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1: > #This is my attempt to do the worksheets that I
2: > # left for students to use.
3: > #
4: > # Two Populations: sigma unknown
5: >
6: > # Case 1 through 5 have us doing confidence intervals on
7: > # the difference of two means. Let me start by loading
8: > # the function into the environment
9: >
10: > source("../ci_2unknown.R")
11: >
12: > # Case 1;
13: > # I will store the required values in variables just so that
14: > # it is clear which values go where in the function
15: > s_1 <- 4.87
16: > n_1 <- 34
17: > xbar_1 <- 71.04
18: > s_2 <- 3.04
19: > n_2 <- 53
20: > xbar_2 <- 74.38
21: > ci_2unknown( s_1, n_1, xbar_1,
22: + + s_2, n_2, xbar_2, 0.90 )
23: Full Low Full High Full MOE Simp Low Simp High Simp MOE
24: -4.9051513 -1.7748487 1.5651513 -4.9202746 -1.7597254 1.5802746
25: St. Error alpha/2 DF calc t calc DF Simp t Simp
26: 0.9337696 0.0500000 49.5936119 1.6761643 33.0000000 1.6923603
27: Diff
28: -3.3400000
29: > #
30: > # Case 2:
31: > #
32: > s_1 <- 4.31
33: > n_1 <- 34
34: > xbar_1 <- 53.92
35: > s_2 <- 2.72
36: > n_2 <- 60
37: > xbar_2 <- 57.46
38: > ci_2unknown( s_1, n_1, xbar_1,
39: + + s_2, n_2, xbar_2, 0.92 )
40: Full Low Full High Full MOE Simp Low Simp High Simp MOE
41: -5.0034865 -2.0765135 1.4634865 -5.0181436 -2.0618564 1.4781436
42: St. Error alpha/2 DF calc t calc DF Simp t Simp
43: 0.8183291 0.0400000 48.2030904 1.7883838 33.0000000 1.8062948
44: Diff
45: -3.5400000
46: > #
47: > # Case 3:
48: > #
49: > s_1 <- 11.46
50: > n_1 <- 55
51: > xbar_1 <- 68.55
52: > s_2 <- 10.01
53: > n_2 <- 53
54: > xbar_2 <- 66.28
55: > ci_2unknown( s_1, n_1, xbar_1,
56: + + s_2, n_2, xbar_2, 0.98 )
57: Full Low Full High Full MOE Simp Low Simp High Simp MOE
58: -2.616437 7.156437 4.886437 -2.694704 7.234704 4.964704
59: St. Error alpha/2 DF calc t calc DF Simp t Simp
60: 2.068433 0.010000 105.004275 2.362386 52.000000 2.400225

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61:      Diff
62: 2.270000
63: > #
64: > # Case 4:
65: > #
66: > # to do this problem we need to load gnrnd4 into the
67: > # environment
68: > source("../gnrnd4.R")
69: > # then we can generate and inspect the first sample
70: > gnrnd4(1690604504,7902117)
71: style= 4   size= 46   seed= 69060   num digits= 1   alt_sign= 1
72: [1] "DONE "
73: > head( L1 )
74: [1] 216.1 213.7 208.2 212.7 214.5 219.2
75: > tail( L1 )
76: [1] 218.5 215.2 206.1 200.5 209.8 216.0
77: > # pull out and display the needed values
78: > s_1 <- sd (L1)
79: > n_1 <-length(L1)
80: > xbar_1 <- mean( L1 )
81: > # sd   length, mean
82: > c(s_1, n_1, xbar_1 )
83: [1] 6.838247 46.000000 211.643478
84: > # generate the second sample
85: > gnrnd4(1523564004,5502173)
86: style= 4   size= 41   seed= 52356   num digits= 1   alt_sign= 1
87: [1] "DONE "
88: > head( L1 )
89: [1] 220.3 220.4 211.7 210.6 221.4 220.1
90: > tail( L1 )
91: [1] 216.5 219.5 211.1 218.0 216.7 208.5
92: > # pull out and display the needed values
93: > s_2 <- sd (L1)
94: > n_2 <-length(L1)
95: > xbar_2 <- mean( L1 )
96: > # sd   length, mean
97: > c(s_2, n_2, xbar_2 )
98: [1] 5.104974 41.000000 218.021951
99: >
100: > ci_2unknown( s_1, n_1, xbar_1,
101: + +           s_2, n_2, xbar_2, 0.955 )
102: Full Low Full High Full MOE Simp Low Simp High Simp MOE
103: -8.994953 -3.761993 2.616480 -9.038568 -3.718377 2.660096
104: St. Error alpha/2 DF calc t calc DF Simp t Simp
105: 1.285374 0.022500 82.556651 2.035579 40.000000 2.069512
106:      Diff
107: -6.378473
108: > #
109: > #
110: > # Case 5:
111: > #
112: > # generate and inspect the first sample
113: > gnrnd4(6744157304,10200633)
114: style= 4   size= 74   seed= 74415   num digits= 1   alt_sign= -1
115: [1] "DONE "
116: > head( L1 )
117: [1] -65.6 -53.7 -54.5 -56.1 -56.4 -68.2
118: > tail( L1 )
119: [1] -66.0 -60.4 -62.7 -63.3 -49.6 -56.8
120: > # pull out and display the needed values

