Modelli Econometrici

Laboratorio di Stata: lezione 2

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Riepilogo della scorsa lezione

- Introduzione a Stata
- Le diverse versioni di Stata (9, 10 e 11)
- L'interfaccia grafica (GUI) di Stata: finestre e menù
- La costruzione di datasets relazionali e importazione dati in Stata
- Files .dta, .log e .do
- Editor dei dati in Stata
- Modi di utilizzo di Stata I: inserimento di comandi nell'interfaccia grafica
- Modi di utilizzo di Stata II: inserimento manuale dei comandi
- Modi di utilizzo di Stata III: programmazione
- La sintassi dei comandi di Stata
- L'Help in linea
- Esportazione di dati

Sommario

- Introduzione all'analisi dei dati in Stata
- Operazioni iniziali
- Gestione dei dati
- Descrizione statistica dei dati
- Analisi grafiche
- Modello di regressione

gen

Intercooled Stata 9.0 - [Results]

File Edit Prefs Data Graphics Statistics User Window Help

Review

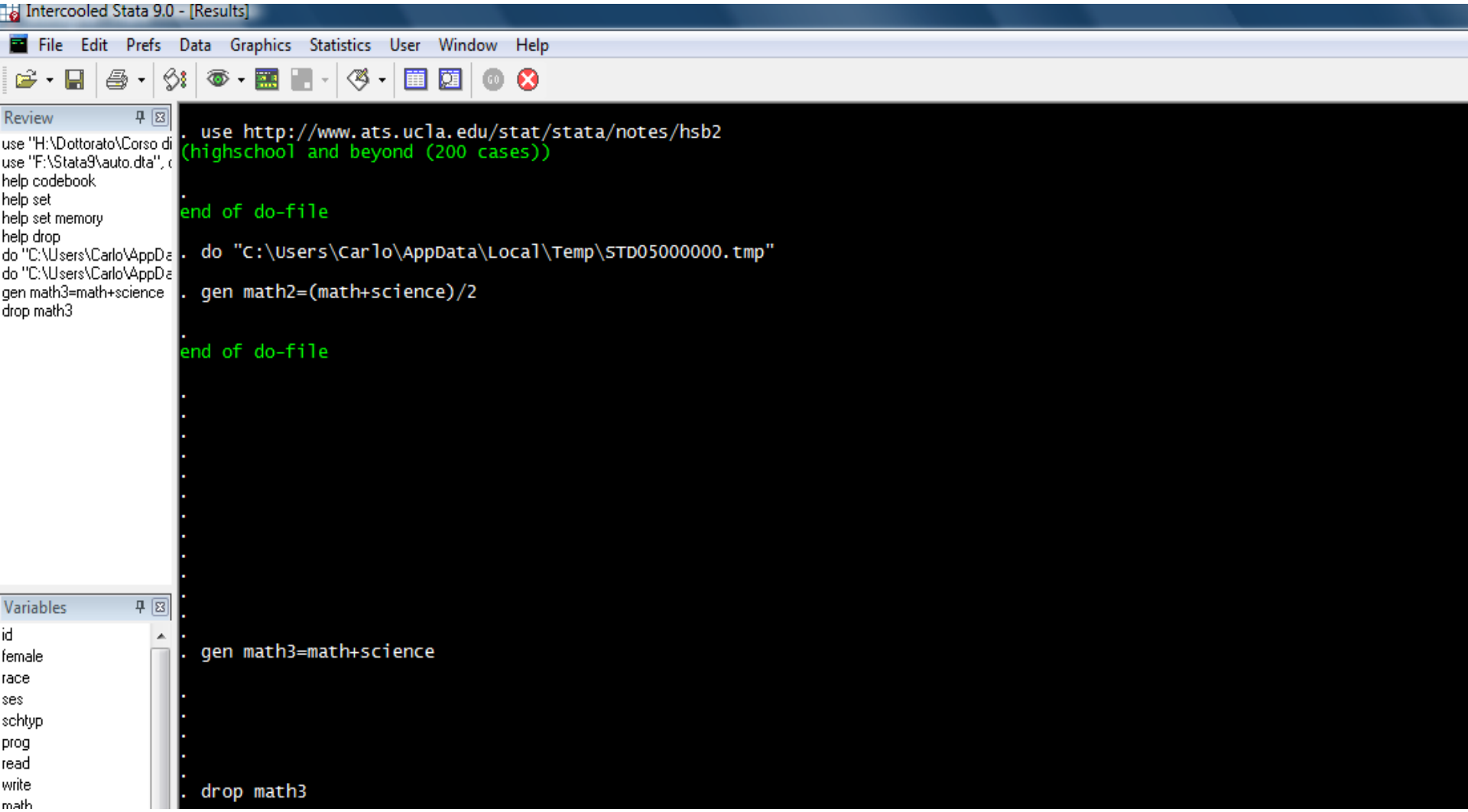
```
use "H:\Dottorato\Corso di
use "F:\Stata9\auto.dta", c
help codebook
help set
help set memory
help drop
do "C:\Users\Carlo\AppDa
do "C:\Users\Carlo\AppDa
gen math3=math+science
```

