the typos were picked up and noted in class during the lectures.

p. 91. See separate page that was handed out fixing up a couple of things in the representation of the bivariate normal.

p. 94, line -5. Eliminate extra - sign in third part of expression.

p. 94 In line 3, for assumption A2, the right side should not be written as $E[\theta/\theta S(\theta, X)]$. See Lemma 7.3.11 for original form of right side.

p. 101. In computing $I_1$, in three places (in $S, I_1$ and $-E(H)$) an $n$ should be a 1.

p. 103. In line -5, in the denominator, the $\lambda^t$ should be $(\lambda n)^t$ and in line -4, there should be an $n^t$ in denominator.

p. 107. See separate page that was handed out fixing up a couple of things in the representation of the bivariate normal.

p. 109, line 5. It is $H_0 : \mu = \mu_0$.

p. 109. $\log(\lambda(x))$ in middle of page. sign on second term should be switched from - to + and sign on fourth term from + to -.

Bottom of OS1 to top of OS2, see separate sheet more carefully deriving the joint distribution of the order statistics.

P. OS4. AT bottom we have used that $(1+a_n/n)^n$ converges to $e^1$ as $n \to \infty$, if $a_n \to a$.

p. 106, line -8. $\phi(T)$ is UMVUE for $\tau(\theta)$.

p. 107, line 7. Should be if $|J(\theta)| \neq 0, \theta \in \Theta^+$.

p. 108. The “since $\bar{x} > \mu_0$ is relevant for what follows at top of next page, not what preceded it.

p. 109. Near bottom, the comment of not being able to achieve a test of size $\alpha$ assumes we are not allowing randomized test.

p. 110, line -2, $f(x|\theta_1) \geq (1/c)f(x|\theta_0)$.

p. 111, line 6. should be $\sum_{j=1}^{m}(y_j - \hat{\mu})^2$. 

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p. 113. first line. The exponents should have plus signs since already accounted for reciprocals.

p. 113. In $C$ the upper bound on the sum is $G$ not $J$.

p. 114, line -2. multiply term on the right by $k$.

p. 115. In table near top, the last term is 0 rather than 1.

p. 119. The various sums and products run from $\gamma = 1$ to $r$.

p. 123. On very last line, the stuff with $C$ should have been eliminated. See top of next page, 123.5 for correct statements. Also, on page 123, we did not try and prove that $C$, which was written in matrix form at first actually equals $\sum_{j=1}^{G} n_j (\bar{X}_j - \bar{X})^2 / S^2$, where $\bar{X}$ is the overall mean. This is tedious to show directly through the matrix expressions. There are other, cuter ways that rely on results from Linear Models.

p. 125, In the second table on the page, the top entries are $RU(\theta_0)$, while the bottom ones are $RL(\theta_0)$.

p. 125 on graph at the bottom. The arrow pointing to where $\theta^*$ where $P_{\theta^*}(X \leq 1) = \alpha/2$ should be between .6 and .7.

p.126. The reference to T9.2.3 should be 9.2.14.

p.127. The reference to T9.2.2 should be 9.2.12.

p. 130. In three places, lines 8, 9, and 14, $P_{\eta_j}()$ should be $P_{\eta}(())$.

p.133 At the bottom: If $[L, U]$ contains 0, then the confidence set is $(-\infty, 1/L] \cup (1/U, \infty)$. If $L < U < 0$, then with change in sign the interval for $1/\mu$ is still $[1/U, 1/L]$ since $1/U$ is still less than $1/L$.

p. 134. In line -3 it should be $\bar{X} + t_{n-1, 1-\alpha} \bar{X}$ and in the length the last term is $-t_{n-1, 1-\alpha}$.

p. 136 at Bottom. The last line is just saying that the definition of an unbiased confidence set in the line preceding it does not apply when the set is a one-sided interval. The definition for these is at top of the next page.

p. 137. Line 3, at end it is if $\pi_{\theta}(\eta') \leq \pi_{\theta}(\eta)$.

p. 146. Line 3 after the tables. “... $(N_{k1}, \ldots, N_{KJ})$ are multinomial ...”. (Change G to J).
p. 148. In the example, for the model to make sense, there would need to be either one supervisor looking at all 48 folders, or 48 supervisors, each looking at one folder (either, with no difference in how supervisors behave or with the 48 supervisors viewed as a random sample of supervisors). If there are multiple supervisors looking at multiple folders it is a type of repeated measures problem and further modeling discussion is needed.

p. 152. A bit up from the bottom. $H(\hat{\beta}) = 2D'D$. Add the two. Don’t really need the $\beta$ here since Hessian is free of $\beta$ in the linear case.

p. 154 $Cov(\hat{\beta}_0, \hat{\beta}_1) = -\sigma^2 \bar{x}/S_{xx}$ (add the $\sigma^2$.)

p. 155. Newton Raphson is $\hat{\beta}_{k+1} = \hat{\beta}_k + 2(H(\hat{\beta}_k))^{-1} r_k$. Gauss-Newton replaces $H(\hat{\beta}_k)$ with $2D(\hat{\beta}_k)'D(\hat{\beta}_k)$.

p. 168a. The mean of the posterior is $\alpha* / (\alpha* + \beta*)$, which is

$$\frac{10 + \alpha}{100 + \alpha + \beta}.$$ 

So, with uniform prior the mean of the posterior is $11/102 = .108$ (not .12). On extra page, if we sequentially feed the posterior back into the prior and do this $k$ times, the mean of the posterior converges to .1 as $k \to \infty$.

p. 171, line -2 It is the posterior distribution of $\theta, \sigma^2|\bar{x}$.

p. 171.5 In bottom half of the page, the improper prior $\pi(\theta, \sigma^2) = c/\sigma^2$ comes essentially from thinking of $(\theta, \log(\sigma^2))$ as distributed uniform. ($\log(\sigma^2)$ rather than $\log(\sigma)$).

p. 177, a couple of lines from the bottom: a term $2\alpha s$ should be $2\alpha \beta$. 