Statistics 521

Wellner, 11/16/98

Typos in Chapters 1-5 and 9 (so far) and Suggested Minor Revisions

1. page 3: Prop 1.1.(j) equation (4): change "subsets of $\mathcal{A}$" to "subsets of Ω".

2. page 3: Definition 1.3.(j): Maybe "A subset A of Ω" or "An arbitrary subset A of Ω" would be better.

3. page 4: last line of "Motivation 1.2", just before Example 1.1: change "subets" to "subsets".

4. page 6: proof of proposition 1.3: in (a), change $\sum_1^n A_n$ to $\sum_1^n A_k$.

5. page 9: Proof, part (b), in the step from 2nd line $\mu^*(TB_n) + \mu^*(TA^c)$" to the 3rd line $\mu^*(TB_nA_1) + \ldots$, the $\geq$ can be replaced by $=$. $\geq$ is true and doesn't hurt, but $=$ is also true.

6. page 9: Proof, part (b) just below the preceding item, change $A \in \mathcal{A}$ to $A \in \mathcal{A}^*$.

7. page 14, line -4: change "fine" to "finite".

8. page 22, line -3: change $[-\infty, b) = \cup_{n=1}^{\infty}[-\infty, b + 1/n]$ to $[-\infty, b) = \cup_{n=1}^{\infty}[-\infty, b - 1/n]$.

9. page 24, line -6: change "Suppose $(\Omega, \mathcal{A}, \mu)$..." to "Suppose $X : (\Omega, \mathcal{A}, \mu)$..."

10. page 25, Proposition 2.5: change "Suppose that Z is a rv" to "Suppose that Z is a measurable function".

11. page 25, -14: change "hold" to "holds".

12. page 25, Exercise 2.2 (Verification criterion): change (18) to: if $V_n \in \mathcal{V}$ satisfy $V_n \uparrow V$, then $V \in \mathcal{V}$; in particular, if $A_n \nearrow A$ with $1_{A_n} \in \mathcal{V}$, then $1_A \in \mathcal{V}$.

13. page 27, exercise 2.3.1: in the first line, change "$(\Omega, \mathcal{A}, P)$" to "$(\Omega, \mathcal{A}, \mu)$".

14. page 28, (5): change $X_n \to_{a.s.}$ to $X_n \to_{a.e.}$; change $|X_m - X_n|$ to $|X_m - X|$; also make the second change in (6).

15. page 31, line 1: change "sueful" to "useful".

16. page 31, line 5: change "probvability" to "probability".

17. page 37, line 4: change (7) to read as follows:

$$\int 2Y = \int \liminf(2Y - Z_n) \leq \liminf \int (2Y - Z_n) = \int 2Y - \limsup \int Z_n \,,$$

and hence $\limsup \int Z_n d\mu \leq 0$.

18. page 38, line 4: either reverse the inequality in the middle of this display, or (better!) change the display to

$$\begin{aligned} \int (2Y - 0) &= \int \liminf(2Y - Z_n) \leq \liminf \int (2Y - Z_n) \\ &= \liminf(\int 2Y - \int Z_n) = \int 2Y - \limsup \int Z_n \,, \end{aligned}$$

and then simplify the conclusion in the next line to just $\limsup \int Z_n d\mu \leq 0$.

19. page 39, line -2: change "Let $\mu_0 = \mu|_{\mathcal{A}}$" to "Let $\mu_0 = \mu|_{\mathcal{A}_0}$".

20. page 42, line -3: change $Cov[X, Y] = Var[X]$ to $Cov[X, X] = Var[X]$.

21. page 44, just before inequality 4.5: insert the following **Exercise:** (Littlewood's inequality) Let $\mu_r \equiv E|X|^r$. For $r \geq s \geq t \geq 0$ we have $\mu_r^{s-t} \mu_t^{r-s} \geq \mu_s^{r-t}$.

22. page 45, line -3: change $u^\alpha v^{\alpha-1}$ to $u^\alpha v^{1-\alpha}$ to

23. page 49, (15): change "unifrom" to "uniform".

24. page 55, line -3: change $\int$ to $\int_A$ three times.

