

**ERRATA FOR THE OTT/LONGNECKER BOOK  
AN INTRODUCTION TO  
STATISTICAL METHODS AND DATA ANALYSIS  
(Some of these typos have been corrected in later printings)**

- **Page: xiv, Line: 15**↓ ; Replace “these” with “the”
- **Page: xiv, Line: 7**↑ ; Insert “analysis” after “statistical”
- **Page: 3, Line: 24**↑ ; Replace “13 Building ...” with “13 More on Multiple Regression”
- **Page: 3, Line: 7**↑ ; Replace “three” with “four”
- **Page: 6, Line: 4**↓ ; Replace “two good” with “many”
- **Page: 9, Line: 15**↓ ; Replace “that exceed” with “in exceeding”
- **Page: 13, Line: 11**↓ ; Replace “Merek” with “Eli Lilly”
- **Page: 83, Line: 3**↓ ; Delete both occurrences of “unimodal,”
- **Page: 83, Line: 9**↓ ; Replace “The ith ordered...” with “The jth ordered...”
- **Page: 87, Line: In Def. 3.7**; Replace “ $\frac{\sum_i (y - \bar{y})^2}{n-1}$ ” with “ $\frac{\sum_i (y_i - \bar{y})^2}{n-1}$ ”
- **Page: 100, Line: 4**↓ ; Delete “unimodal,”
- **Page: 107, Line: 5**↓ ; Replace “27.37” with “27.98”
- **Page: 111, Line: 12**↑ ; Replace “.0011” with “.0110”
- **Page: 114, In Exercise 3.76** ; Delete “San Jose and”
- **Page: 114, In Exercise 3.76 c.** ; Replace “for the 87 measurements in part (a).” with “by averaging all 88 measurements.”
- **Page: 139, Line: 7**↓ ; Replace “In Exercise 4.23...” with “In Exercise 4.25”
- **Page: 140, In Exercise 4.28** ; Replace the table of outcomes with

Radiologic Determination	Presence of Appendicitis	
	Confirmed (C)	Ruled Out (RO)
DA	.94	.02
EA	.04	.04
DNA	.02	.94

- **Page: 165, Exercise 4.64 d.** ; Replace “ $P(88 < y < 12)$ ” with “ $P(88 < y < 120)$ ”
- **Page: 170, Exercise 4.83** ; Replace “exist” with “exit”
- **Page: 189, Exercise 4.112** ; Replace “2.35” with “5.35” and Replace “1.2” with “.12”
- **Page: 190, Exercise 4.122** ; Replace “ $P(95 \leq \bar{y} \geq 105)$ ” with “ $P(95 \leq \bar{y} \leq 105)$ ”
- **Page: 202, Exercise 5.7 b.** ; Replace “99%” with “95%”
- **Page: 220, Line: 8** ↓ ; Replace “... labeled weight of 12 ...” with “... labeled weight of 16 ...”

- **Page: 227, Line: 7** ↓ ; Replace “page 228” with “page 226”
- **Page: 239, Line: 3** ↓ ; Replace “ $H_o : \mu > 30$ ” with “ $H_a : \mu > 30$ ”
- **Page: 242, Exercise 5.61 b.** ; Replace “ $H_o : \mu \leq \mu_o$ ” with “ $H_o : \mu \geq \mu_o$ ”
- **Page: 243, Line: 15** ↑ ; Replace “ $L_{\alpha/2} = C_{\alpha(2),n}$ ” with “ $L_{\alpha/2} = C_{\alpha(2),n} + 1$ ”
- **Page: 243, Line: 14** ↑ ; Replace “ $U_{\alpha/2} = n - C_{\alpha(2),n} + 1$ ” with “ $U_{\alpha/2} = n - C_{\alpha(2),n}$ ”
- **Page: 243, Line: 7** ↑ ; Replace “Level= $Pr(Bin(n, .5) \leq U_{\alpha/2} - 2) - Pr(Bin(n, .5) \leq L_{\alpha/2})$ ” with “Level= $1 - 2P[Bin(n, .5) \leq C_{\alpha(2),n}]$ ”

- **Page: 245;** Replace “ $L_{.025} = C_{.05,25} = 7$  ... per week.” with

$$L_{.025} = C_{.05,25} + 1 = 8$$

$$U_{.025} = n - C_{.05,25} = 25 - 7 = 18$$

The 95% confidence interval for the population median is given by

$$(M_L, M_U) = (y_{(8)}, y_{(18)}) = (3.9, 6.7).$$

Using the binomial distribution, the exact level of coverage is given by

$1 - 2Pr(Bin(25, .5) \leq 7) = 1 - 2(.0216) = .957$ , which is slightly larger than the selected 95%. Thus, we are 95.7% confident that the population median amount of recyclable waste per household is between 3.9 and 6.7 pounds per week.”