Variables

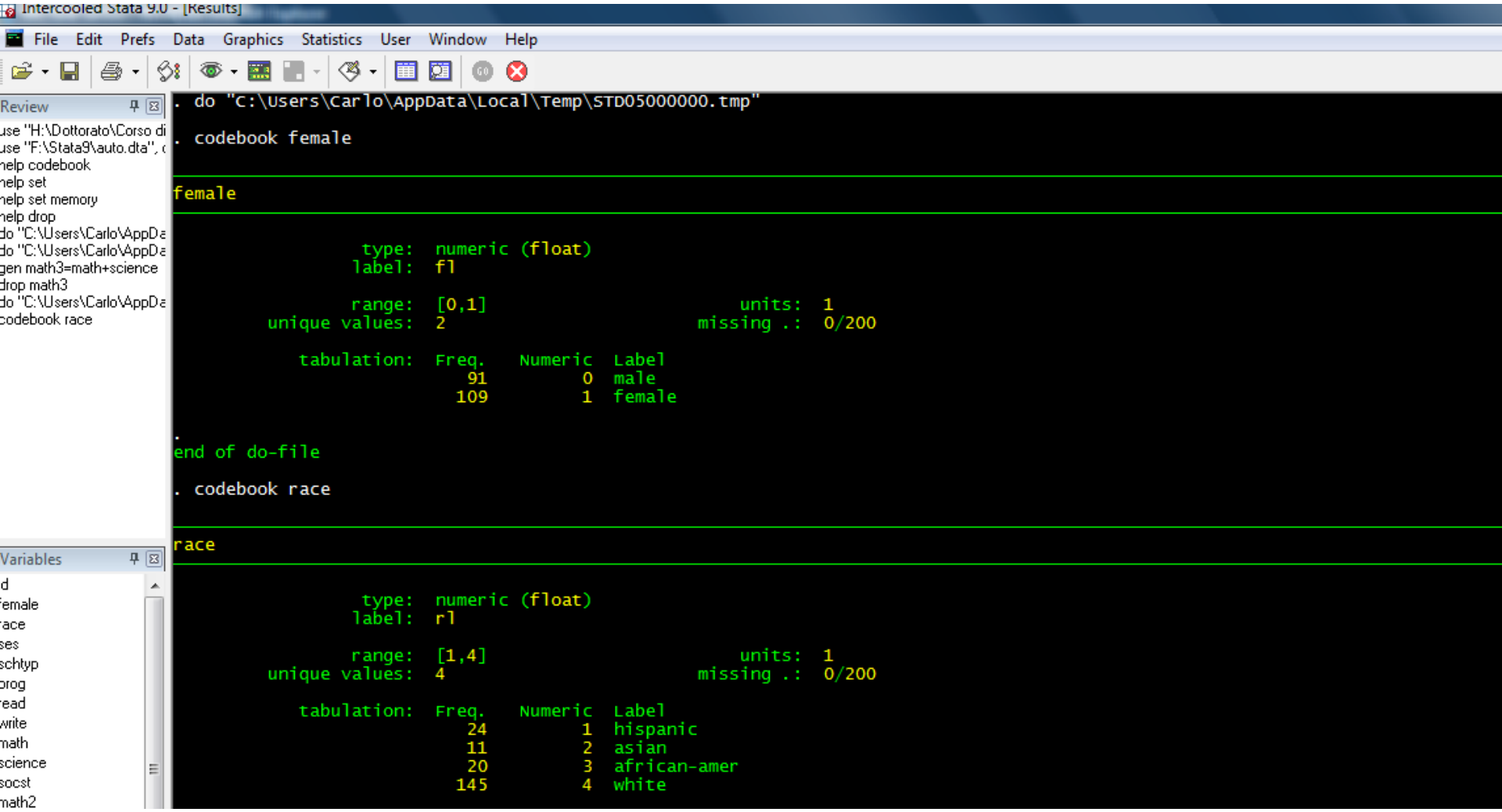
```
id
female
race
ses
schtyp
prog
read
write
math
science
socst
math2
```

```
. do "C:\Users\Carlo\AppData\Local\Temp\STD05000000.tmp"

. use http://www.ats.ucla.edu/stat/stata/notes/hsb2
(highschool and beyond (200 cases))

.
end of do-file

. do "C:\Users\Carlo\AppData\Local\Temp\STD05000000.tmp"

. gen math2=(math+science)/2

.
end of do-file

. gen math3=math+science

.
```

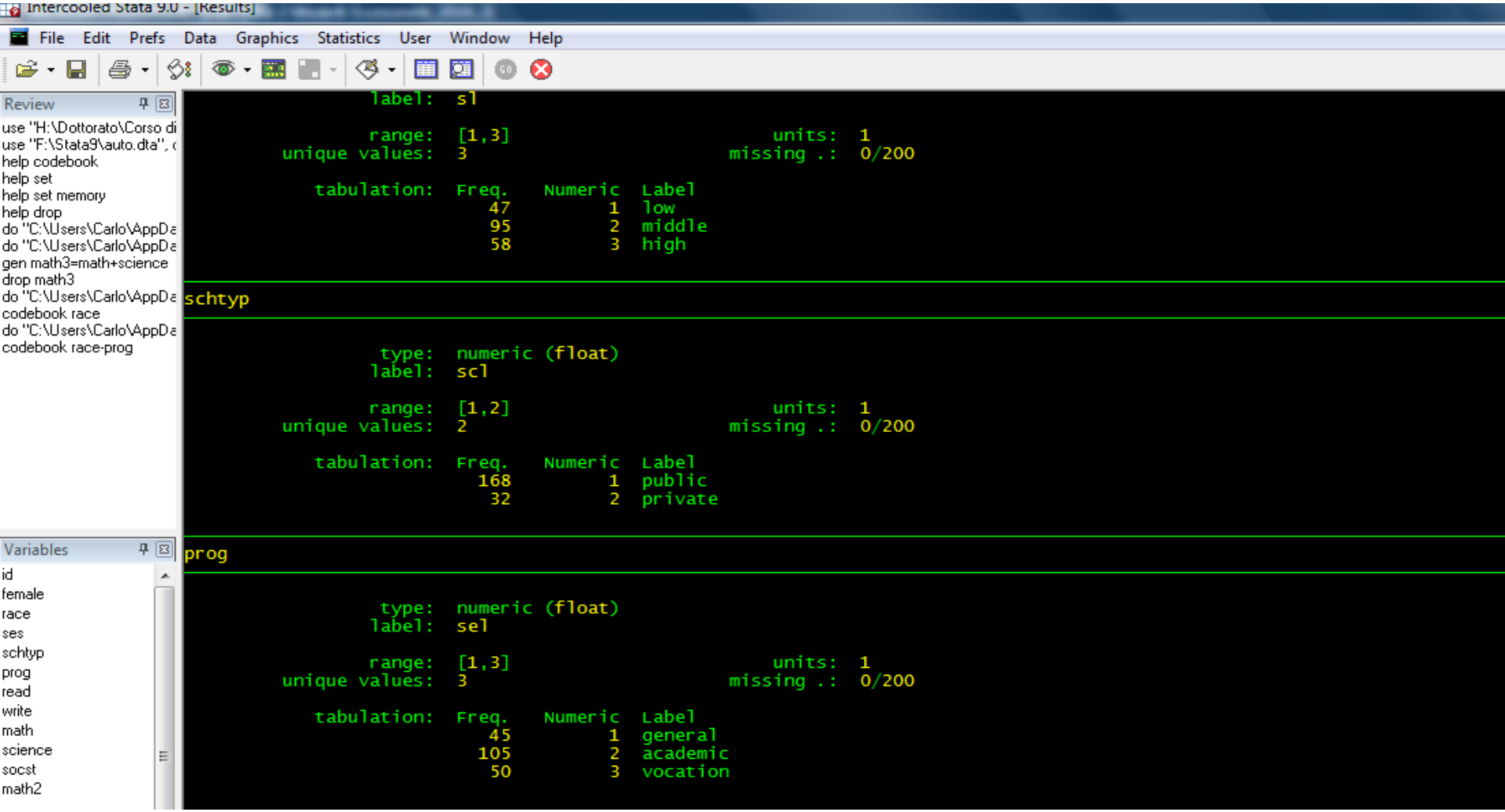
drop


Intercooled Stata 9.0 - [Results]
File Edit Prefs Data Graphics Statistics User Window Help
Review
use "H:\Dottorato\Corso di
use "F:\Stata9\auto.dta", c
help codebook
help set
help set memory
help drop
do "C:\Users\Carlo\AppDa
do "C:\Users\Carlo\AppDa
gen math3=math+science
drop math3
Variables
id
female
race
ses
schtyp
prog
read
write
math
. use http://www.ats.ucla.edu/stat/stata/notes/hsb2
(highschool and beyond (200 cases))
.
end of do-file
. do "C:\Users\Carlo\AppData\Local\Temp\STD05000000.tmp"
. gen math2=(math+science)/2
.
end of do-file
. gen math3=math+science
. drop math3

