

Statistical Methods for Reliability Data

Meeker and Escobar (1998)

Errors in the first and second printing

May 11, 2001

1. (RL). Page 30, lines 4–5: Change “if $F(t_2) - F(t_1)$ is small (say, less than .1), then” to “if $S(t_2)/S(t_1)$ is large (say, larger than .9), then”
2. (RL) Page 30, line 6: Change equation (2.3) to

$$\text{AHR}(t_1, t_2) \approx \frac{F(t_2) - F(t_1)}{(t_2 - t_1) S(t_1)}. \quad (2.3)$$

3. (RL). Page 30, line –1: Change 217 to 21.7
4. Page 42, line –5: Change “this probabilities” to “these probabilities”
5. (NT). Page 58, Table 3.3, second entry under the heading Pointwise Confidence Intervals: Change “[.0004, .0133]” to “[.0003, .0263]”
6. (CA). Page 60, line –2: Change “imultaneous” to “simultaneous”
7. (RL). Page 64 line 13: Change “biased upward” to “biased downward”
8. (RL). Page 64 line 15: Change “biased downward” to “biased upward”
9. (RL). Page 64 line 15: Change $\hat{p}_i = d_i(n_i - r_i)$ to $\hat{p}_i = d_i/(n_i - r_i)$
10. (RL). Page 66 line 5: Change (3.19) to (3.16)
11. Page 70, line –3: Change “Figure 3.4” to “Figure 3.1”
12. Page 73, line 4 in Exercise 3.22: Change $L(\underline{\pi})$ to $L(\boldsymbol{\pi})$

The corrected equation is

$$L(\boldsymbol{\pi}) = \pi_1^{d_1} \times \pi_2^{d_2} \times \cdots \times \pi_m^{d_m} \times [S(t_1)]^{r_1} \times [S(t_2)]^{r_2} \times \cdots \times [S(t_m)]^{r_m}.$$

13. Page 77, equation (4.3): Change $F(t)$ to $F(t; \boldsymbol{\theta})$

The corrected equation is

$$E(T) = \int_0^\infty t f(t; \boldsymbol{\theta}) dt = \int_0^\infty [1 - F(t; \boldsymbol{\theta})] dt \quad (4.3)$$

14. Page 100, line –8: Change $\text{WEIB}(\theta, \beta)$ to $\text{WEIB}[\log(\theta), 1/\beta]$.
15. Page 103, line –9: Change $\text{WEIB}(\exp(\mu), 1/\sigma)$ to $\text{WEIB}(\mu, \sigma)$.
16. Page 141, line –15: Change “it helpful” to “it is helpful”
17. (JP). Page 159, line 2: Change “Section 7.3” to “Section 7.4.2”
18. (MB). Page 161, line –13: Change “yes/no result of an significance” to “yes/no result of a significance”
19. Page 166, equation (7.16): Change $\left[-\frac{d^2\mathcal{L}(\theta)}{d\theta^2}\right]^{-1}$ to $\left[-\frac{d^2\mathcal{L}(\theta)}{d\theta^2}\right]^{-1}\Big|_{\hat{\theta}}$

The corrected equation is

$$\widehat{\text{se}}_{\hat{\theta}} = \sqrt{\left[-\frac{d^2\mathcal{L}(\theta)}{d\theta^2}\right]^{-1}\Big|_{\hat{\theta}}} = \sqrt{\frac{\widehat{\theta}^2}{r}} = \frac{\hat{\theta}}{\sqrt{r}} \quad (7.16)$$

20. Page 167, Example 7.13. Change
 “The failure times were recorded as 1.08, 12.20, 17.80, 19.10, 26.00, 27.90, 28.20, 32.20, 35.90, 43.50, 44.00, 45.20, 45.70, 46.30, and 47.80 hours. The total time on test for these data is $1.08 + 12.20 + \cdots + 47.80 + 10 \times 47.80 = 950.88$ hours.”
 to
 “The failure times were recorded as 1.15, 3.16, 10.38, 10.75, 12.53, 16.74, 22.54, 25.01, 33.02, 33.93, 36.17, 39.06, 44.56, 46.65, and 55.93 hours. The total time on test for these data is $1.15 + 3.16 + \cdots + 55.93 + 10 \times 55.93 = 950.88$ hours.”
21. Page 170, line –17: Change “simpler” to “similar”
22. (RL). Page 192, line –11: Change $L(\mu)$ to $\mathcal{L}(\mu)$
23. Page 195, last line: Change “an approximate” to “a conservative”
24. (KR). Page 202 Exercise 8.21: Change “Section 8.5.1” to “Section 8.5.2”
25. (JP). Page 215, line 1: Change .07316 to .07317 in both expressions.
26. Page 220, third line in the Caption of Figure 9.12: Change “.5/ n_i ” to “.5/ n_1 ”

27. (RL). Page 226, line –4: Change “is the bootstrap sample” to “are the bootstrap sample estimates”
28. (RL). Page 227, line 1: Change “is the bootstrap sample” to “are the bootstrap sample estimates”
29. (HK). Page 242, line 12: Change $V_{\exp(\hat{g})} = g^2 V_{\hat{g}}$ to $V_{\exp(\hat{g})} = \exp(2g) V_{\hat{g}}$
30. (YH). Page 245, equation (10.9): Remove σ^2 from the denominators in all three terms inside the square brackets.