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121: > s_1 <- sd (L1)
122: > n_1 <-length(L1)
123: > xbar_1 <- mean( L1 )
124: > # sd length, mean
125: > c(s_1, n_1, xbar_1 )
126: [1] 11.28169 74.00000 -61.90405
127: > # generate the second sample
128: > gnrnd4(6746183904,7200704)
129: style= 4 size= 40 seed= 74618 num digits= 1 alt_sign= -1
130: [1] "DONE "
131: > head( L1 )
132: [1] -82.6 -62.1 -71.7 -58.1 -78.3 -78.0
133: > tail( L1 )
134: [1] -69.7 -68.2 -67.1 -66.7 -76.8 -72.1
135: > # pull out and display the needed values
136: > s_2 <- sd (L1)
137: > n_2 <-length(L1)
138: > xbar_2 <- mean( L1 )
139: > # sd length, mean
140: > c(s_2, n_2, xbar_2 )
141: [1] 7.317471 40.000000 -71.077500
142: >
143: > ci_2unknown( s_1, n_1, xbar_1,
144: + + s_2, n_2, xbar_2, 0.835 )
145: Full Low Full High Full MOE Simp Low Simp High Simp MOE
146: 6.728668 11.618224 2.444778 6.698754 11.648138 2.474692
147: St. Error alpha/2 DF calc t calc DF Simp t Simp
148: 1.748882 0.082500 108.186010 1.397909 39.000000 1.415014
149: Diff
150: 9.173446
151: > #
152: > # for Case 6 and beyond we need the function to test
153: > # the hypothesis that the means are equal
154: > source("../hypo_2unknown.R")
155: > #
156: > # Case 6
157: > #
158: > # we will pull out the values from the problem statement
159: > # set h_type to -1 for <. 0 for !=, and 1 for > in alternative
160: > h_type <- 0
161: > alpha <- 0.04
162: > s_1 <- 6.98
163: > n_1 <- 62
164: > xbar_1 <- 72.47
165: > s_2 <- 5.04
166: > n_2 <- 30
167: > xbar_2 <- 69.61
168: > hypoth_2test_unknown( s_1, n_1, xbar_1,
169: + s_2, n_2, xbar_2,
170: + h_type, alpha)
171: H1: s_one n_one
172: "mu_1 != mu_2" "6.98" "62"
173: mean_one s_two n_two
174: "72.47" "5.04" "30"
175: mean_two std. err. difference
176: "69.61" "1.27770610988044" "2.86"
177: sig level t-value full df
178: "0.04" "2.23838641600268" "76.4865428418713"
179: full low full high full AttnD
180: "-2.66959561692734" "2.66959561692734" "0.0281044873792456"

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181:         full decision                simple df                simp low
182:         "Reject"                    "29"                    "-2.74748350295668"
183:         simp high                    simp Attnd                simp decision
184:         "2.74748350295668" "0.0330382923897657"                    "Reject"
185: > #
186: > # Case 7
187: > #
188: > # we will pull out the values from the problem statement
189: > # set h_type to -1 for <. 0 for !=, and 1 for > in alternative
190: > h_type <- 0
191: > alpha <- 0.06
192: > s_1 <- 6.86
193: > n_1 <- 65
194: > xbar_1 <- 66.92
195: > s_2 <- 4.95
196: > n_2 <- 83
197: > xbar_2 <- 68.72
198: > hypoth_2test_unknown( s_1, n_1, xbar_1,
199: +                         s_2, n_2, xbar_2,
200: +                         h_type, alpha)
201:         H1:                s_one                n_one
202:         "mu_1 != mu_2"      "6.86"                "65"
203:         mean_one            s_two                n_two
204:         "66.92"            "4.95"                "83"
205:         mean_two            std. err.            difference
206:         "68.72"            "1.00955667970022"        "-1.8"
207:         sig level           t-value              full df
208:         "0.06"             "-1.78296081457703"    "112.265041914806"
209:         full low            full high            full Attnd
210:         "-1.91814641459502" "1.91814641459502"    "0.0772952581803584"
211:         full decision       simple df                simp low
212:         "do not reject"     "64"                    "-1.93301962836637"
213:         simp high           simp Attnd                simp decision
214:         "1.93301962836637" "0.079334933215136"    "do not reject"
215: >
216: > #
217: > # Case 8
218: > #
219: > # we will pull out the values from the problem statement
220: > # set h_type to -1 for <. 0 for !=, and 1 for > in alternative
221: > h_type <- -1
222: > alpha <- 0.02
223: > s_1 <- 5.50
224: > n_1 <- 58
225: > xbar_1 <- 113.65
226: > s_2 <- 3.77
227: > n_2 <- 41
228: > xbar_2 <- 115.73
229: > hypoth_2test_unknown( s_1, n_1, xbar_1,
230: +                         s_2, n_2, xbar_2,
231: +                         h_type, alpha)
232:         H1:                s_one                n_one
233:         "mu_1 < mu_2"      "5.5"                "58"
234:         mean_one            s_two                n_two
235:         "113.65"           "3.77"                "41"
236:         mean_two            std. err.            difference
237:         "115.73"           "0.931776701629155"    "-2.08"
238:         sig level           t-value              full df
239:         "0.02"             "-2.23229449326566"    "96.9314236161266"
240:         full low            full high            full Attnd

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241:    "-1.939730137486"          "n.a." "0.0139488243308509"
242:      full decision          simple df      simp low
243:        "Reject"            "40"    "-1.97807790957955"
244:      simp high          simp Attnd      simp decision
245:        "n.a." "0.0156305011473881"      "Reject"
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