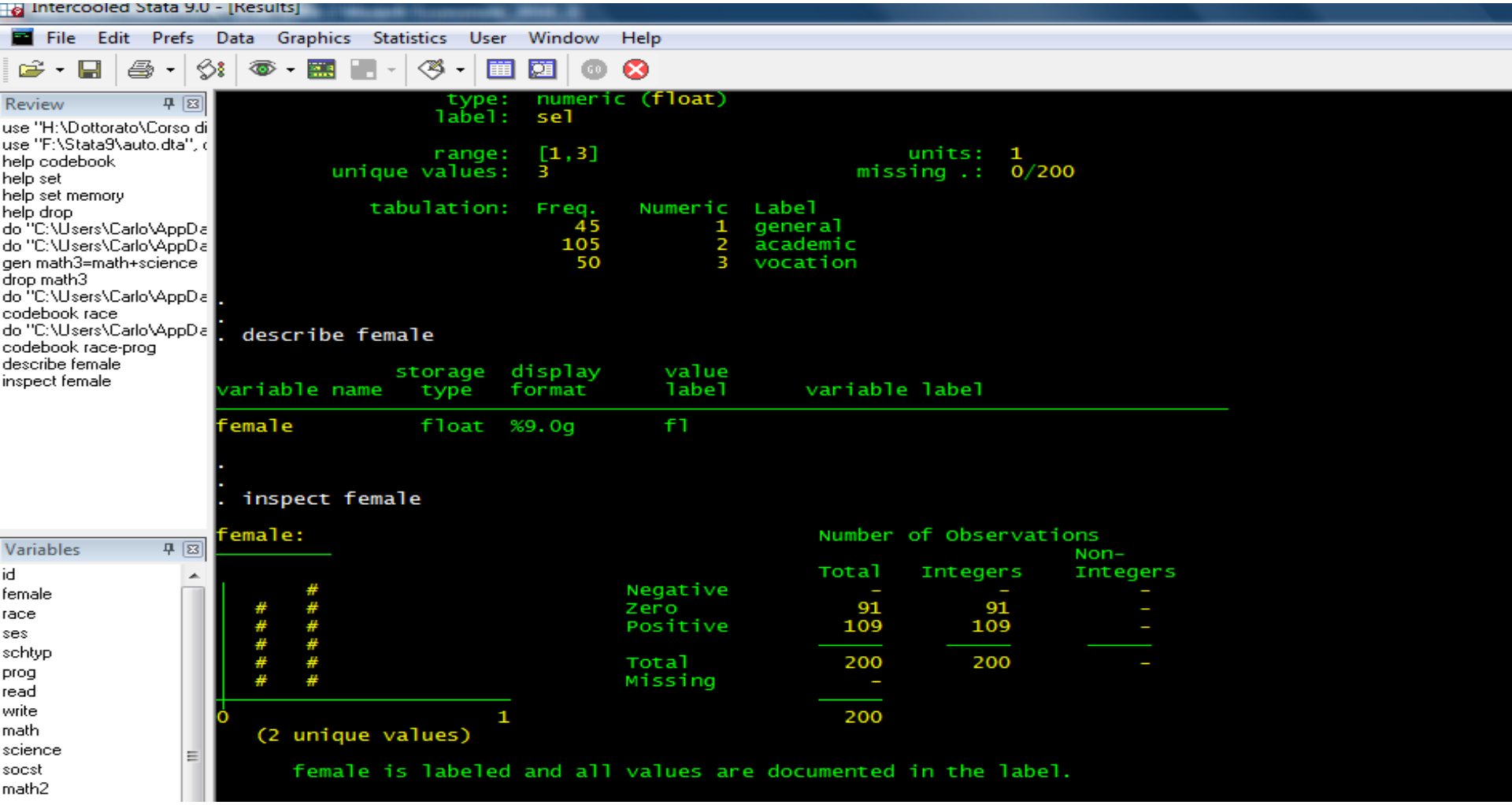
codebook


Intercooled Stata 9.0 - [Results]
File Edit Prefs Data Graphics Statistics User Window Help
Review
use "H:\Dottorato\Corso di
use "F:\Stata9\auto.dta",
help codebook
help set
help set memory
help drop
do "C:\Users\Carlo\AppDa
do "C:\Users\Carlo\AppDa
gen math3=math+science
drop math3
do "C:\Users\Carlo\AppDa
codebook race
Variables
id
female
race
ses
schtyp
prog
read
write
math
science
socst
math2
. do "C:\Users\Carlo\AppData\Local\Temp\STD05000000.tmp"
. codebook female
female
type: numeric (float)
label: fl
range: [0,1] units: 1
unique values: 2 missing .: 0/200
tabulation: Freq. Numeric Label
91 0 male
109 1 female
.
end of do-file
. codebook race
race
type: numeric (float)
label: rl
range: [1,4] units: 1
unique values: 4 missing .: 0/200
tabulation: Freq. Numeric Label
24 1 hispanic
11 2 asian
20 3 african-amer
145 4 white

