

tsfill — Fill in gaps in time variable

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Syntax

```
tsfill [ , full ]
```

You must `tsset` your data before using `tsfill`; see [\[TS\] tsset](#).

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Description

`tsfill` is used after `tsset` to fill in gaps in time-series data and gaps in panel data with new observations, which contain missing values. For instance, perhaps observations for `timevar = 1, 3, 5, 6, . . . , 22` exist. `tsfill` would create observations for `timevar = 2` and `timevar = 4` containing all missing values. There is seldom reason to do this because Stata's time-series operators consider `timevar`, not the observation number. Referring to `L.gnp` to obtain lagged `gnp` values would correctly produce a missing value for `timevar = 3`, even if the data were not filled in. Referring to `L2.gnp` would correctly return the value of `gnp` in the first observation for `timevar = 3`, even if the data were not filled in.

Option

`full` is for use with panel data only. With panel data, `tsfill` by default fills in observations for each panel according to the minimum and maximum values of `timevar` for the panel. Thus if the first panel spanned the times 5–20 and the second panel the times 1–15, after `tsfill` they would still span the same periods; observations would be created to fill in any missing times from 5–20 in the first panel and from 1–15 in the second.

If `full` is specified, observations are created so that both panels span the time 1–20, the overall minimum and maximum of `timevar` across panels.

Remarks and examples

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Remarks are presented under the following headings:

[Using `tsfill` with time-series data](#)

[Using `tsfill` with panel data](#)

[Video example](#)

Using tsfill with time-series data

You have monthly data, with gaps:

```
. use http://www.stata-press.com/data/r13/tsfillxmpl
. tsset
      time variable:  mdate, 1995m7 to 1996m3, but with gaps
      delta:         1 month
. list mdate income
```

	mdate	income
1.	1995m7	1153
2.	1995m8	1181
3.	1995m11	1236
4.	1995m12	1297
5.	1996m1	1265
6.	1996m3	1282

You can fill in the gaps by interpolation easily with `tsfill` and `ipolate`. `tsfill` creates the missing observations:

```
. tsfill
. list mdate income
```

	mdate	income	
1.	1995m7	1153	
2.	1995m8	1181	
3.	1995m9	.	← new
4.	1995m10	.	← new
5.	1995m11	1236	
6.	1995m12	1297	
7.	1996m1	1265	
8.	1996m2	.	← new
9.	1996m3	1282	

We can now use `ipolate` (see [\[D\] ipolate](#)) to fill them in:

```
. ipolate income mdate, gen(ipinc)
. list mdate income ipinc
```

	mdate	income	ipinc
1.	1995m7	1153	1153
2.	1995m8	1181	1181
3.	1995m9	.	1199.3333
4.	1995m10	.	1217.6667
5.	1995m11	1236	1236
6.	1995m12	1297	1297
7.	1996m1	1265	1265
8.	1996m2	.	1273.5
9.	1996m3	1282	1282

Using tsfill with panel data

You have the following panel dataset:

```
. use http://www.stata-press.com/data/r13/tsfillxmpl2, clear
. tsset
    panel variable:  edlevel (unbalanced)
    time variable:   year, 1988 to 1992, but with a gap
                    delta: 1 unit
. list edlevel year income
```

	edlevel	year	income
1.	1	1988	14500
2.	1	1989	14750
3.	1	1990	14950
4.	1	1991	15100
5.	2	1989	22100
6.	2	1990	22200
7.	2	1992	22800

Just as with nonpanel time-series datasets, you can use `tsfill` to fill in the gaps:

```
. tsfill
. list edlevel year income
```

	edlevel	year	income
1.	1	1988	14500
2.	1	1989	14750
3.	1	1990	14950
4.	1	1991	15100
5.	2	1989	22100
6.	2	1990	22200
7.	2	1991	.
8.	2	1992	22800

← new

You could instead use `tsfill` to produce fully balanced panels with the `full` option:

```
. tsfill, full
. list edlevel year income, sep(0)
```

	edlevel	year	income
1.	1	1988	14500
2.	1	1989	14750
3.	1	1990	14950
4.	1	1991	15100
5.	1	1992	.
6.	2	1988	.
7.	2	1989	22100
8.	2	1990	22200
9.	2	1991	.
10.	2	1992	22800

← new
← new
← new

Video example

Time series, part 1: Formatting dates, `tsset`, `tsreport`, and `tsfill`

Also see

[TS] **tsset** — Declare data to be time-series data

[TS] **tsappend** — Add observations to a time-series dataset