- **Page: 245, Line: 24** ↓ ; Replace “ $C_{\alpha(2),n}$ ” with “ $C_{\alpha(2),n}$ ”
- **Page: 249, Exercise 5.69** ; Replace “35 workers” with “25 workers”
- **Page: 261, Exercise 5.118** ; Replace “sandard” with “standard”
- **Page: 276, Top Blue Box**; Delete “and with  $df = n_1 + n_2 - 2$ ”
- **Page: 277, Figure 6.6 caption**; Replace “plot oil for” with “plot for oil”
- **Page: 278, Second Equation**; Replace “ $(\bar{y}_1 - \bar{y}_2 \pm$ ” with “ $(\bar{y}_1 - \bar{y}_2) \pm$ ”
- **Page: 299, Line: 3** ↑ ; Replace “four” with “three”
- **Page: 310**; In table at top of page in “Brand B” column, Replace “186.6” with “186.7”
- **Page: 321, Exercise 6.42 a.** ; Replace “population abundance” with “the population mean abundance”
- **Page: 328, Exercise 6.65** ; Delete “The state land office analyzed the data and their computer output is given here.”
- **Page: 358, Blue Box**; Replace “ $H_a : 1. \sigma_1^2 \neq \sigma_2^2$ ” with “2.  $\sigma_1^2 \neq \sigma_2^2$ ”
- **Page: 358, Blue Box**; Replace “ $F_o \geq F_{\alpha/2, df_1, df_2}$ ” with “ $F \geq F_{\alpha/2, df_1, df_2}$ ”
- **Page: 358, Line: 17** ↓ ; Replace “t in a confidence interval or” with “the pooled t-test”
- **Page: 364, Exercise 7.17 b.** ; Replace “than the new machine” with “than the old machine”
- **Page: 371, Exercise 7.20:** ; Replace “e. Which supplier of ...” with  
“e. Which of the additives appears to be a better product? Provide an explanation for your choice.”

- **Page: 371, Exercise 7.21:** ; Replace “d. Which of the additives ...” with “d. Which supplier of monomer would you recommend to the manufacturer of soft lenses? Justify your answer.”
- **Page: 416, Line: Exercise 8.11:** ; In table, Replace “Control 3” with “Control”
- **Page: 432, Line: 12↑** ; Replace “Two contrasts  $l_1$  and  $l_2$  where” with “Two contrasts  $\hat{l}_1$  and  $\hat{l}_2$  where”
- **Page: 450, Line: 11↑** ; Replace “ $\sqrt{\frac{s_W^2}{n}}$ ” with “ $\sqrt{\frac{2s_W^2}{n}}$ ”
- **Page: 451, Line: 11↓** ; Replace “4. For the one-sided alternative  $H_a : \mu_i > \mu_c$ ” with “4. For the one-sided alternative  $H_a : \mu_i < \mu_c$ ”
- **Page: 459, Formula 1.** ; Replace “LSD” with “ $LSD_{ij}$ ”
- **Page: 459 Formula 5.** ; Replace “ $\sqrt{\frac{s_W^2}{n}}$ ” with “ $\sqrt{\frac{2s_W^2}{n}}$ ”
- **Page: 460, Exercise 9.7:** ; Replace “preparation A” with “preparation A1”
- **Page: 460, Exercise 9.7:** ; Replace “B to the second” with “A2 to the second”
- **Page: 460, Exercise 9.7:** ; In the data for **A4**, Replace “11.5” with “12.2”
- **Page: 465, Line: 2↑** ; Replace “Ten dogs” with “Five dogs”
- **Page: 472, Second Blue Box & Second Equation (after the blue boxes)** ; Replace “ $\sigma_{\hat{\pi}}$ ” with “ $\hat{\sigma}_{\hat{\pi}}$ ”
- **Page: 473, Line: 18↓** ; Replace “... or  $y = 1$ ...” with “...  $y = n$  ...”
- **Page: 473, Line: 14↑** ; In the margin, Replace “**y=1**” with “**y=n**”
- **Page: 474, Blue Box;** Replace “...  $\pi = 5$  ...” with “...  $\pi = .5$  ...”
- **Page: 483, Title of Blue Box;** Replace “... Interval for  $\pi_1 - \pi_1$ ” with “... Interval for  $\pi_1 - \pi_2$ ”
- **Page: 487, Exercise 10.33:** ; In table, Replace “100” with “50” in both Strain A and Strain B columns
- **Page: 502, Line: 21↓** ; Replace “proportions (probabilities)” with “variables”
- **Page: 502, Line: 8↑** ; Replace “that is, that” with “that is,”
- **Page: 504, Line: 6↑** ; Replace “Example 10.8” with “Example 10.12”
- **Page: 518, Blue Box (definition 10.5);** Replace “... =  $\frac{P(A \text{ and group 1})/[1-P(A \text{ and group 1})]}{P(A \text{ and group 2})/[1-P(A \text{ and group 2})]}$ ,” with “... =  $\frac{P(A \text{ and group 1})/[P(\text{group 1})-P(A \text{ and group 1})]}{P(A \text{ and group 2})/[P(\text{group 2})-P(A \text{ and group 2})]}$ ”
- **Page: 519, Line: 8↑** ; In TABLE 10.5, Replace “ $n_2 = 5, 200$ ” with “ $n_2 = 5, 000$ ”
- **Page: 521, Formula 10.:** ; Replace “ $\frac{\pi}{1-\pi}$ ” with “ $\frac{-\pi}{(1-\pi)}$ ”
- **Page: 521, Line: 6↑** ; Replace “Age” with “Opinion”