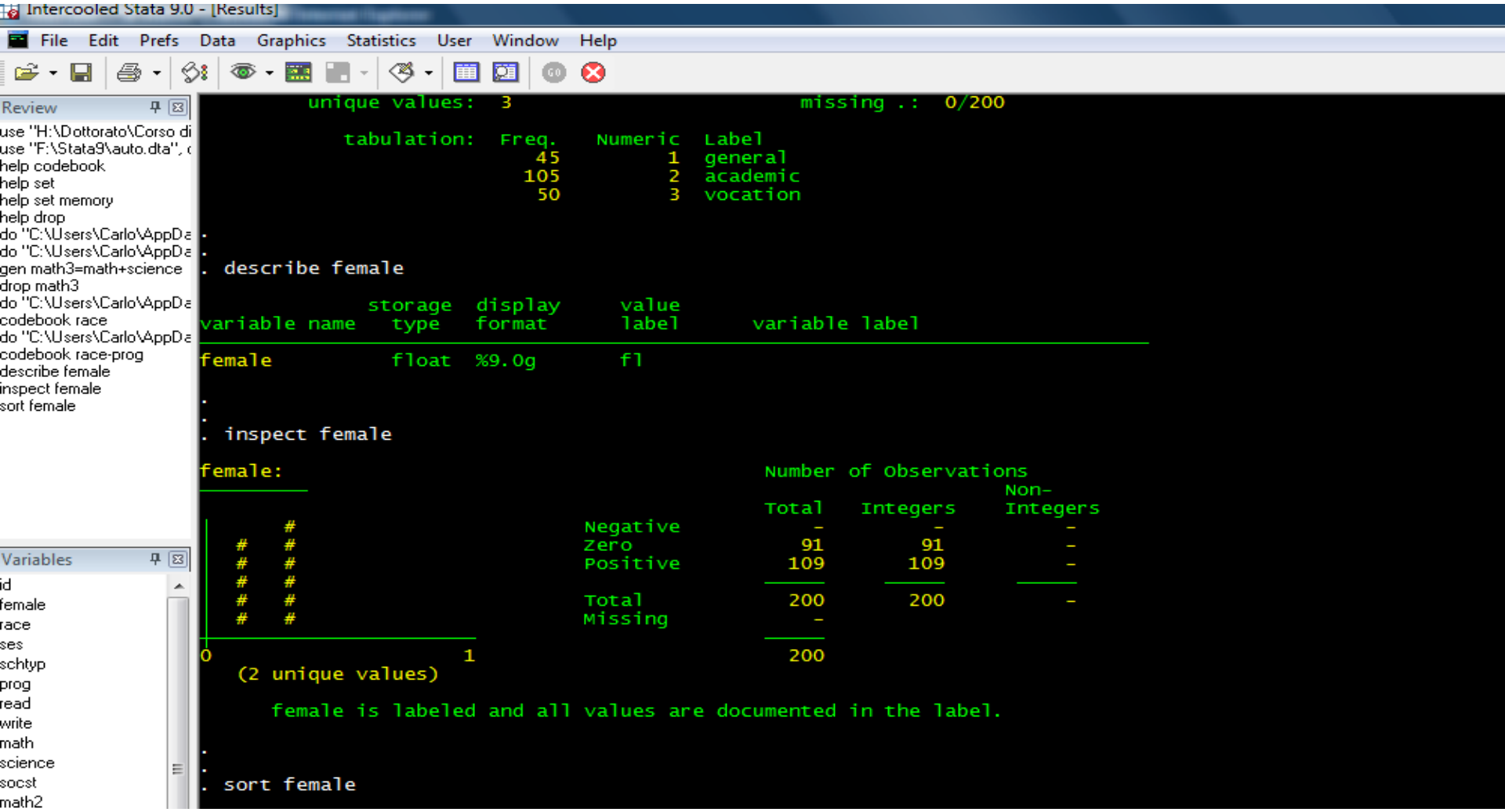
Replica di comandi per più variabili



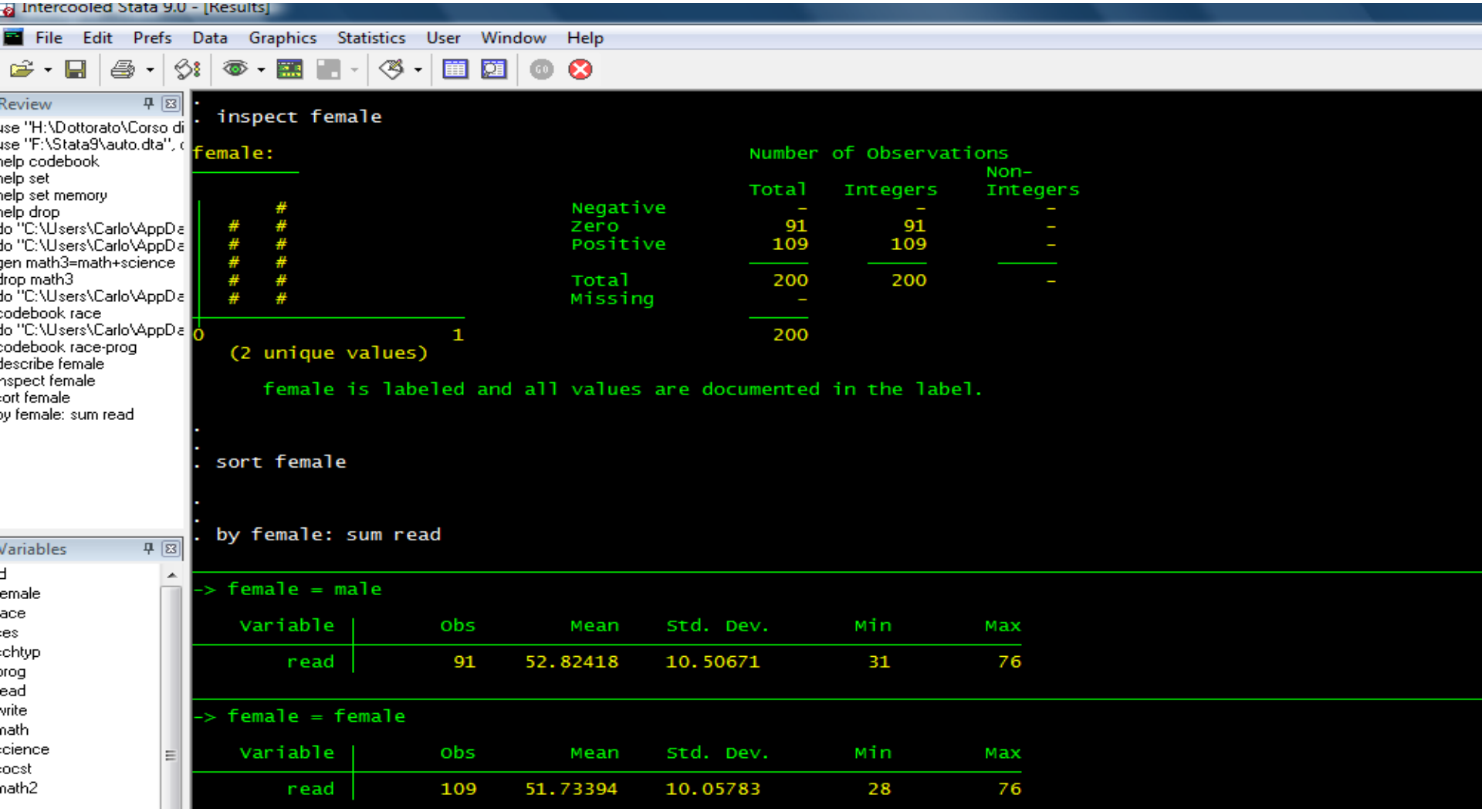
inspect


Intercooled Stata 9.0 - [Results]
File Edit Prefs Data Graphics Statistics User Window Help
Review
use "H:\Dottorato\Corso di
use "F:\Stata9\auto.dta",
help codebook
help set
help set memory
help drop
do "C:\Users\Carlo\AppD
do "C:\Users\Carlo\AppD
gen math3=math+science
drop math3
do "C:\Users\Carlo\AppD
codebook race
do "C:\Users\Carlo\AppD
codebook race-prog
describe female
inspect female
Variables
id
female
race
ses
schtyp
prog
read
write
math
science
socst
math2
type: numeric (float)
label: sel
range: [1,3] units: 1
unique values: 3 missing .: 0/200
tabulation: Freq. Numeric Label
45 1 general
105 2 academic
50 3 vocation
. describe female
storage display value
variable name type format label variable label
female float %9.0g fl
. inspect female
female:
Number of Observations
Total Integers Non-Integers
Negative - - -
Zero 91 91 -
Positive 109 109 -
Total 200 200 -
Missing -
200
0 1
(2 unique values)
female is labeled and all values are documented in the label.