25. page 58, line 9: in the definition of A_k, change $max_{1 \le k < j} Z_j$ to $max_{1 \le j < k} Z_j$; also note that the inclusion of this is crucial to make the A_k's form a partition of Ω.

26. page 58, line -7: change the inequality sign $\le$ in the line before (h) to an equality sign; change the first equality sign in (h) to a $\le$ sign.

27. page 59, (k) and (l): replace by the following:

$$\begin{aligned}
\phi_{ac}(A) &= \int_A Z_0 d\mu = \int_{A\Omega^-} Z_0 d\mu \qquad \text{since } \mu(\Omega^+) = 0 \\
&= \phi_{ac}(A\Omega^-) \\
&= \phi_{ac}(A\Omega^-\overline{\Omega}^-) + \phi_{ac}(A\Omega^-\overline{\Omega}^+) \\
&= \phi_{ac}(A\Omega^-\overline{\Omega}^-) + \int_{A\Omega^-\overline{\Omega}^+} Z_0 d\mu \\
&= \phi_{ac}(A\Omega^-\overline{\Omega}^-) \qquad \text{since } \mu(\overline{\Omega}^+) = 0 \\
&= \phi(A\Omega^-\overline{\Omega}^-) - \phi_s(A\Omega^-\overline{\Omega}^-) \\
&= \phi(A\Omega^-\overline{\Omega}^-) \qquad \text{since } \phi_s(\Omega^-) = 0 \\
&= \overline{\phi}(A\Omega^-\overline{\Omega}^-) \qquad \text{by hypothesis} \\
&= \overline{\phi}_{ac}(A) \qquad \text{by repeating the above steps in reverse}
\end{aligned}$$

28. page 60, line 3: change "for some" to "for".

29. page 61, (5): change "a.e. ν" to "a.e. μ".

30. page 61, (6): change "a.e. μ" to "a.e. ν".

31. page 61, Exercise 2.2: I would advocate replacing this exercise by the following: "Let P_{μ,σ^2} denote the $N(\mu, \sigma^2)$ distribution on R.
(a) Show that $P_{\mu,1} \ll P_{0,1}$ and compute $dP_{\mu,1}/dP_{0,1}$.
(b) Show that $P_{0,\sigma^2} \ll P_{0,1}$ and compute $dP_{0,\sigma^2}/dP_{0,1}$.

32. page 61, Exercise 2.3: Because P is not absolutely continuous with respect to either Lebesgue measure or counting measure, I would advocate changing this to read as follows:
(a) Let μ be Lebesgue measure on R. Find the Lebesgue decomposition of P with respect to μ, $P = P_{ac} + P_s$.
(b) Repeat (a) with μ being counting measure on $\{0, 1, 2, \ldots\}$.

33. page 62, line 7: change x to x (after "differentiable at").

34. page 71, (1): change the last A' to A_i'.

35. page 71, (2) +1: change "T he" to "The".

36. page 72, line 5: change "Carethéodory" to "Carathéodory".

37. page 73, line 12: change "monotonicly" to "monotonically" twice.

38. page 74, line 9: change "interated" to "iterated".

39. page 98, line -15: change $\mu_c(x, y]$ to $\mu_{ac}(x, y]$.

40. page 112, line -3: change "materail" to "material".

41. page 133, lines 5-6: change "occurence" to "occurrence" four times.

42. page 133, line 14: change $A_i \in \mathcal{A}$ to $A_i \in \mathcal{A}_i$.

43. page 133, line -5: add after "if and only if", "... , for each $k = 1, \ldots, n$,"

44. page 156, formula (6): change $\binom{N}{k}$ to $\binom{N}{n}$.

45. page 156, line -1: change Hypergeometric$(m+n, k, m)$ to Hypergeometric$(m+n, m, k)$.

46. page 163, formula (9): on the right side replace $\int_0^\infty y f_X(yz)dy$ by $\int_0^\infty y f_X(yz) f_Y(y)dy$.

47. page 166, line -4: change "Since $Y^{(1)} = Z^{(1)} + \ldots$" to $Y^{(1)} = \mu^{(1)} + Z^{(1)} + \ldots$.

48. page 134, line 3: change "then" to "than".

49. page 173, line 4: change "test" to "text".

50. page 183, line 1: change "unifrom" to "uniform".