

How can I perform 3-way, 4-way, 5-way or more cross tabulation in Stata?

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RECOMMENDED CITATION

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The process of performing a 3-way, 4-way, 5-way or more cross tabulation in Stata involves using the "tabulate" command in the software. This command allows for the comparison of multiple variables at once, creating a table that displays the frequency of occurrences for each combination of variables. The syntax for this command varies based on the number of variables and the desired layout of the table. By utilizing the "tabulate" command and proper syntax, users can easily generate cross tabulation tables to analyze and interpret their data in Stata.

How can you get 3-way, 4-way, 5-way or more cross tabulation in Stata? | Stata FAQ

The tabulate command is great for 2-way cross tabulations. But how do you do 3-way, 4-way, 5-way or more cross tabulations? The answer is to use the table command with the stat(freq) option. Here is the general form of the table command.

table rowvars colvars tabvars, stat(freq)

Before we begin let's load the hsbdemo dataset and create an additional categorical variable, read_level.

use <https://stats.idre.ucla.edu/stat/data/hsbdemo>, clear

*** create new categorical variable**

```

gen read_level=read>=55
label define read_level 0 "low" 1 "high"
label values read_level read_level

```

We begin by looking at all of the 1-way tables for our categorical variables using the tabulation command, which has been shortened to tab.

```
tab1 prog ses female honors read_level
```

-> tabulation of prog

```

type of |
program | Freq. Percent Cum.
-----+-----
general | 45 22.50 22.50
academic | 105 52.50 75.00
vocation | 50 25.00 100.00
-----+-----
Total | 200 100.00

```

-> tabulation of ses

```

ses | Freq. Percent Cum.
-----+-----

```

low | 47 23.50 23.50
 middle | 95 47.50 71.00
 high | 58 29.00 100.00

-----+-----

Total | 200 100.00

-> tabulation of female

female | Freq. Percent Cum.

-----+-----

male | 91 45.50 45.50
 female | 109 54.50 100.00

-----+-----

Total | 200 100.00

-> tabulation of honors

honors |
 english | Freq. Percent Cum.

-----+-----

not enrolled | 147 73.50 73.50
 enrolled | 53 26.50 100.00

-----+-----

Total | 200 100.00

-> tabulation of read_level

read_level | Freq. Percent Cum.

-----+-----

low | 117 58.50 58.50

high | 83 41.50 100.00

-----+-----

Total | 200 100.00

Next the 2-way table.

tab prog ses

type of | ses

program | low middle high | Total

-----+-----+-----

general | 16 20 9 | 45

academic | 19 44 42 | 105

vocation | 12 31 7 | 50

-----+-----+-----

Total | 47 95 58 | 200

Now the 3-way table.

table prog ses female, stat(freq)

| female

| male female Total

-----+-----
type of program |

general |

ses |

low | 7 9 16

middle | 10 10 20

high | 4 5 9

Total | 21 24 45

academic |

ses |

low | 4 15 19

middle | 22 22 44

high | 21 21 42

Total | 47 58 105

vocation |

ses |

low | 4 8 12

middle | 15 16 31

high | 4 3 7

Total | 23 27 50

Total |

```

ses |
low | 15 32 47
middle | 47 48 95
high | 29 29 58
Total | 91 109 200

```

Followed by a 4-way table.

```

table prog ses female honors, stat(freq)

```

```

| honors english
| not enrolled enrolled Total

```

```

type of program |
general |
ses |
low |
female |
male | 7 7
female | 7 2 9
Total | 14 2 16
middle |

```

female |
male | 10 10
female | 8 2 10
Total | 18 2 20
high |
female |
male | 2 2 4
female | 4 1 5
Total | 6 3 9
Total |
female |
male | 19 2 21
female | 19 5 24
Total | 38 7 45
academic |
ses |
low |
female |
male | 3 1 4
female | 9 6 15
Total | 12 7 19
middle |
female |
male | 17 5 22

female | 16 6 22

Total | 33 11 44

high |

female |

male | 12 9 21

female | 8 13 21

Total | 20 22 42

Total |

female |

male | 32 15 47

female | 33 25 58

Total | 65 40 105

vocation |

ses |

low |

female |

male | 4 4

female | 6 2 8

Total | 10 2 12

middle |

female |

male | 14 1 15

female | 14 2 16

Total | 28 3 31

high |
female |
male | 4 4
female | 2 1 3
Total | 6 1 7
Total |
female |
male | 22 1 23
female | 22 5 27
Total | 44 6 50
Total |
ses |
low |
female |
male | 14 1 15
female | 22 10 32
Total | 36 11 47
middle |
female |
male | 41 6 47
female | 38 10 48
Total | 79 16 95
high |
female |

male | 18 11 29
 female | 14 15 29
 Total | 32 26 58
 Total |
 female |
 male | 73 18 91
 female | 74 35 109
 Total | 147 53 200

Finally a 5-way table.