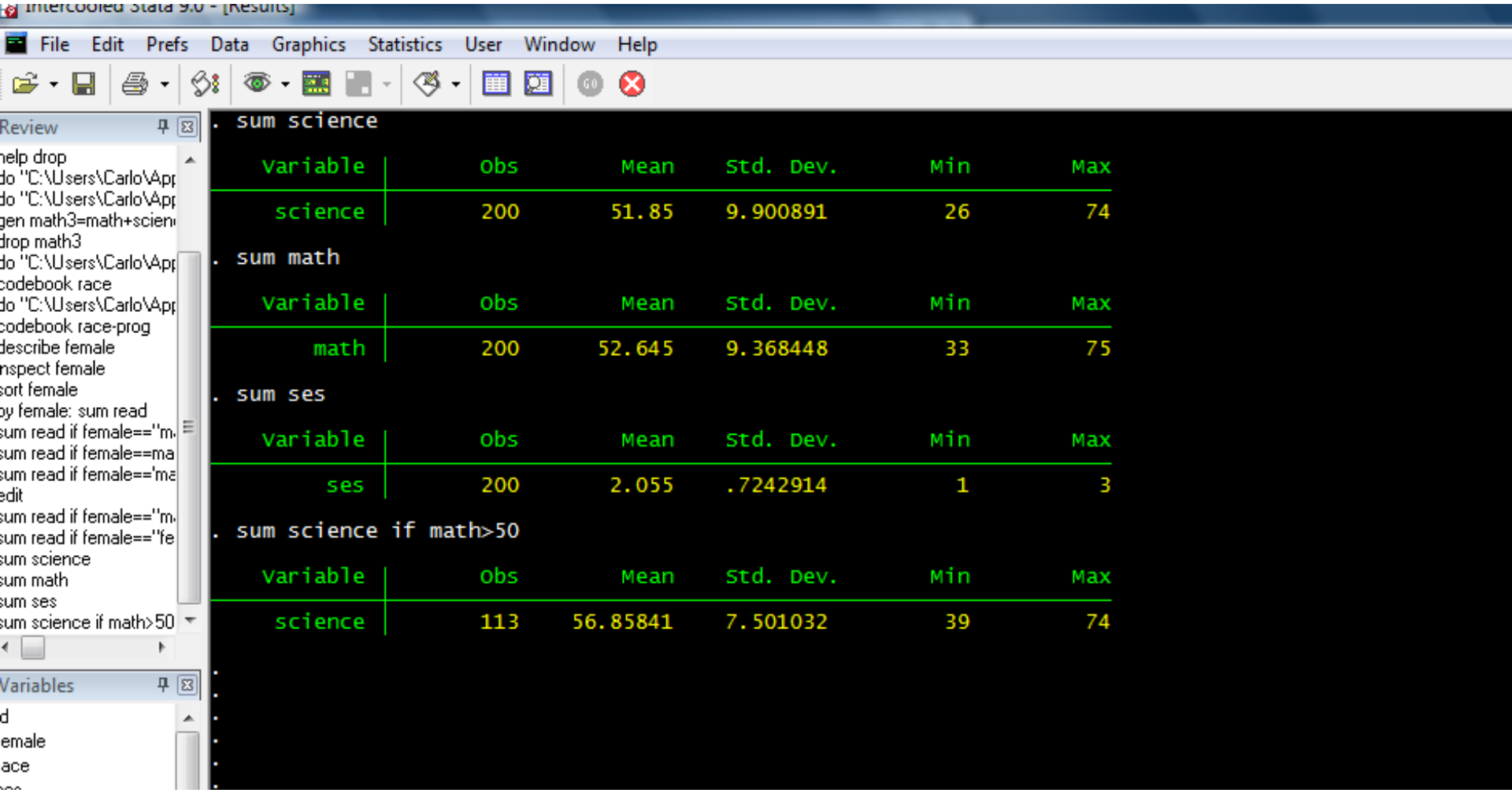
sort


Intercooled Stata 9.0 - [Results]
File Edit Prefs Data Graphics Statistics User Window Help
Review
use "H:\Dottorato\Corso di
use "F:\Stata9\auto.dta", c
help codebook
help set
help set memory
help drop
do "C:\Users\Carlo\AppDa
do "C:\Users\Carlo\AppDa
gen math3=math+science
drop math3
do "C:\Users\Carlo\AppDa
codebook race
do "C:\Users\Carlo\AppDa
codebook race-prog
describe female
inspect female
sort female
Variables
id
female
race
ses
schtyp
prog
read
write
math
science
socst
math2
unique values: 3 missing .: 0/200
tabulation: Freq. Numeric Label
45 1 general
105 2 academic
50 3 vocation
. describe female
variable name storage type display format value label variable label
female float %9.0g fl
. inspect female
female:
Number of Observations
Total Integers Non-Integers
Negative - - -
Zero 91 91 -
Positive 109 109 -
Total 200 200 -
Missing -
0 1
200
(2 unique values)
female is labeled and all values are documented in the label.
. sort female

