



Special Edition

(R)
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Serial number: 40120571691
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UNC Chapel Hill

Notes:

1. (/v# option or -set maxvar-) 5000 maximum variables
2. New update available; type -update all-

. set obs 1
obs was 0, now 1

. generate var1 = 89 in 1

. set obs 2
obs was 1, now 2

. replace var1 = 98 in 2
(1 real change made)

. set obs 3
obs was 2, now 3

. replace var1 = 116 in 3
(1 real change made)

. set obs 4
obs was 3, now 4

. replace var1 = 67 in 4
(1 real change made)

. set obs 5
obs was 4, now 5

. replace var1 = 128 in 5
(1 real change made)

. set obs 6
obs was 5, now 6

. replace var1 = 81 in 6
(1 real change made)

```
. set obs 7
obs was 6, now 7

. replace var1 = 96 in 7
(1 real change made)

. set obs 8
obs was 7, now 8

. replace var1 = 116 in 8
(1 real change made)

. set obs 9
obs was 8, now 9

. replace var1 = 110 in 9
(1 real change made)

. set obs 10
obs was 9, now 10

. replace var1 = 90 in 10
(1 real change made)

. set obs 11
obs was 10, now 11

. replace var1 = 76 in 11
(1 real change made)

. set obs 12
obs was 11, now 12

. replace var1 = 71 in 12
(1 real change made)

. set obs 13
obs was 12, now 13

. replace var1 = 100 in 13
(1 real change made)

. set obs 14
obs was 13, now 14

. replace var1 = 108 in 14
(1 real change made)

. set obs 15
obs was 14, now 15

. replace var1 = 74 in 15
(1 real change made)

. generate var2 = 77 in 1
(14 missing values generated)
```

```
. replace var2 = 110 in 2
(1 real change made)

. replace var2 = 94 in 3
(1 real change made)

. replace var2 = 91 in 4
(1 real change made)

. replace var2 = 122 in 5
(1 real change made)

. replace var2 = 94 in 6
(1 real change made)

. replace var2 = 121 in 7
(1 real change made)

. replace var2 = 114 in 8
(1 real change made)

. replace var2 = 88 in 9
(1 real change made)

. replace var2 = 91 in 10
(1 real change made)

. replace var2 = 99 in 11
(1 real change made)

. replace var2 = 93 in 12
(1 real change made)

. replace var2 = 104 in 13
(1 real change made)

. replace var2 = 102 in 14
(1 real change made)

. replace var2 = 82 in 15
(1 real change made)

. rename var2 Sibling

. rename var1 PKU

. label variable PKU "IQ of PKU Case"

. label variable Sibling "IQ of Sibling"

. save "C:\Users\herringa\Documents\BIOS600\pke.dta"
file C:\Users\herringa\Documents\BIOS600\pke.dta saved

. generate diff=PKU-Sibling
```

```
. hist(diff)
(bin=3, start=-25, width=15.666667)
```

```
. hist diff, bin(6_
) required
r(100);
```

```
. hist diff, bin(6)
(bin=6, start=-25, width=7.8333333)
```

```
. hist diff, bin(10)
(bin=10, start=-25, width=4.7)
```

```
. hist diff, bin(6) freq
(bin=6, start=-25, width=7.8333333)
```

```
. label variable diff "IQ of PKU Case - Sibling IQ"
```

```
. hist diff, bin(6) freq
(bin=6, start=-25, width=7.8333333)
```

```
. bitesti 15 6 .5
```

N	Observed k	Expected k	Assumed p	Observed p
15	6	7.5	0.50000	0.40000

```
Pr(k >= 6)          = 0.849121 (one-sided test)
Pr(k <= 6)          = 0.303619 (one-sided test)
Pr(k <= 6 or k >= 9) = 0.607239 (two-sided test)
```

```
. signrank PKU=Sibling
```

Wilcoxon signed-rank test

sign	obs	sum ranks	expected
positive	6	40.5	60
negative	9	79.5	60
zero	0	0	0
all	15	120	120

```
unadjusted variance    310.00
adjustment for ties    -0.75
adjustment for zeros    0.00
```

```
adjusted variance      309.25
```

```
Ho: PKU = Sibling
```

```
z = -1.109
Prob > |z| = 0.2675
```

```
. ttest PKU=Sibling, unequal
```

```
unequal option invalid for one-sample or paired tests
r(198);
```

```
. ttest diff=0
```

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
diff	15	-4.133333	4.10559	15.90088	-12.93895	4.672282

```
mean = mean(diff)
Ho: mean = 0
t = -1.0068
degrees of freedom = 14
```

```
Ha: mean < 0
Pr(T < t) = 0.1656
Ha: mean != 0
Pr(|T| > |t|) = 0.3311
Ha: mean > 0
Pr(T > t) = 0.8344
```

```
. ttest PKU=Sibling
```