- **Page: 528, Exercise 10.86** ; Replace the computer output for “TABLE OF SERVICE RATINGS BY OUTPUT” with the following:

ANALYSIS OF CASE STUDY  
 TABLE OF SERVICE RATINGS BY GROUP  
 SERVICE RATINGS  
 Frequency  
 Expected  
 Cell Chi-Square  
 Percent  
 Row Pct  
 Col Pct

	GROUP				Total
	G1	G2	G3	G4	
1	15	16	23	11	65
	15.992	17.282	15.089	16.637	
	0.0615	0.0951	4.1473	1.9099	
	2.98	3.17	4.56	2.18	12.90
	23.08	24.62	35.38	16.92	
	12.10	11.94	19.66	8.53	
2	18	21	17	18	74
	18.206	19.675	17.179	18.94	
	0.0023	0.0893	0.0019	0.0467	
	3.57	4.17	3.37	3.57	14.68
	24.32	28.38	22.97	24.32	
	14.52	15.67	14.53	13.95	
3	36	31	33	24	124
	30.508	32.968	28.786	31.738	
	0.9887	0.1175	0.617	1.8866	
	7.14	6.15	6.55	4.76	24.60
	29.03	25.00	26.61	19.35	
	29.03	23.13	28.21	18.60	
4	29	35	21	33	118
	29.032	31.373	27.393	30.202	
	347E-7	0.4193	1.4919	0.2591	
	5.75	6.94	4.17	6.55	23.41
	24.58	29.66	17.80	27.97	
	23.39	26.12	17.95	25.58	
5	26	31	23	43	123
	30.262	32.702	28.554	31.482	
	0.6002	0.0886	1.0802	4.2139	
	5.16	6.15	4.56	8.53	24.40
	21.14	25.20	18.70	34.96	
	20.97	23.13	19.66	33.33	
Total	124	134	117	129	504
	24.60	26.59	23.21	25.60	100.00

SERVICE RATINGS

The FREQ Procedure

Statistics for Table of SERVICE RATINGS BY GROUP

Statistic	DF	Value	Prob
Chi-Square	12	18.1170	0.1122
Likelihood Ratio Chi-Square	12	17.6795	0.1258
Mantel-Haenszel Chi-Square	1	2.1672	0.1410
Phi Coefficient		0.1896	
Contingency Coefficient		0.1863	
Cramer's V		0.1095	

Sample Size = 504

- Page: 547, Line: 21↓ ; Replace “7.660” with “±7.660”
- Page: 552, Line: 3↓ ; Replace “ $x' = \log_{10}$ ” with “ $x' = \log_{10}x$ ”
- Page: 552, Line: 6↓ ; Replace “ $x' = \log_{10}$ ” with “ $x' = \log_{10}x$ ”
- Page: 556, Line: 4↓ ; Replace “y =” with “x =”
- Page: 568, Blue Box; Replace “... where  $t_\alpha$  cuts off area  $\alpha$  in the right tail...” with “... where  $t_{\alpha/2}$  cuts off area  $\alpha/2$  in the right tail...”
- Page: 575, Line: 12↓ ; Replace “SUBC> Predict 1.301.” with “SUBC> Predict 20.”
- Page: 575, Line: 24↓ ; Replace “SUBC> Predict 20.” with “SUBC> Predict 1.301.”
- Page: 586, Line: 7↓ ; Replace “ $\widehat{HEC}$ ” with “ $\widehat{HEC}$ ”
- Page: 588, Exercise 11.57 b.: ; Replace “99%” with “95%”
- Page: 590, Line: 25↓ ; Replace “ $\sum_i (y_i - \bar{y}_i)^2$ ” with “ $\sum_i (y_i - \bar{y})^2$ ”
- Page: 596, Line: 13↓ ; Replace “...Example 11.18...” with “...Example 11.16...”
- Page: 602, Formula 8.: 3↓ ; Replace “T.S.: =  $\frac{MS_{Lack}}{MS_{exp}}$ ” with “T.S.: =  $\frac{MS_{Lack}}{MSP_{exp}}$ ”
- Page: 602, Formula 8.: 5↓ ; Replace “ $MS_{Lack}$  =” with “ $MSP_{exp}$  =”
- Page: 607, Exercise 11.79: ; Replace “50 routes” with “48 routes”
- Page: 638, Exercise 12.9 c.: ; Replace “ $\hat{\beta}_i$ ” with “ $\hat{\beta}_1$ ”
- Page: 644, Line: 18↓ ; Replace “SPEED2” with “SPEED3”
- Page: 654, Line: 14↓ ; Replace “2.  $t < t_\alpha$ ” with “2.  $t < -t_\alpha$ ”
- Page: 661, Exercise 12.23: ; Replace “developmental expenditures” with “promotional activities”
- Page: 674, Exercise 12.31: ; Replace part b. with “Change the model of part (a) to reflect that the three drug products have the same slope.”
- Page: 693, Exercise 12.42: ; Replace “ $y = \beta_0 + \beta_1x_1 + \epsilon$ ” with “ $y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \epsilon$ ”
- Page: 727, Line: 5↑ ; Replace “ $F = MS_{Lack}/MS(Residual)$ ” with “ $F = MS_{Lack}/MSP_{exp}$ ”
- Page: 783, Formula 1. ; Replace “ $-(n - 2p)$ ” with “ $(n - 2p)$ ”

