Mathematical Statistics with Resampling and R, (First Edition). By Laura Chihara and Tim Hesterberg

Errata (12 February 2014)

Page xiii, paragraph 2, change Waldrop to Wardrop.
Page 6, First sentence in Section 1.7. Whom do you plan to vote for...

Page 23, line 1 and 3. The pdf should be $f(x) = 3e^{-3x}$.

Page 26, line 11. `R` Note. The command `abline(v = 25, col= "red")` should be deleted.
line 26, the legend command should be
`legend(5, .8, legend=c("Males", "Females"), ...)`

Page 29, line -2. "while a variable with negative kurtosis is flatter"...

Page 30, Exercise 3c Are there any conditions that would ensure that $f(\bar{x})$ is the mean of the transformed data?

Page 42, Figure 3.3. The vertical line should be at 5.2

Page 43, Third line of Remark: $p = P(\bar{X}_1 - \bar{X}_2 \geq \bar{x}_1 - \bar{x}_2)$.

Page 53, line -4. $87 \times 409/1307 = 27.2249$.
Table 3.4 The Row Sum for Graduate is 114.

Page 54, Table 3.5 The Oppose column for HS should be 222.4935 and JrCol should be JrCol=27.2249.

Page 58 `R` Note `1-pchisq(23.45, 4)`

Page 65, Table, 3rd observed count should be 22, not 28.

Page 65 Test statistic, the third term should be $(22 - 18.6)^2/18.6$ so the sum is 7.53. Hence the P-value = 0.56 so it is plausible that the data do come from Exp(1).

Page 67, line 2. $P(X = x) = \lambda^x e^{-\lambda}/x!$

Page 91 Equation 4.5: $\approx \Phi(z) - \frac{\kappa_3}{6\sqrt{n}}(z^2 - 1)\Phi'(z)$
Page 91 phrase under Equation (4.5): $\Phi(z)$ is the standard normal CDF (not "density").

Page 97, Exercise 29(c). Delete $\mathrm{E}[(X - \mu)^3] = 1/160$.

Page 130, Exercise 6(a): k_2 occurrences of a_2.

Page 139, line 2 from bottom, need a minus sign in the exponent of the exponential density, $\lambda e^{-\lambda x}$.

Page 143, Equation 6.8
$1/\sigma^3$, not $1/2\sigma^4$.

Page 145, Equation (6.10)
Change $n\ln(k)$ to $n\ln(\lambda)$:

$$\frac{\partial(\ln(L(k,\lambda)))}{\partial k} = \frac{n}{k} - n\ln(\lambda) + \sum_{i=1}^{n}\ln(x_i) - \sum_{i=1}^{n}\left(\frac{x_i}{\lambda}\right)^k \ln\left(\frac{x_i}{\lambda}\right) = 0$$

Page 145, Equation (6.13)
The middle term needs a factor $(1/n)$:

$$\frac{1}{k} + \frac{1}{n}\sum_{i=1}^{n}\ln(x_i) - \frac{1}{\alpha}\sum_{i=1}^{n}x_i^k\ln(x_i) = 0$$

Page 152, Example 6.13 second paragraph, 25/24 should be 26/25 and in the R Note:

```
my.max[i] <- 26/25 * max(x)
```

Page 191 Non-numbered equation above (7.17):

$$\left(\frac{n}{1.96^2}+1\right)p^2 - \left(\frac{2n\hat{p}}{1.96^2}+1\right)p + \frac{n\hat{p}^2}{1.96^2} = 0$$

Page 193, Remark (2nd bullet): Center of the score interval is
$\hat{p} + q^2/(2n)(1 + q^2/n)$.

Page 194, Example 7.19
0.05 under radical sign should be 0.5.

$$1.96\sqrt{\frac{0.5(1-0.5)}{\tilde{n}}} \leq 0.04$$

Page 196 First occurrence of T. $\bar{x}$ should be $\bar{X}$.

Page 208 # 34. see Exercise 11 in Appendix B Probability distributions

Page 226 Example 8.12 The final probability should be 0.0736

```
> sum(dbinom(5:8, 8, 0.3185))
> 1- pbinom(4, 8, 0.3185)     #alternatively...
```

Page 244 Exercises # 28, 29. Include a graph similar to Figure 8.5.

