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## Description

`xtline` draws line plots for panel data.

## Quick start

Matrix of line plots of `y` against time variable `tvar` with panel identifier `pvar`

```
xtline y, i(pvar) t(tvar)
```

Same as above, but using `xtset` data

```
xtline y
```

Same as above, but overlay line plots for each panel identifier `pvar`

```
xtline y, overlay
```

Add “My Title” to graph showing a matrix of line plots

```
xtline y, byopts(title(My Title))
```

Add “My Title” to graph of overlaid line plots

```
xtline y, overlay title(My Title)
```

## Menu

Statistics > Longitudinal/panel data > Line plots

## Syntax

Graph by panel

```
xtline varlist [if] [in] [, panel_options]
```

Overlaid panels

```
xtline varname [if] [in], overlay [overlaid_options]
```

<i>panel_options</i>	Description
Main	
<i>i</i> ( <i>varname</i> <sub><i>i</i></sub> )	use <i>varname</i> <sub><i>i</i></sub> as the panel ID variable
<i>t</i> ( <i>varname</i> <sub><i>t</i></sub> )	use <i>varname</i> <sub><i>t</i></sub> as the time variable
Plot	
<i>cline_options</i>	affect rendition of the plotted points connected by lines
Add plots	
addplot( <i>plot</i> )	add other plots to the generated graph
Y axis, Time axis, Titles, Legend, Overall	
<i>twoway_options</i>	any options other than by() documented in [G-3] <i>twoway_options</i>
<i>byopts</i> ( <i>byopts</i> )	affect appearance of the combined graph

<i>overlaid_options</i>	Description
Main	
<u>o</u> verlay	overlay each panel on the same graph
<i>i</i> ( <i>varname</i> <sub><i>i</i></sub> )	use <i>varname</i> <sub><i>i</i></sub> as the panel ID variable
<i>t</i> ( <i>varname</i> <sub><i>t</i></sub> )	use <i>varname</i> <sub><i>t</i></sub> as the time variable
Plots	
<u>plot</u> #opts( <i>cline_options</i> )	affect rendition of the # panel line
Add plots	
addplot( <i>plot</i> )	add other plots to the generated graph
Y axis, Time axis, Titles, Legend, Overall	
<i>twoway_options</i>	any options other than by() documented in [G-3] <i>twoway_options</i>

A panel variable and a time variable must be specified. Use xtset (see [XT] [xtset](#)) or specify the *i*() and *t*() options. The *t*() option allows noninteger values for the time variable, whereas xtset does not.

## Options for graph by panel

### Main

$i(\text{varname}_i)$  and  $t(\text{varname}_t)$  override the panel settings from `xtset`; see [XT] `xtset`.  $\text{varname}_i$  is allowed to be a string variable.  $\text{varname}_t$  can take on noninteger values and have repeated values within panel. That is to say, it can be any numeric variable that you would like to specify for the  $x$ -dimension of the graph. It is an error to specify `i()` without `t()` and vice versa.

### Plot

`cline_options` affect the rendition of the plotted points connected by lines; see [G-3] `cline_options`.

### Add plots

`addplot(plot)` provides a way to add other plots to the generated graph; see [G-3] `addplot_option`.

### Y axis, Time axis, Titles, Legend, Overall

`twoway_options` are any of the options documented in [G-3] `twoway_options`, excluding `by()`. These include options for titling the graph (see [G-3] `title_options`) and for saving the graph to disk (see [G-3] `saving_option`).

`byopts(byopts)` allows all the options documented in [G-3] `by_option`. These options affect the appearance of the `by`-graph. `byopts()` may not be combined with `overlay`.

## Options for overlaid panels

### Main

`overlay` causes the plot from each panel to be overlaid on the same graph. The default is to generate plots by panel. This option may not be combined with `byopts()` or be specified when there are multiple variables in `varlist`.

$i(\text{varname}_i)$  and  $t(\text{varname}_t)$  override the panel settings from `xtset`; see [XT] `xtset`.  $\text{varname}_i$  is allowed to be a string variable.  $\text{varname}_t$  can take on noninteger values and have repeated values within panel. That is to say, it can be any numeric variable that you would like to specify for the  $x$ -dimension of the graph. It is an error to specify `i()` without `t()` and vice versa.