- Page: 794, Line: 4↑ ; Replace “ $LOG_{DOSE}$ ” with “TEMP”
- Page: 811, Line: 22↓ ; Replace “RCR” with “INS”
- Page: 811, Line: 26↓ ; Replace “ $DV_1$ ” with “RC1”
- Page: 811, Line: 28↓ ; Replace “ $DV_2$ ” with “RC2”
- Page: 811, Line: 30↓ ; Replace “ $DV_3$ ” with “RC3”
- Page: 835, Line: 7↑ ; Replace “ever” with “error”
- Page: 857, Line: 18↓ ; Replace “Table 15.4.” with “Table 15.4, with  $N = \sum_{i=1}^t n_i.$ ”
- Page: 881, ; Replace “ $y_{ij}$ ” with “ $y_{ijk}$ ” and Replace “ $\epsilon_{ij}$ ” with “ $\epsilon_{ijk}$ ”
- Page: 881, Line: 2↑ ; Replace “ $\bar{y}_3 - \bar{y}_1$ ” with “ $\bar{y}_{..3} - \bar{y}_{..1}$ ”
- Page: 881, Line: 1↑ ; Replace “ $\bar{y}_3$ ” with “ $\bar{y}_{..3}$ ” and Replace “ $\bar{y}_1$ ” with “ $\bar{y}_{..1}$ ”
- Page: 882, ; Replace “ $y_{ij}$ ” with “ $y_{ijk}$ ” and Replace “ $\epsilon_{ij}$ ” with “ $\epsilon_{ijk}$ ”
- Page: 882, Line: 3↓ ; Replace with “ $\bar{y}_{..1} = \frac{1}{4}(y_{111} + y_{241} + y_{331} + y_{421})$ ”
- Page: 882, Line: 4↓ ; Replace “ $\bar{\epsilon}_1$ ” with “ $\bar{\epsilon}_{..1}$ ”
- Page: 882, Line: 5↓ ; Replace “ $\bar{\epsilon}_1$ ” with “ $\bar{\epsilon}_{..1}$ ”
- Page: 882, Line: 7↓ ; Replace with “ $\bar{y}_{..3} = \frac{1}{4}(y_{133} + y_{223} + y_{313} + y_{443})$ ”
- Page: 882, Line: 8↓ ; Replace “ $\bar{\epsilon}_3$ ” with “ $\bar{\epsilon}_{..3}$ ”
- Page: 882, Line: 10↓ ; Replace with “ $\bar{y}_{..3} - \bar{y}_{..1} = \alpha_3 - \alpha_1 + \bar{\epsilon}_{..3} - \bar{\epsilon}_{..1}$ ”
- Page: 882, Line: 11↓ ; Replace “ $\bar{\epsilon}_3 - \bar{\epsilon}_1$ ” with “ $\bar{\epsilon}_{..3} - \bar{\epsilon}_{..1}$ ”
- Page: 882, Line: 15↓ ; Replace with “ $\bar{y}_{..3} - \bar{y}_{..1} = \alpha_3 - \alpha_1 + [(\bar{\epsilon}_{..3} - \bar{\epsilon}_{..1}) + (\text{column effects that do not cancel})]$ ”
- Page: 882, Line: 10↑ ; Replace “ $\bar{y}_{..}$ ” with “ $\bar{y}_{...}$ ”
- Page: 882, Line: 8↑ ; Replace with “ $TSS = \sum_{ij} (y_{ijk} - \bar{y}_{...})^2$ ”
- Page: 882, Line: 1↑ ; Replace with “ $y_{ijk} = \mu + \alpha_k + \beta_i + \gamma_j + \epsilon_{ijk}$ ”
- Page: 883, Line: 2↓ ; Replace with “ $\hat{\mu} = \bar{y}_{...} \quad \hat{\alpha}_k = \bar{y}_{..k} - \bar{y}_{...} \quad \hat{\beta}_i = \bar{y}_{i..} - \bar{y}_{...} \quad \hat{\gamma}_j = \bar{y}_{.j.} - \bar{y}_{...}$ ”
- Page: 883, Line: 3↓ ; Replace with “ $TSS = t \sum_k (\bar{y}_{..k} - \bar{y}_{...})^2 + t \sum_i (\bar{y}_{i..} - \bar{y}_{...})^2 + t \sum_j (\bar{y}_{.j.} - \bar{y}_{...})^2 + SSE$ ”
- Page: 883, Line: 6↓ ; Replace “ $\bar{y}_k$ ” with “ $\bar{y}_{..k}$ ”
- Page: 883, Line: 6↓ ; Replace “ $\bar{y}_{..}$ ” with “ $\bar{y}_{...}$ ”
- Page: 883, Line: 7↓ ; Replace with “ $SST = t \sum_k (\bar{y}_{..k} - \bar{y}_{...})^2 = t \sum_k (\hat{\alpha}_k)^2$ ”
- Page: 883, Line: 9↓ ; Replace “ $y'_{ij}$ ” with “ $\bar{y}_{ijk}$ 's”
- Page: 883, Line: 10↓ ; Replace with “ $SSR = t \sum_i (\bar{y}_{i..} - \bar{y}_{...})^2 = t \sum_i (\hat{\beta}_i)^2$ ”
- Page: 883, Line: 11↓ ; Replace “ $\bar{y}_i$ ” with “ $\bar{y}_{i..}$ ”