Page 270, Theorem 9.4 (4) $\text{Var}[\hat{\alpha}] = \sigma^2\left[1/n + \bar{x}^2/ss_x\right]$

Page 294, Exercise 5
$\text{Cov}[X, Z] = -4$ (not $\text{Cov}[X, Z =] - 4$).

Page 309, Top Box: "The posterior distribution..." (not "prior").

Page 325, Exercise 9. The prior should be $\mu \sim N(0.72, 0.08^2)$.

Page 337, line 1, $r = \mu_Y/\mu_X$.

Page 337, the paragraph before Equation (11.6) should read:
Using only the first approximation in Equation 11.5, $\bar{Y}/\bar{X} \approx r = \mu_Y/\mu_X$, suggests that the estimate is consistent.

Page 337, after Equation (11.6), change the rest of the paragraph to read: is a constant plus the difference of two sample means (times constants). The mean of the expression is r, and variance is $\text{Var}[\bar{Y} - r\bar{X}]/(\mu_X^2)$. We consider two important special cases. In the case of two independent samples, the variance is $(\sigma_Y^2/n_Y + r^2\sigma_X^2/nX)/(\mu_X^2)$. In the case of paired bivariate observations, the variance is $\text{Var}[Y - rX]/(n\mu_X^2)$.

Page 351 Equation (11.20)

$$g(x) = \begin{cases} \lambda \exp\left(-\lambda(x - 700)\right) & x \geq 700 \\ 0 & x < 700 \end{cases}$$

Page 364, Example A.1 $\int_0^x \lambda e^{-\lambda t}\, dt$

Page 394, Exercise 14

Prove that the expected value of $X \sim F_{m,n}$ is $n/(n-2)$ for $n > 2$.

Page 396, pmf for Binomial $\binom{n}{x}p^x(1-p)^{n-1}$
Geometric $(1-p)^{x-1}p$

Page 398, pdf for the gamma $(1-t/\lambda)^{-r}$
for uniform distribution $\frac{e^{bt}-e^{at}}{(b-a)t}$

Solutions to Odd Exercises

Page 399, Chapter 2 # 3 (d): f is an increasing (or decreasing) function and n is odd, or f is linear.

Page 399, Chapter 2 #5(a) Favor: 899, Oppose 409

Page 400 Chapter 2, # 15. Solution is a graph (not numbers as given in the back).

Page 400, Chapter 3 1.(b) The P-value is $2/10 = 0.2$.

Page 401, 23(a) Last sentence: "Conclude that the data do not come from $N(25, 10^2)$."

Page 401, Chapter 4
Page 401 3(a): Sampling distribution of $X+Y$ is $\{6, 8, 8, 9, 10, 10, 10, 11, 12, 12, 13, 14\}$.
11. $n = 90$.

The numbering is off—delete the current # 17 (that is, delete 17. (c) 0.506) and renumber those following by 17, 19, 21, 23, 25, 27.

Page 402, Chapter 5
Page 402, Chapter 5 # 17(c) 1.63

Page 402, Chapter 6 # 17. $C = 14.217$, so successive earthquakes do not follow the Weibull distribution.

Page 402, Chapter 6 # 27b $(\sigma^4/n^2)2(n-1)$.

Page 403, Chapter 6 # 33b Bias $-17/(27\theta)$, MSE $589/2 \cdot 9^3\theta^2)$

Page 403, Chapter 7 # 7 118.01

Page 403, Chapter 7 # 13b $(11.46664, \text{inf})$. We are 95% confident that, on average, seedlings grown in fertilized plots grew at least 11.5cm more than seedlings grown in non-fertilized plots.

Page 403, Chapter 7 # 21a. 1064

Page 404, Chapter 8 # 23b 0.473

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Page 404, Chapter 9 # 3: 133

Page 405, Chapter 10 # 15. (a) $f(\theta) = 1/\theta^n$, where $\theta > \max\{X_1, X_2, \ldots, X_N\}$.
(b) Pareto distribution with parameters $\alpha+N$, where $\theta > \max\{\beta, X_1, X_2, \ldots, X_N\}$.
(c) 0.17.

Page 405, Chapter 10 # 17. (a) The typesetting for the exponential is bad. Should be closer to $\theta^n \, e^{\theta \sum_{i=1}^{n} X_i}$.

Bibliography
Page 411, last line, change Waldrop to Wardrop.

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