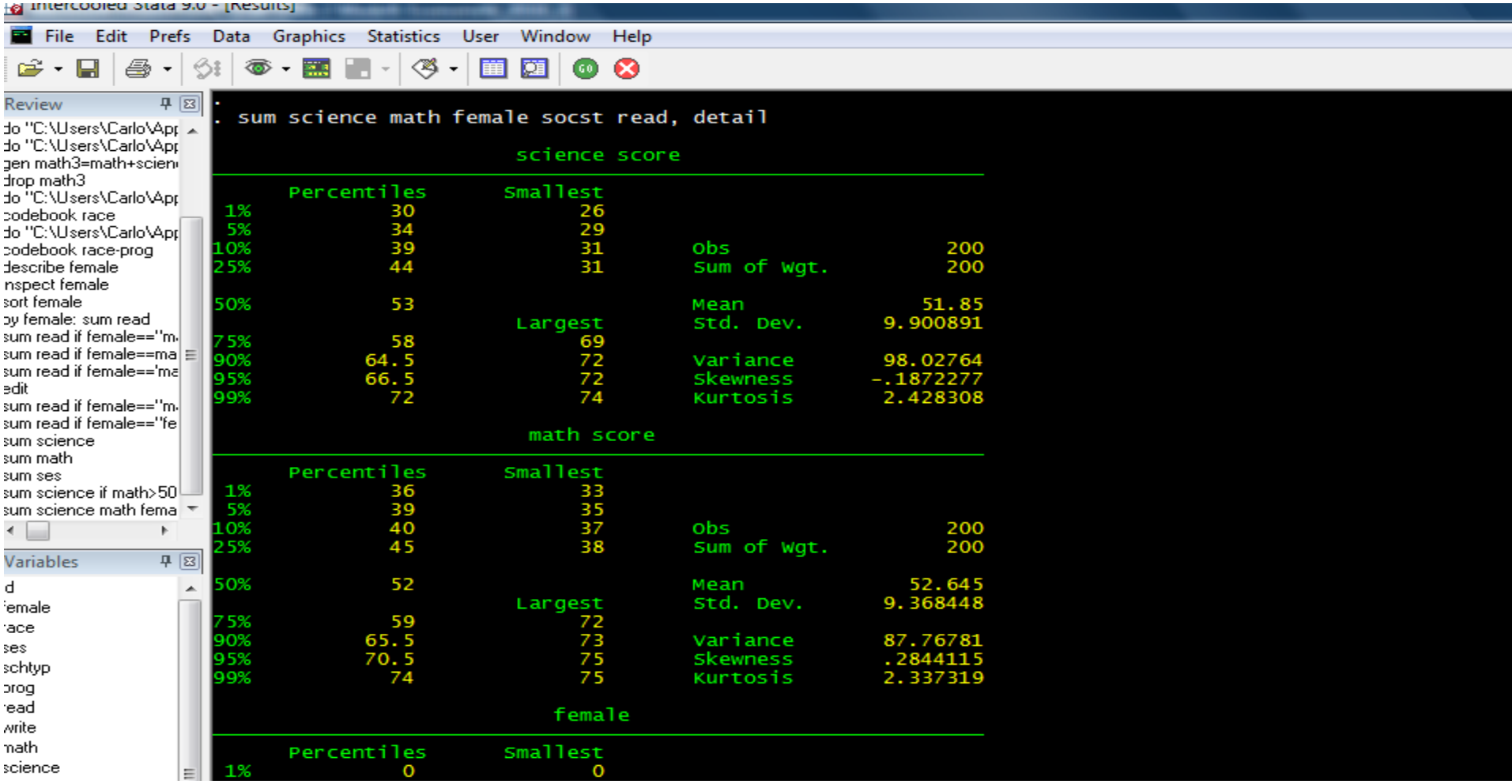
Uso di by


Intercooled Stata 9.0 - [Results]
File Edit Prefs Data Graphics Statistics User Window Help
Review
use "H:\Dottorato\Corso di
use "F:\Stata9\auto.dta",
help codebook
help set
help set memory
help drop
do "C:\Users\Carlo\AppDa
do "C:\Users\Carlo\AppDa
gen math3=math+science
drop math3
do "C:\Users\Carlo\AppDa
codebook race
do "C:\Users\Carlo\AppDa
codebook race-prog
describe female
inspect female
sort female
by female: sum read
Variables
female
race
ses
schtyp
prog
read
write
math
science
socst
math2
. inspect female
female:
Number of Observations
Total Integers Non-Integers
Negative - - -
Zero 91 91 -
Positive 109 109 -
Total 200 200 -
Missing -
200
0 1
(2 unique values)
female is labeled and all values are documented in the label.
. sort female
. by female: sum read
-> female = male
Variable Obs Mean Std. Dev. Min Max
read 91 52.82418 10.50671 31 76
-> female = female
Variable Obs Mean Std. Dev. Min Max
read 109 51.73394 10.05783 28 76

Uso di if


File Edit Prefs Data Graphics Statistics User Window Help
Review
help drop
do "C:\Users\Carlo\App
do "C:\Users\Carlo\App
gen math3=math+scien
drop math3
do "C:\Users\Carlo\App
codebook race
do "C:\Users\Carlo\App
codebook race-prog
describe female
inspect female
sort female
by female: sum read
sum read if female=="m
sum read if female==ma
sum read if female=='ma
edit
sum read if female=="m
sum read if female=="fe
sum science
sum math
sum ses
sum science if math>50
Variables
d
emale
ace
. sum science
Variable | Obs Mean Std. Dev. Min Max
science | 200 51.85 9.900891 26 74
. sum math
Variable | Obs Mean Std. Dev. Min Max
math | 200 52.645 9.368448 33 75
. sum ses
Variable | Obs Mean Std. Dev. Min Max
ses | 200 2.055 .7242914 1 3
. sum science if math>50
Variable | Obs Mean Std. Dev. Min Max
science | 113 56.85841 7.501032 39 74

sum


File Edit Prefs Data Graphics Statistics User Window Help
Review
do "C:\Users\Carlo\App
do "C:\Users\Carlo\App
gen math3=math+scien
drop math3
do "C:\Users\Carlo\App
codebook race
do "C:\Users\Carlo\App
codebook race-prog
describe female
inspect female
sort female
by female: sum read
sum read if female=="m
sum read if female==ma
sum read if female=='ma
edit
sum read if female=="m
sum read if female=="fe
sum science
sum math
sum ses
sum science if math>50
sum science math fema
Variables
id
female
race
ses
schtyp
prog
read
write
math
science
. sum science math female socst read, detail
science score
Percentiles Smallest
1% 30 26
5% 34 29
10% 39 31 Obs 200
25% 44 31 Sum of Wgt. 200
50% 53 Mean 51.85
Largest Std. Dev. 9.900891
75% 58 69
90% 64.5 72 Variance 98.02764
95% 66.5 72 Skewness -.1872277
99% 72 74 Kurtosis 2.428308
math score
Percentiles Smallest
1% 36 33
5% 39 35
10% 40 37 Obs 200
25% 45 38 Sum of Wgt. 200
50% 52 Mean 52.645
Largest Std. Dev. 9.368448
75% 59 72
90% 65.5 73 Variance 87.76781
95% 70.5 75 Skewness .2844115
99% 74 75 Kurtosis 2.337319
female
Percentiles Smallest
1% 0 0

tabulate

```
sort female
by female: sum read
sum read if female=="m
sum read if female==ma
sum read if female=='ma
edit
sum read if female=="m
sum read if female=="fe
sum science
sum math
sum ses
sum science if math>50
sum science math fema
do "C:\Users\Carlo\App
use "F:\Stata9\auto.dta
do "C:\Users\Carlo\App
do "C:\Users\Carlo\App
do "C:\Users\Carlo\App
do "C:\Users\Carlo\App
do "C:\Users\Carlo\App
do "C:\Users\Carlo\App
do "C:\Users\Carlo\App
```

Variables

```
make
price
mpg
rep78
headroom
trunk
weight
length
turn
displacement
gear_ratio
foreign
```