- **Page: 883, Line: 14**↓ ; Replace “ $\bar{y}_{.j}$ ” with “ $\bar{y}_{.j}$ .”
- **Page: 883, Line: 15**↓ ; Replace with “ $SSC = t \sum_j (\bar{y}_{.j} - \bar{y}_{...})^2 = t \sum_j (\hat{\gamma}_j)^2$ ”
- **Page: 883, Line: 17**↓ ; Replace “ $y_{ij}$ ”s with “ $y_{ijk}$ ’s”
- **Page: 884, Line: 15**↑ ; Replace “ $\frac{MSE_{LS}}{MSE_{CR}}$ ” with “ $\frac{MSE_{CR}}{MSE_{LS}}$ ”
- **Page: 885, Line: 11**↓ ; Replace “ $y_{ij}$  and  $\epsilon_{ij}$ ” with “ $y_{ijk}$  and  $\epsilon_{ijk}$ ”
- **Page: 885, Line: 13**↓ ; Replace “ $\bar{y}_k$ ” with “ $\bar{y}_{..k}$ ”
- **Page: 885, Line: 17**↓ ; Replace with “ $\hat{\mu} = \bar{y}_{...}$ ,  $\hat{\alpha}_k = \bar{y}_{..k} - \bar{y}_{...}$ ,  $\hat{\beta}_i = \bar{y}_{i..} - \bar{y}_{...}$ ”
- **Page: 885, Line: 18**↓ ; Replace with “ $\hat{\gamma}_j = \bar{y}_{.j} - \bar{y}_{...}$ ”, and “ $\hat{\mu} = \bar{y}_{...}$ ”
- **Page: 885, Line: 25**↓ ; Replace with “ $TSS = \sum_{ij} (y_{ijk} - \bar{y}_{...})^2 =$ ”
- **Page: 886, Line: 13**↑ ; Replace with “ $\epsilon_{ijk} = y_{ijk} - \hat{\mu} - \hat{\alpha}_k - \hat{\beta}_i - \hat{\gamma}_j$ ”
- **Page: 902, Line: 17**↑ ; Replace with “We next calculate the sum of squares. Note that there was rounding when the treatment means were calculated which will result in values for the sum of squares which are slightly different from the values that would be obtained using a computer program.”
- **Page: 902, Line: 3**↑ ; Insert after “Table 15.30.”, the following sentence: “Using a computer program, we obtain  $SSA=2227.46$  and  $SSE=507.50$ ”
- **Page: 913, Line: 15**↓ ; Replace “three products” with “two products”
- **Page: 913, Line: 16**↓ ; Replace the row of Means with  