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
PKU	15	94.66667	4.789539	18.5498	84.39413	104.9392
Sibling	15	98.8	3.450604	13.36413	91.39919	106.2008
diff	15	-4.133333	4.10559	15.90088	-12.93895	4.672282

```
mean(diff) = mean(PKU - Sibling)
Ho: mean(diff) = 0
t = -1.0068
degrees of freedom = 14
```

```
Ha: mean(diff) < 0
Pr(T < t) = 0.1656
Ha: mean(diff) != 0
Pr(|T| > |t|) = 0.3311
Ha: mean(diff) > 0
Pr(T > t) = 0.8344
```

```
. save "C:\Users\herringa\Documents\BIOS600\pke.dta", replace
file C:\Users\herringa\Documents\BIOS600\pke.dta saved
```

```
. clear
```

```
. set obs 1
obs was 0, now 1
```

```
. generate str var1 = "before" in 1
```

```
. clear
```

```
. set obs 1
obs was 0, now 1
```

```
. generate var1 = 1.71 in 1
```

```
. set obs 2
obs was 1, now 2
```

```
. replace var1 = 1.25 in 2
(1 real change made)
```

```
. set obs 3
obs was 2, now 3
```

```
. replace var1 = 2.13 in 3
(1 real change made)

. set obs 4
obs was 3, now 4

. replace var1 = 1.29 in 4
(1 real change made)

. set obs 5
obs was 4, now 5

. replace var1 = 1.58 in 5
(1 real change made)

. set obs 6
obs was 5, now 6

. replace var1 = 4 in 6
(1 real change made)

. set obs 7
obs was 6, now 7

. replace var1 = 1.4 in 7
(1 real change made)

. set obs 8
obs was 7, now 8

. replace var1 = 1.08 in 8
(1 real change made)

. set obs 9
obs was 8, now 9

. replace var1 = 1.83 in 9
(1 real change made)

. set obs 10
obs was 9, now 10

. replace var1 = .67 in 10
(1 real change made)

. set obs 11
obs was 10, now 11

. replace var1 = 1.1 in 11
(1 real change made)

. set obs 12
obs was 11, now 12

. replace var1 = 2.71 in 12
(1 real change made)
```

```
. set obs 13
obs was 12, now 13

. replace var1 = 1.96 in 13
(1 real change made)

. generate var2 = .13 in 1
(12 missing values generated)

. replace var2 = .88 in 2
(1 real change made)

. replace var2 = 1.38 in 3
(1 real change made)

. replace var2 = .13 in 4
(1 real change made)

. replace var2 = .25 in 5
(1 real change made)

. replace var2 = 2.63 in 6
(1 real change made)

. replace var2 = 1.38 in 7
(1 real change made)

. replace var2 = .5 in 8
(1 real change made)

. replace var2 = 1.25 in 9
(1 real change made)

. replace var2 = .75 in 10
(1 real change made)

. replace var2 = 0 in 11
(1 real change made)

. replace var2 = 2.38 in 12
(1 real change made)

. replace var2 = 1.13 in 13
(1 real change made)

. rename var1 before

. label variable before "Episodes/hour 24 hours before treatment"

. rename var2 after

. label variable after "Episodes/hour 16 hours after treatment"

. save "C:\Users\herringa\Documents\BIOS600\LECTURES\LECTURE18\apnea.dta"
file C:\Users\herringa\Documents\BIOS600\LECTURES\LECTURE18\apnea.dta saved
```

```

. generate diff=before-after

. hist before
(bin=3, start=.67000002, width=1.11)

. hist before, bin(6)
(bin=6, start=.67000002, width=.555)

. hist after, bin(6)
(bin=6, start=0, width=.43833335)

. hist diff, bin(6)
(bin=6, start=-.07999998, width=.27666667)

. hist diff, bin(6)
(bin=6, start=-.07999998, width=.27666667)

. help(graph combine)

. hist before, bin(6) saving(before)
(bin=6, start=.67000002, width=.555)
(file before.gph saved)

. hist after, bin(6) saving(after)
(bin=6, start=0, width=.43833335)
(file after.gph saved)

. hist diff, bin(6) saving(diff)
(bin=6, start=-.07999998, width=.27666667)
(file diff.gph saved)

. graph combine before after diff
before is not a memory graph
r(198);

. graph combine before.gph after.gph diff.gph

. label variable diff "Difference in episodes/hour (before-after)"

. save "C:\Users\herringa\Documents\BIOS600\LECTURES\LECTURE18\apnea.dta", repl
> ace
file C:\Users\herringa\Documents\BIOS600\LECTURES\LECTURE18\apnea.dta saved

. hist diff, bin(6) saving(diff2)
(bin=6, start=-.07999998, width=.27666667)
(file diff2.gph saved)

. graph combine before.gph after.gph diff2.gph

. hist before, bin(6) saving(before) freq
(bin=6, start=.67000002, width=.555)
file before.gph already exists
r(602);

. hist before, bin(6) saving(before) freq replace
(bin=6, start=.67000002, width=.555)
option replace not allowed
r(198);

```



```

. hist before, bin(6) saving(before2) freq
(bin=6, start=-.67000002, width=.555)
(file before2.gph saved)

. hist after, bin(6) saving(after2) freq
(bin=6, start=0, width=.43833335)
(file after2.gph saved)

. hist diff, bin(6) saving(diff3) freq
(bin=6, start=-.07999998, width=.27666667)
(file diff3.gph saved)

. graph combine before2.gph after2.gph diff3.gph

. list before after diff

```

	before	after	diff
1.	1.71	.13	1.58
2.	1.25	.88	.37
3.	2.13	1.38	.7500001
4.	1.29	.13	1.16
5.	1.58	.25	1.33
6.	4	2.63	1.37
7.	1.4	1.38	.02
8.	1.08	.5	.58
9.	1.83	1.25	.58
10.	.67	.75	-.08
11.	1.1	0	1.1
12.	2.71	2.38	.3299999
13.	1.96	1.13	.83

.