table prog ses female honors read_level, stat(freq)

| read_level
 | low high Total

type of program |
 general |
 ses |
 low |
 female |
 male |

honors english |
 not enrolled | 4 3 7
 Total | 4 3 7

female |

honors english |
 not enrolled | 6 1 7
 enrolled | 2 2

Total | 8 1 9

Total |

honors english |
 not enrolled | 10 4 14
 enrolled | 2 2

Total | 12 4 16

middle |

female |

male |

honors english |
 not enrolled | 5 5 10
 Total | 5 5 10

female |

honors english |
 not enrolled | 6 2 8
 enrolled | 2 2

Total | 6 4 10

Total |
honors english |
not enrolled | 11 7 18
enrolled | 2 2
Total | 11 9 20

high |
female |
male |
honors english |
not enrolled | 1 1 2
enrolled | 2 2
Total | 1 3 4

female |
honors english |
not enrolled | 4 4
enrolled | 1 1
Total | 5 5

Total |
honors english |
not enrolled | 5 1 6
enrolled | 1 2 3
Total | 6 3 9

Total |
female |

male |

honors english |

not enrolled | 10 9 19

enrolled | 2 2

Total | 10 11 21

female |

honors english |

not enrolled | 16 3 19

enrolled | 3 2 5

Total | 19 5 24

Total |

honors english |

not enrolled | 26 12 38

enrolled | 3 4 7

Total | 29 16 45

academic |

ses |

low |

female |

male |

honors english |

not enrolled | 2 1 3

enrolled | 1 1

Total | 2 2 4

female |
honors english |
not enrolled | 8 1 9
enrolled | 1 5 6
Total | 9 6 15
Total |
honors english |
not enrolled | 10 2 12
enrolled | 1 6 7
Total | 11 8 19
middle |
female |
male |
honors english |
not enrolled | 8 9 17
enrolled | 2 3 5
Total | 10 12 22
female |
honors english |
not enrolled | 12 4 16
enrolled | 1 5 6
Total | 13 9 22
Total |
honors english |

not enrolled | 20 13 33

enrolled | 3 8 11

Total | 23 21 44

high |

female |

male |

honors english |

not enrolled | 7 5 12

enrolled | 2 7 9

Total | 9 12 21

female |

honors english |

not enrolled | 3 5 8

enrolled | 1 12 13

Total | 4 17 21

Total |

honors english |

not enrolled | 10 10 20

enrolled | 3 19 22

Total | 13 29 42

Total |

female |

male |

honors english |

not enrolled | 17 15 32

enrolled | 4 11 15

Total | 21 26 47

female |

honors english |

not enrolled | 23 10 33

enrolled | 3 22 25

Total | 26 32 58

Total |

honors english |

not enrolled | 40 25 65

enrolled | 7 33 40

Total | 47 58 105

vocation |

ses |

low |

female |

male |

honors english |

not enrolled | 4 4

Total | 4 4

female |

honors english |

not enrolled | 6 6

enrolled | 1 1 2

Total | 7 1 8

Total |

honors english |

not enrolled | 10 10

enrolled | 1 1 2

Total | 11 1 12

middle |

female |

male |

honors english |

not enrolled | 11 3 14

enrolled | 1 1

Total | 11 4 15

female |

honors english |

not enrolled | 12 2 14

enrolled | 1 1 2

Total | 13 3 16

Total |

honors english |

not enrolled | 23 5 28

enrolled | 1 2 3

Total | 24 7 31

high |
female |
male |
honors english |
not enrolled | 3 1 4
Total | 3 1 4
female |
honors english |
not enrolled | 2 2
enrolled | 1 1
Total | 3 3
Total |
honors english |
not enrolled | 5 1 6
enrolled | 1 1
Total | 6 1 7
Total |
female |
male |
honors english |
not enrolled | 18 4 22
enrolled | 1 1
Total | 18 5 23
female |

honors english |
not enrolled | 20 2 22
enrolled | 3 2 5
Total | 23 4 27
Total |

honors english |
not enrolled | 38 6 44
enrolled | 3 3 6
Total | 41 9 50
Total |

ses |

low |

female |

male |

honors english |
not enrolled | 10 4 14
enrolled | 1 1
Total | 10 5 15

female |

honors english |
not enrolled | 20 2 22
enrolled | 4 6 10
Total | 24 8 32

Total |

honors english |
not enrolled | 30 6 36
enrolled | 4 7 11
Total | 34 13 47
middle |
female |
male |
honors english |
not enrolled | 24 17 41
enrolled | 2 4 6
Total | 26 21 47
female |
honors english |
not enrolled | 30 8 38
enrolled | 2 8 10
Total | 32 16 48
Total |
honors english |
not enrolled | 54 25 79
enrolled | 4 12 16
Total | 58 37 95
high |
female |
male |

honors english |
not enrolled | 11 7 18
enrolled | 2 9 11
Total | 13 16 29

female |
honors english |
not enrolled | 9 5 14
enrolled | 3 12 15
Total | 12 17 29

Total |
honors english |
not enrolled | 20 12 32
enrolled | 5 21 26
Total | 25 33 58

Total |
female |
male |
honors english |
not enrolled | 45 28 73
enrolled | 4 14 18
Total | 49 42 91

female |
honors english |
not enrolled | 59 15 74

enrolled | 9 26 35

Total | 68 41 109

Total |

honors english |

not enrolled | 104 43 147

enrolled | 13 40 53

Total | 117 83 200

5-way tables are not the limit. You can add more levels.

We leave it as an exercise

to find the maximum number of variables allowed.