Mean	22.9	19.6	21.9	23.1	30.5	45.6
------	------	------	------	------	------	------
- **Page: 913, Line: 14**↓ ; Replace mean values for age group and product type with  

Mean by age group:	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	Mean by product type:	P <sub>1</sub>	P <sub>2</sub>
	23.0	25.05	33.75		21.47	33.07
- **Page: 914**; Replace AOV Table at the top of page with

Two-Way Analysis of Variance					
Analysis of Variance for Time					
Source	DF	SS	MS	F	P
Age	2	1303.0	651.5	4.43	0.017
Product	1	2018.4	2018.4	13.72	0.001
Interaction	2	1384.3	692.1	4.70	0.013
Error	54	7944.0	147.1		
Total	59	12649.7			

- Page: 917, Line: 1↓ ; Replace “ $n_t$ ” with “ $n$ ”
- Page: 919, Line: 4↓ ; Replace “less” with “greater”
- Page: 923, Line: 6↓ ; Delete “ $-\hat{\beta}_j$ ” in the expression for SSE.
- Page: 923, Line: 1↑ ; Replace “ $n_t$ ” with “ $n$ ”
- Page: 925, Line: 1↓ ; Replace AOV table with

Two-Way Analysis of Variance for Salary

Source	DF	SS	MS	F	P
REGION	7	42.620	6.089	14.42	0.000
JOB	2	79.491	39.745	94.16	0.000
Error	14	5.909	0.422		
Total	23	128.020			

- Page: 956, Line: 3↓ ; Replace with “Model B:  $y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \dots + \beta_tx_t + \epsilon$ ”
- Page: 965-967; Replace AOV tables with

MODEL I: REGION AND TREATMENT DIFFERENCES WITH COVARIATE HAVING UNEQUAL SLOPES

The GLM Procedure

Dependent Variable: S SPEED

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	12	18.57446432	1.54787203	54.57	<.0001
Error	11	0.31203151	0.02836650		
Corrected Total	23	18.88649583			

Source	DF	Type III SS	Mean Square	F Value	Pr > F
X1	1	0.84623766	0.84623766	29.83	0.0002
X2	1	0.21498101	0.21498101	7.58	0.0188
X3	1	0.18539490	0.18539490	6.54	0.0267
X4	1	0.13629629	0.13629629	4.80	0.0508
X5	1	0.27240763	0.27240763	9.60	0.0101
X6	1	0.05024586	0.05024586	1.77	0.2101
X7	1	0.00154873	0.00154873	0.05	0.8195
X8	1	0.01972964	0.01972964	0.70	0.4220
X9	1	0.48434458	0.48434458	17.07	0.0017
X10	1	0.02495287	0.02495287	0.88	0.3684
X1*X9	1	0.09110959	0.09110959	3.21	0.1006
X1*X10	1	0.13467594	0.13467594	4.75	0.0520

MODEL II: REGION AND TREATMENT DIFFERENCES WITH COVARIATE HAVING EQUAL SLOPES

The GLM Procedure

Dependent Variable: S SPEED

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	18.41522972	1.84152297	50.80	<.0001
Error	13	0.47126611	0.03625124		
Corrected Total	23	18.88649583			

Source	DF	Type III SS	Mean Square	F Value	Pr > F
X1	1	3.12245889	3.12245889	86.13	<.0001
X2	1	0.09497230	0.09497230	2.62	0.1295
X3	1	0.15887210	0.15887210	4.38	0.0565
X4	1	0.16679129	0.16679129	4.60	0.0514
X5	1	0.23014999	0.23014999	6.35	0.0256
X6	1	0.04177024	0.04177024	1.15	0.3026
X7	1	0.01075404	0.01075404	0.30	0.5952
X8	1	0.04107013	0.04107013	1.13	0.3065
X9	1	14.08930137	14.08930137	388.66	<.0001
X10	1	3.74477234	3.74477234	103.30	<.0001

MODEL III: COVARIATE WITH EQUAL SLOPES, REGION DIFFERENCES, BUT NO TREATMENT DIFFERENCES

The GLM Procedure

Dependent Variable: S SPEED

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	8	4.32038575	0.54004822	0.56	0.7971
Error	15	14.56611008	0.97107401		
Corrected Total	23	18.88649583			

Source	DF	Type III SS	Mean Square	F Value	Pr > F
X1	1	2.00762325	2.00762325	2.07	<.0001
X2	1	0.11376059	0.11376059	0.12	0.1295
X3	1	0.15977479	0.15977479	0.16	0.0565
X4	1	0.21374424	0.21374424	0.22	0.0514
X5	1	0.41270875	0.41270875	0.43	0.0256
X6	1	0.00400793	0.00400793	0.00	0.3026
X7	1	0.00004833	0.00004833	0.00	0.5952
X8	1	0.00350604	0.00350604	0.00	0.3065