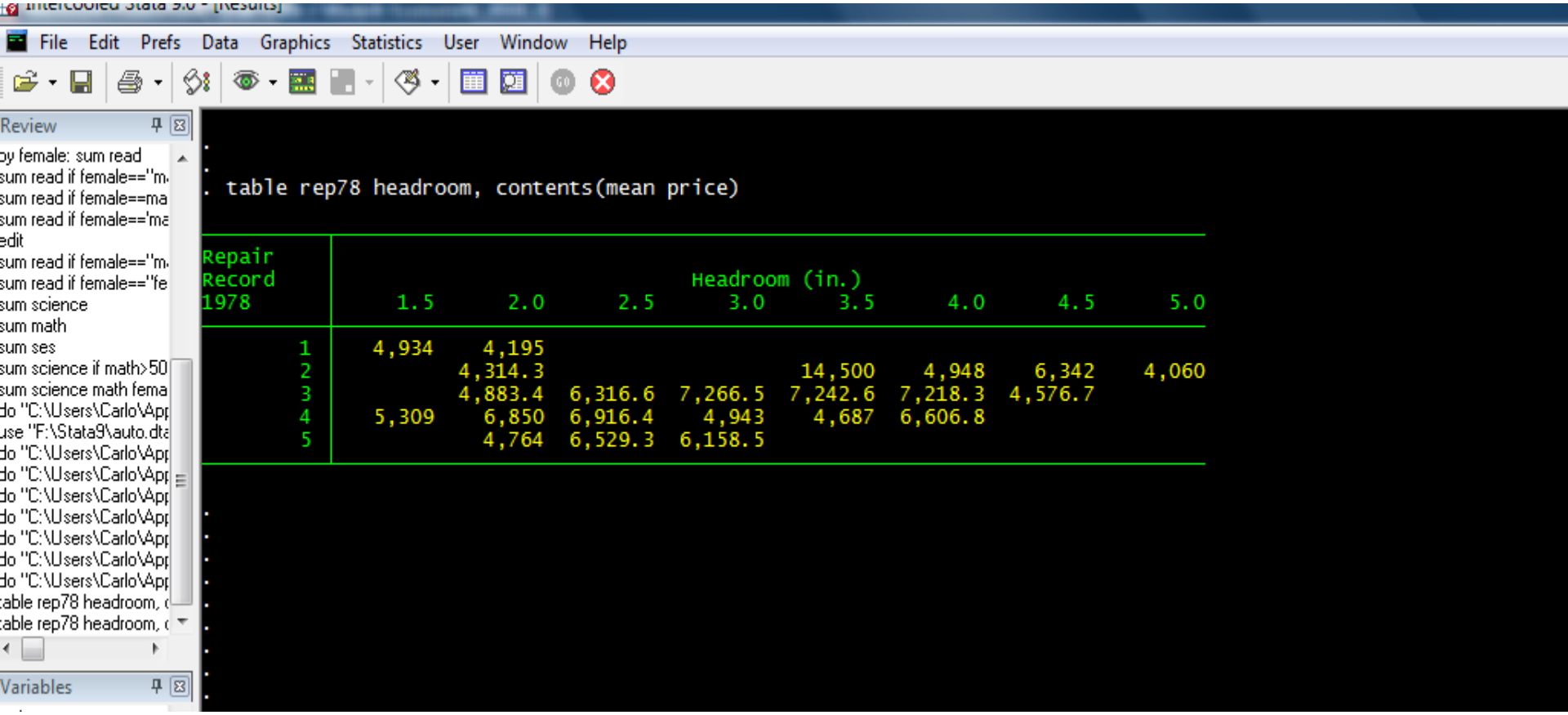
Repair Record 1978	Headroom (in.) 1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	Total
1	1	1	0	0	0	0	0	0	2
	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
	33.33	7.69	0.00	0.00	0.00	0.00	0.00	0.00	2.90
	1.45	1.45	0.00	0.00	0.00	0.00	0.00	0.00	2.90
2	0	3	0	0	1	2	1	1	8
	0.00	37.50	0.00	0.00	12.50	25.00	12.50	12.50	100.00
	0.00	23.08	0.00	0.00	7.69	20.00	25.00	100.00	11.59
	0.00	4.35	0.00	0.00	1.45	2.90	1.45	1.45	11.59
3	0	5	5	4	10	3	3	0	30
	0.00	16.67	16.67	13.33	33.33	10.00	10.00	0.00	100.00
	0.00	38.46	35.71	36.36	76.92	30.00	75.00	0.00	43.48
	0.00	7.25	7.25	5.80	14.49	4.35	4.35	0.00	43.48
4	2	1	5	3	2	5	0	0	18
	11.11	5.56	27.78	16.67	11.11	27.78	0.00	0.00	100.00
	66.67	7.69	35.71	27.27	15.38	50.00	0.00	0.00	26.09
	2.90	1.45	7.25	4.35	2.90	7.25	0.00	0.00	26.09
5	0	3	4	4	0	0	0	0	11
	0.00	27.27	36.36	36.36	0.00	0.00	0.00	0.00	100.00
	0.00	23.08	28.57	36.36	0.00	0.00	0.00	0.00	15.94
	0.00	4.35	5.80	5.80	0.00	0.00	0.00	0.00	15.94
Total	3	13	14	11	13	10	4	1	69
	4.35	18.84	20.29	15.94	18.84	14.49	5.80	1.45	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	4.35	18.84	20.29	15.94	18.84	14.49	5.80	1.45	100.00

```
.
end of do-file

.
```

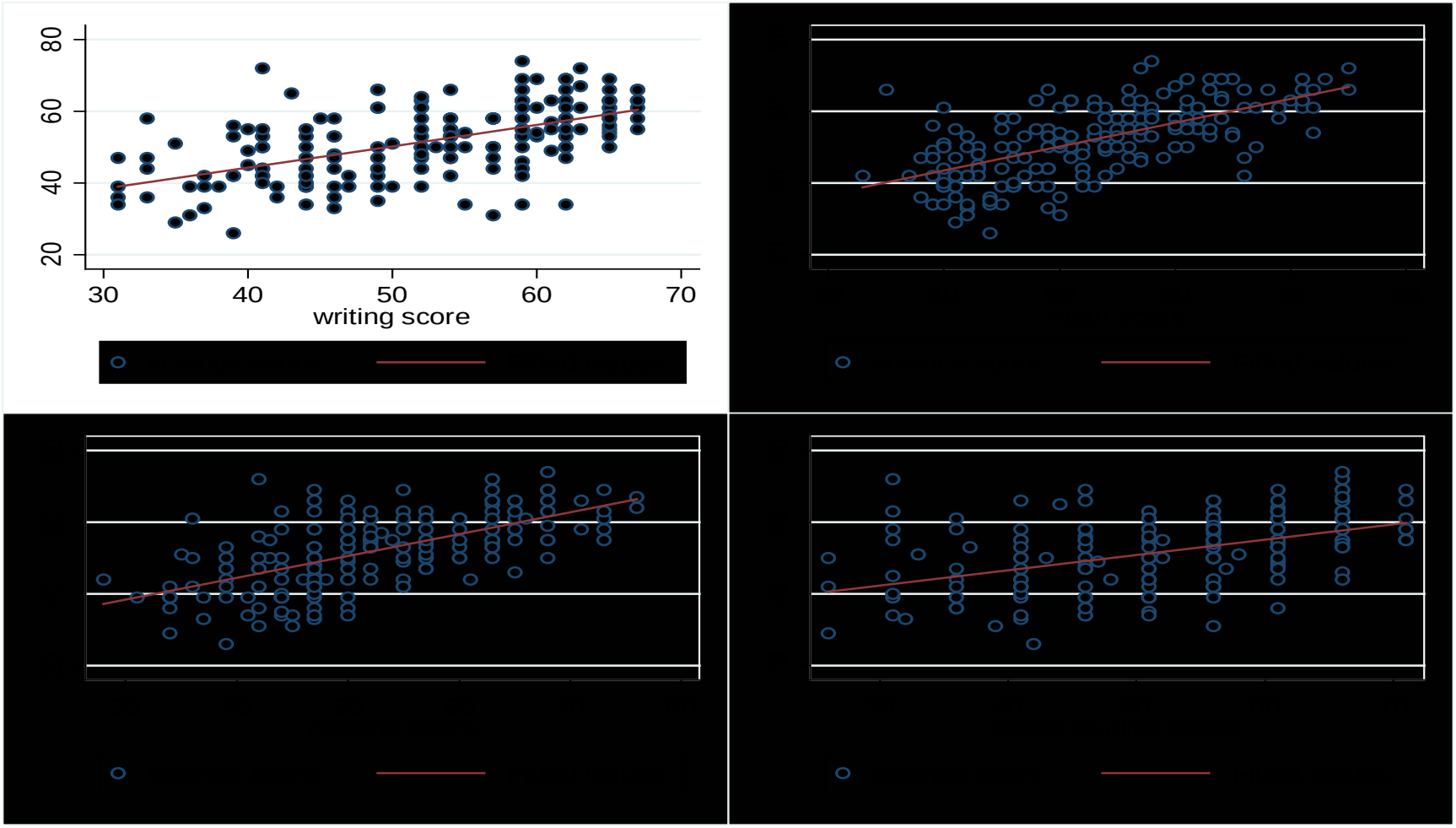
Command

```
tabulate rep78 headroom, column row cell
```