### Plots

`plot#opts(cline_options)` affect the rendition of the  $\#$ th panel (in sorted order). The `cline_options` can affect whether and how the points are connected; see [G-3] `cline_options`.

### Add plots

`addplot(plot)` provides a way to add other plots to the generated graph; see [G-3] `addplot_option`.

### Y axis, Time axis, Titles, Legend, Overall

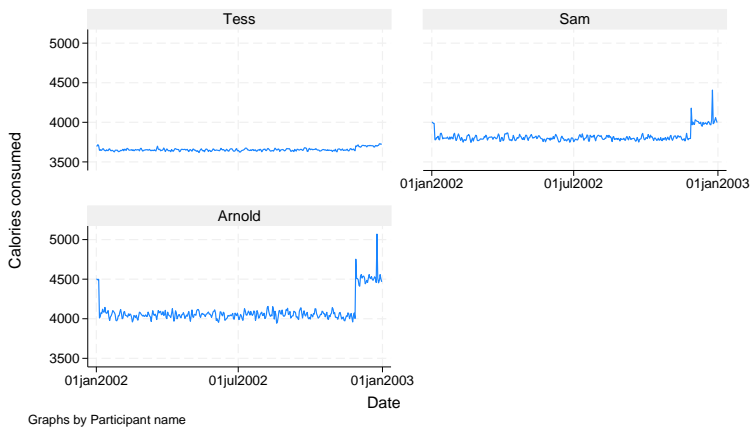
`twoway_options` are any of the options documented in [G-3] `twoway_options`, excluding `by()`. These include options for titling the graph (see [G-3] `title_options`) and for saving the graph to disk (see [G-3] `saving_option`).

## Remarks and examples

### ► Example 1

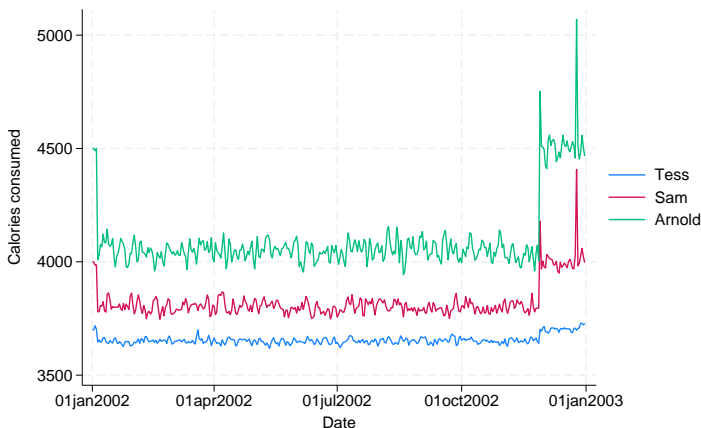
Suppose that Tess, Sam, and Arnold kept a calorie log for an entire calendar year. At the end of the year, if they pooled their data together, they would have a dataset (for example, `xtline1.dta`) that contains the number of calories each of them consumed for 365 days. They could then use `xtset` to identify the date variable and treat each person as a panel and use `xtline` to plot the calories versus time for each person separately.

```
. use https://www.stata-press.com/data/r19/xtline1
(Simulated data of calories consumed for 365 days)
. xtset person day
Panel variable: person (strongly balanced)
Time variable: day, 01jan2002 to 31dec2002
Delta: 1 day
. xtline calories, tlabel(#3)
```



Specify the `overlay` option so that the values are plotted on the same graph to provide a better comparison among Tess, Sam, and Arnold.

```
. xtline calories, overlay
```



◀

## References

- Chatfield, M. D. 2018. [Graphing each individual's data over time](#). *Stata Journal* 18: 503–516.
- Gallup, J. L. 2020. [Added-variable plots for panel-data estimation](#). *Stata Journal* 20: 30–50.

## Also see

- [XT] [xtset](#) — Declare data to be panel data
- [G-2] [graph twoway](#) — Two-way graphs
- [TS] [tsline](#) — Time-series line plots

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