- Page: 966; Replace “ $F = \dots = \frac{(.4687 - .3111)/(13-11)}{.0283} = 2.79$ ” with “ $F = \dots = \frac{(.4713 - .3120)/(13-11)}{.02836} = 2.81$ ”
- Page: 966;, Line: 6↑ Replace “ $\Pr(F_{2,11} \geq 2.79) = .1050$ ” with “ $\Pr(F_{2,11} \geq 2.81) = .1033$ ”

- **Page: 967;** Replace “ $F = \dots = \frac{(14.5630 - .4687)/(15-13)}{.0361} = 195.21$ ” with “ $F = \dots = \frac{(14.5661 - .4713)/(15-13)}{.0363} = 194.14$ ”
- **Page: 967;, Line: 12**↑ Replace “ $\Pr(F_{2,13} \geq 195.21) < .0001$ ” with “ $\Pr(F_{2,13} \geq 194.14) < .0001$ ”
- **Page: 972-973;** Replace AOV table with

MODEL I: DIFFERENT SLOPES AND TREATMENT DIFFERENCES

The GLM Procedure

Dependent Variable: Y VSKILL

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	6337.926975	905.418139	20.50	<.0001
Error	72	3180.729900	44.176804		
Corrected Total	79	9518.656875			

Source	DF	Type III SS	Mean Square	F Value	Pr > F
X1 (AGE)	1	188.8171093	188.8171093	4.27	0.0423
X2 (C1)	1	554.5949725	554.5949725	12.55	0.0007
X3 (C2)	1	170.5036575	170.5036575	3.86	0.0533
X4 (C3)	1	31.7644655	31.7644655	0.72	0.3993
X5 (X1*X2)	1	2.3592730	2.3592730	0.05	0.8179
X6 (X1*X3)	1	13.4041339	13.4041339	0.30	0.5835
X7 (X1*X4)	1	69.8470840	69.8470840	1.58	0.2127

Parameter	Estimate	Standard Error	t Value	Pr >  t
Intercept	34.70618792	5.34237764	6.50	<.0001
X1 (AGE)	0.35901225	0.17365438	2.07	0.0423
X2 (C1)	-23.90173188	6.74587910	-3.54	0.0007
X3 (C2)	-12.60819010	6.41775371	-1.96	0.0533
X4 (C3)	-6.14139936	7.24258684	-0.85	0.3993
X5 (X1*X2)	0.05050567	0.21854869	0.23	0.8179
X6 (X1*X2)	-0.11399476	0.20694867	-0.55	0.5835
X7 (X1*X3)	-0.29938948	0.23810008	-1.26	0.2127

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MODEL II: SAME SLOPES BUT TREATMENT DIFFERENCES

The GLM Procedure

Dependent Variable: Y VSKILL

Source	DF	Squares	Sum of Mean Square	F Value	Pr > F
Model	4	6201.828754	1550.457189	35.06	<.0001
Error	75	3316.828121	44.224375		
Corrected Total	79	9518.656875			

Source	DF	Type III SS	Mean Square	F Value	Pr > F
X1 (AGE)	1	688.689379	688.689379	15.57	0.0002
X2 (C1)	1	5056.080561	5056.080561	114.33	<.0001
X3 (C2)	1	2542.485319	2542.485319	57.49	<.0001
X4 (C3)	1	2183.510378	2183.510378	49.37	<.0001

Parameter	Estimate	Standard Error	t Value	Pr >  t
Intercept	37.19688646	2.53835518	14.65	<.0001
X1 (AGE)	0.27472465	0.06961724	3.95	0.0002
X2 (C1)	-22.49016521	2.10337402	-10.69	<.0001
X3 (C2)	-15.95148404	2.10379161	-7.58	<.0001
X4 (C3)	-14.78401158	2.10399893	-7.03	<.0001

MODEL III: SAME SLOPES AND NO TREATMENT DIFFERENCES

The GLM Procedure

Dependent Variable: Y VSKILL

Source	DF	Squares	Sum of Mean Square	F Value	Pr > F
Model	1	793.871687	793.871687	7.10	0.0094
Error	78	8724.785188	111.856220		
Corrected Total	79	9518.656875			

Source	DF	Type III SS	Mean Square	F Value	Pr > F
X1 (AGE)	1	793.8716867	793.8716867	7.10	0.0094

Parameter	Estimate	Error	t Value	Pr >  t
Intercept	23.30979334	3.41463015	6.83	<.0001
X1 (AGE)	0.29478261	0.11065137	2.66	0.0094