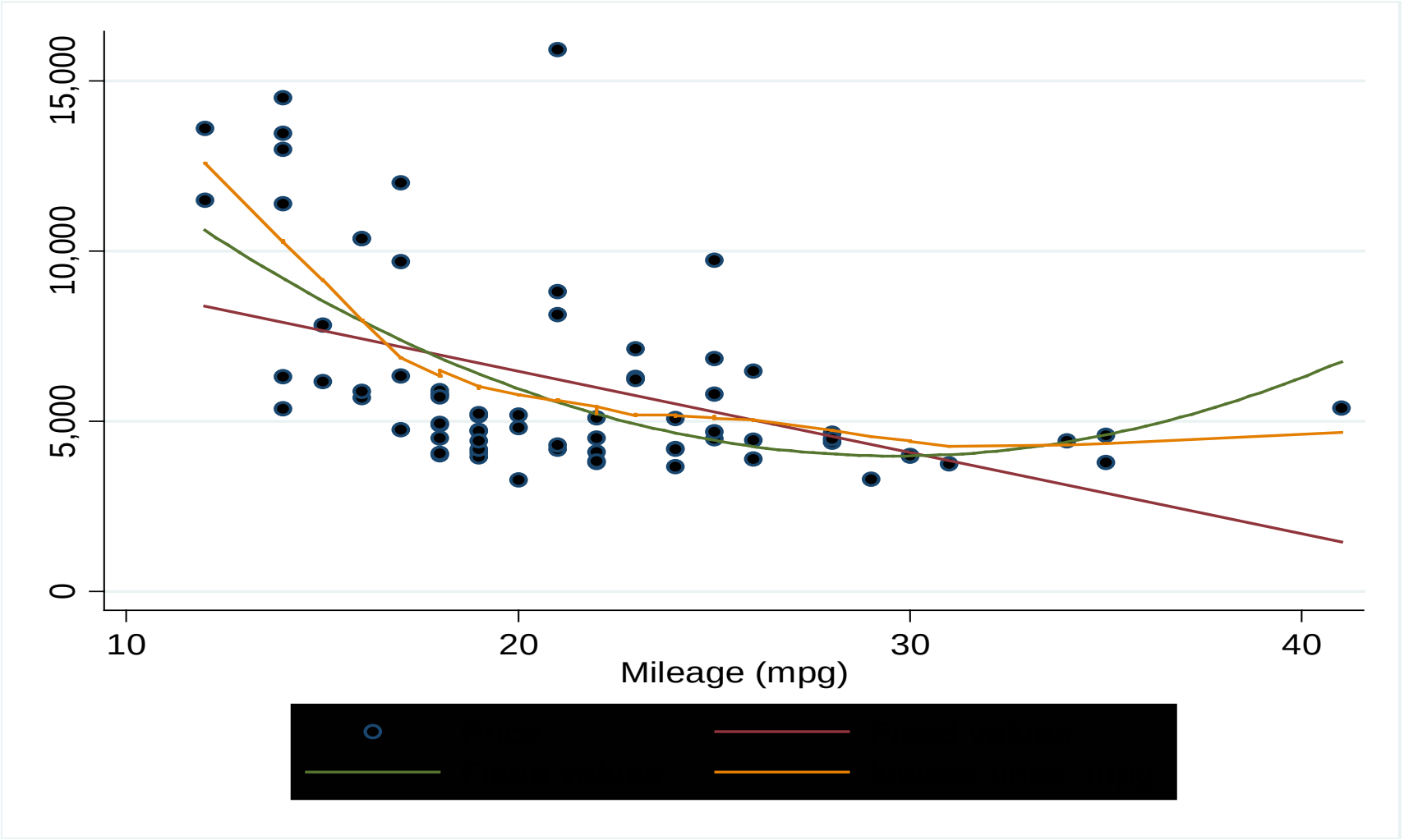
table


File Edit Prefs Data Graphics Statistics User Window Help
Review
Variables
. table rep78 headroom, contents(mean price)
Repair Record 1978 | Headroom (in.)
1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
1 4,934 4,195
2 4,314.3 14,500 4,948 6,342 4,060
3 4,883.4 6,316.6 7,266.5 7,242.6 7,218.3 4,576.7
4 5,309 6,850 6,916.4 4,943 4,687 6,606.8
5 4,764 6,529.3 6,158.5

graph twoway



Twoway



regress

File Edit Prefs Data Graphics Statistics User Window Help

```
. do "C:\Users\Carlo\AppData\Local\Temp\STD05000000.tmp"

. twoway (scatter mpg price) (lowess mpg price, bwidth(0.3)) (lowess mpg price)

.
end of do-file

. twoway (scatter price mpg) (lfit price mpg) (qfit price mpg)

. twoway (scatter price mpg) (lfit price mpg) (qfit price mpg) (lowess price mpg)

. do "C:\Users\Carlo\AppData\Local\Temp\STD05000000.tmp"

. use http://www.ats.ucla.edu/stat/stata/notes/hsb2
(highschool and beyond (200 cases))

.
end of do-file

. do "C:\Users\Carlo\AppData\Local\Temp\STD05000000.tmp"

. regress science math female
```

Source	SS	df	MS
Model	7993.54995	2	3996.77498
Residual	11513.95	197	58.4464469
Total	19507.5	199	98.0276382

Number of obs	200
F(2, 197)	68.38
Prob > F	0.0000
R-squared	0.4098
Adj R-squared	0.4038
Root MSE	7.645

science	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
math	.6631901	.0578724	11.46	0.000	.549061	.7773191
female	-2.168396	1.086043	-2.00	0.047	-4.310159	-.0266329
_cons	18.11813	3.167133	5.72	0.000	11.8723	24.36397

Riepilogo

- Introduzione all'analisi dei dati in Stata
- Operazioni iniziali
- Gestione dei dati
- Descrizione dei dati
- Analisi grafiche
- Modello di regressione

Per approfondire Stata

- Delicious http://delicious.com/tag/stata
- Delicious http://delicious.com/c.drago/stata
- Pagine su Stata ad UCLA http://www.ats.ucla.edu/stat/stata/
- Statacorp website http://www.stata.com/
- Statacorp, risorse per l'apprendimento di Stata http://www.stata.com/links/resources1.html
- Tutorial (Carolina Population Center) http://www.cpc.unc.edu/research/tools/data_analysis/statatutorial/index.html
- Tutorial (Rodriguez Princeton University) http://data.princeton.edu/stata/default.html
- Parole chiave utili: "Stata", "Stata codes", "Stata notes", "Stata commands", "Stata tutorial", "Stata programming", "Stata tips".

Bibliografia (I)

- Di Fonzo Lisi (2005) “Serie Storiche Economiche” Carocci
- Marcellino (2006) “Econometria Applicata” Egea
- Scepi (2010) “Corso di Modelli Econometrici”
- Statacorp (2007) “Stata 10 Manuals”
- UCLA Academic Technology Services (2010): http://www.ats.ucla.edu/stat/stata/output/reg_output.htm