The corrected equation is

$$V_{\log(\hat{h})} = \frac{1}{h^2} V_{\hat{h}} = \frac{1}{h^2} \left[\left(\frac{\partial h}{\partial \mu} \right)^2 V_{\hat{\mu}} + \left(\frac{\partial h}{\partial \sigma} \right)^2 V_{\hat{\sigma}} + 2 \left(\frac{\partial h}{\partial \mu} \right) \left(\frac{\partial h}{\partial \sigma} \right) V_{(\hat{\mu}, \hat{\sigma})} \right] \quad (10.9)$$

31. Page 249, horizontal axis label of Figure 10.10: Change “Test Length as a Factor of Life Length Specification” to “Test-Length Factor k ”
32. (HK). Page 251, line –6: Change “Escobar and Meeker (1997)” to “Escobar and Meeker (1998d)”
33. (MB). Page 275, line 10. Change: “density approximation defined” to “the density approximation defined”
34. Page 303, line 4: Change “calibration curves” to “calibration curve”
35. Page 303, line 5: Change “Operationally,” to “For Example,”
36. Page 303, line 6: Change “one-sided prediction” to “one-sided lower prediction”
37. Page 370, line –15: Omit the word “independent.”
38. (JP). Page 378, line 3: Switch the indexes i and j on the products of the displayed equation. The corrected equation is

$$F_T(t) = 1 - \prod_{j=1}^k \left(1 - \prod_{i=1}^r F_{ij} \right).$$

39. (JP). Page 379, equation (15.6): Change the index j in the summation from $j = k$ to $j = s - k + 1$

The corrected equation is

$$F_T(t) = \sum_{j=s-k+1}^s \left\{ \sum_{\delta \in A_j} \left[\prod_{i=1}^s F_i^{\delta_i} (1 - F_i)^{(1-\delta_i)} \right] \right\} \quad (15.6)$$

40. (JP). Page 380, line 3: Change the index j in the summations from $j = s$ to $j = s - k + 1$

The corrected equation is: $F_T(t) = \sum_{j=s-k+1}^s \binom{s}{j} F^j (1 - F)^{s-j}$

41. Page 379, last line (caption of Figure 15.10): Change “A k -out-of- s system structure” to “A 2-out-of-3 system structure”

42. (JP). Page 450, Table 17.4:

- The ML Estimate of β_1 for Model 1: Change $-.02$ to $-.03$
- Also, the ML Estimate of β_3 for Model 2: Change $.000082$ to $-.000082$

43. (KR). Page 504 Example 19.10, line -5 : Remove the unnecessary) after 18.4.2

44. (KR). Page 509, Table 19.4, at 250°C : Change 7.87 to $.87$

45. (ET). Page 511, line -5 : Change “similar to Figure 19.12” to “similar to Figure 19.13”

46. (HK). Page 513, Figure 19.16: Change “45 cen” to “49 cen”

47. (QJ). Page 514, line 1: Change “Figure 19.6” to “Figure 19.16”

48. (ET). Page 524, line 4: Change “relationship if” to “relationship is”

49. (CJ). Pages 552 and 553. Change x_{1L} to x_{1U} and x_{2L} to x_{2U} in equations (20.3), (20.5), (20.6), (20.7), and (20.8). The corrected equations are

$$\xi_{1L} = \xi_{2L} = \frac{\sigma(\zeta_U - \zeta_L)}{(x_{1H} - x_{1U})\beta_1 + (x_{2H} - x_{2U})\beta_2}. \quad (20.3)$$

$$\xi_{1L1} = \frac{\sigma(\zeta_U - \zeta_L) - (x_{2H} - x_{2U})\beta_2}{(x_{1H} - x_{1U})\beta_1}. \quad (20.5)$$

$$\xi_{2L1} = \frac{\sigma(\zeta_U - \zeta_L) - (x_{1H} - x_{1U})\beta_1\xi_{1A}}{(x_{2H} - x_{2U})\beta_2}. \quad (20.6)$$

$$\xi_{1L2} = \frac{\sigma(\zeta_U - \zeta_L) - (x_{2H} - x_{2U})\beta_2\xi_{2A}}{(x_{1H} - x_{1U})\beta_1}. \quad (20.7)$$

$$\xi_{2L2} = \frac{\sigma(\zeta_U - \zeta_L) - (x_{1H} - x_{1U})\beta_1}{(x_{2H} - x_{2U})\beta_2}. \quad (20.8)$$

50. (CJ). Page 553, third line above Table 20.5: Change $\xi_{1A} = 0$ to $\xi_{2A} = 0$

51. Page 574, line -4: what we really did was “path on the linear-linear scale (Figure 21.11)” (but this is not the best model to fit)

52. (FS). Page 680: Change

Zero-failure
confidence bounds, 147, 195

to

Zero-failure
confidence bounds, 167–168, 195

53. (CA). Back Cover, fourth line into William Q. Meeker biography: Change “Youdan” to “Youden”

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