- **Page:980, Line: 20**↓; Replace  $\sigma_\alpha^2 + n\sigma_\epsilon^2$  with  $\sigma_\epsilon^2 + n\sigma_\alpha^2$
- **Page:980, Line: 22**↓; Replace  $\sigma_\alpha^2 + n\sigma_\epsilon^2$  with  $\sigma_\epsilon^2 + n\sigma_\alpha^2$
- **Page: 986, Line: 1**↑ ; Replace “Total  $\hat{\sigma}_y^2 = \hat{\sigma}_\alpha^2 + \hat{\beta}_\alpha^2 + \hat{\sigma}_{\alpha\beta}^2 + \hat{\sigma}_\epsilon^2$ ” with  
“Total  $\hat{\sigma}_y^2 = \hat{\sigma}_\alpha^2 + \hat{\sigma}_\beta^2 + \hat{\sigma}_{\alpha\beta}^2 + \hat{\sigma}_\epsilon^2$ ”
- **Page: 1020**; In Exercise 17.13, delete the second part b.
- **Page: 1024**; In Exercise 17.27, replace the data with the following:

	10% Fat			15% Fat			20% Fat		
	Broil	Bake	Fry	Broil	Bake	Fry	Broil	Bake	Fry
Taster 1	75	79	82	78	82	81	81	85	87
Taster 2	74	78	81	78	81	83	84	87	88
Taster 3	75	78	79	80	82	83	87	88	92
Taster 4	91	88	83	80	76	73	81	77	74

- **Page: 1040, Line: 1**↓ ; Replace “Percentage Inhibition Time (hours)” with “Time (hours)”
- **Page: 1040**; In Exercise 18.5, Replace “the test time” with “the measurement time”
- **Page: 1059, Line: 11**↓ ; Replace “ $\hat{M} = \frac{t(y_{i.} + y_{.j} + y_k) - 2y_{..}}{(t-1)(t-2)}$ ” with “ $\hat{M} = \frac{t(y_{i..} + y_{.j.} + y_{..k}) - 2y_{...}}{(t-1)(t-2)}$ ”
- **Page: 1059, Line: 20**↓ ; Replace “bias =  $\left(\frac{y_{..} - y_{i.} - y_{.j} - (t-1)y_k}{(t-1)(t-2)}\right)^2$ ” with “bias =  $\frac{(y_{...} - y_{i..} - y_{.j.} - (t-1)y_{..k})^2}{(t-1)(t-2)}$ ”
- **Page: 1060**; In the **Solution**, Replace “ $y_{.5} = 99.70$   $y_{2..} = 80.70$   $y_{.5} = 85.90$   $y_{..} = 520.80$ ” with  
“ $y_{..5} = 99.70$   $y_{2..} = 80.70$   $y_{.5} = 85.90$   $y_{...} = 520.80$ ”
- **Page: 1060**; In the **Investigator** column, Replace “ $\bar{y}_{1.}, \bar{y}_{2.}, \bar{y}_{3.}, \bar{y}_{4.}, \bar{y}_{5.}$ ” with “ $\bar{y}_{1..}, \bar{y}_{2..}, \bar{y}_{3..}, \bar{y}_{4..}, \bar{y}_{5..}$ ”
- **Page: 1060**; In the **Day** column, Replace “ $\bar{y}_{.1}, \bar{y}_{.2}, \bar{y}_{.3}, \bar{y}_{.4}, \bar{y}_{.5}$ ” with “ $\bar{y}_{.1.}, \bar{y}_{.2.}, \bar{y}_{.3.}, \bar{y}_{.4.}, \bar{y}_{.5.}$ ”
- **Page: 1060**; In the **Version** column, Replace “ $\bar{y}_{1.}, \bar{y}_{2.}, \bar{y}_{3.}, \bar{y}_{4.}, \bar{y}_{5.}$ ” with “ $\bar{y}_{.1.}, \bar{y}_{.2.}, \bar{y}_{.3.}, \bar{y}_{.4.}, \bar{y}_{.5.}$ ”
- **Page: 1060**; In the **Overall** column, Replace “ $\bar{y}_{..}$ ” with “ $\bar{y}_{...}$ ”
- **Page: 1061, Line: 18**↑ ; Replace “model 1: ...” with “model 1:  $y_{ijk} = \mu + \alpha_k + \beta_i + \gamma_j + \epsilon_{ijk}$ ”
- **Page: 1061, Line: 13**↑ ; Replace “model 2: ...” with “model 2:  $y_{ijk} = \mu + \beta_i + \gamma_j + \epsilon_{ijk}$ ”
- **Page: 1073**; In Formula 4. b., Replace “Bias =  $\frac{\{y_{.j} - (t-1)\hat{M}\}^2}{t(t-1)}$ ” with “bias =  $\frac{(y_{...} - y_{i..} - y_{.j.} - (t-1)y_{..k})^2}{(t-1)(t-2)}$ ”
- **Page: 1075**; In Exercise 19.21, Replace “No Additional Testing” with “No Additional Training”