Building Connected Dashboards in Stata

Oceania Stata Conference

sdas

Statistics | Data | Analytics | Solutions

Agenda

- Introduction to dashboards
- Stata's dyndoc command
- Dynamic tags and markdown
- Stata's JDBC command
- Building a dashboard do-file
- Automate the process

Introduction to Dashboards

- A dashboard presents data visually and is easy to understand at a glance
- Dashboards have a wide variety of uses, including:
  - Providing information in an easy to understand format for those who are unfamiliar
  - Displaying performance data
  - Visibility of systems and their performance
- Automated live dashboards provide up-to-date information quickly and efficiently
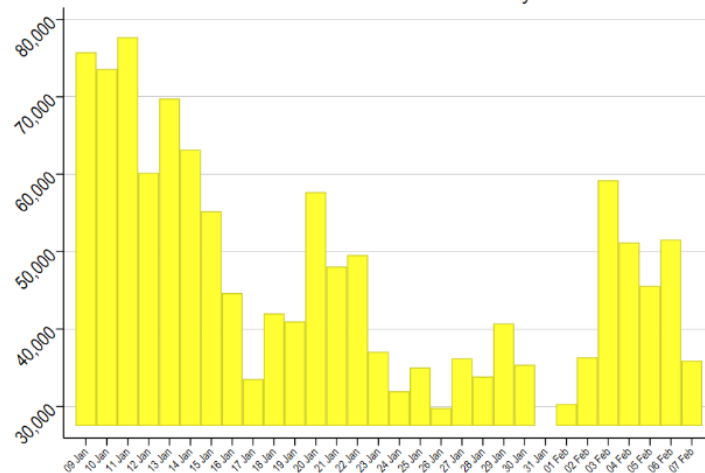
COVID19 in Australia on 07 February 2021

CONFIRMED	DEATHS	RECOVERED	ACTIVE
28660	909	25627	2124

STATE	CONFIRMED	DEATHS	RECOVERED	ACTIVE
ACT	118	3	115	0
NSW	4931	54	.	.
NT	103	0	99	4
QLD	1312	6	1295	11
SA	602	4	596	2
TAS	232	13	219	0
VIC	20455	820	19614	21
WA	907	9	887	11

COVID19 Cases in the Last 30 Days
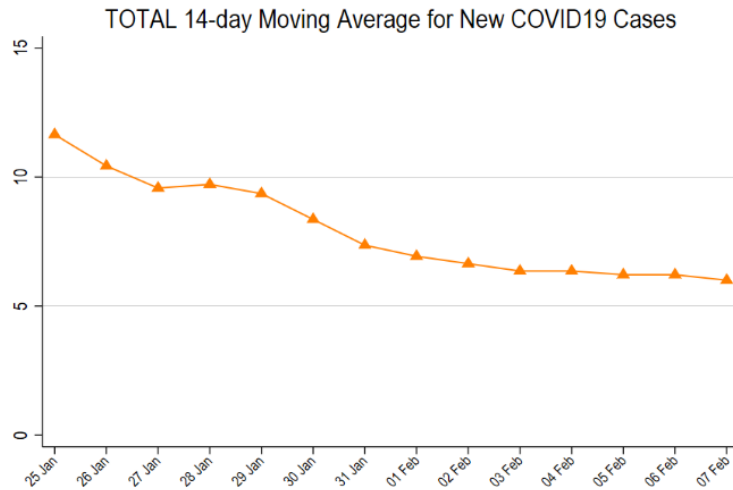
[56,126]
[33,56]
[13,33]
[0,13]
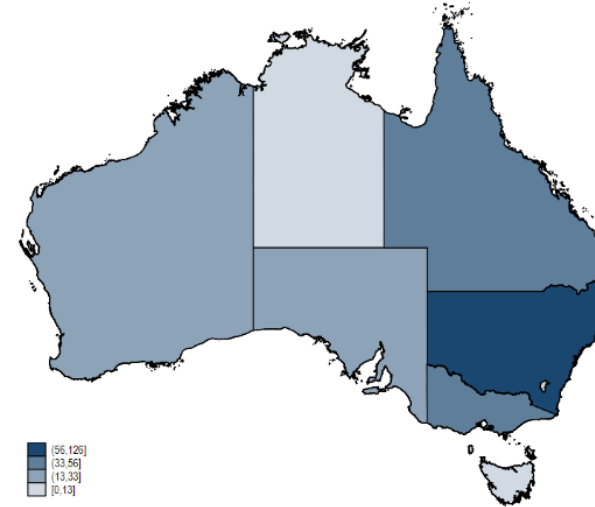
COVID19 Tests in Last 30 Days

Total COVID19 Tests
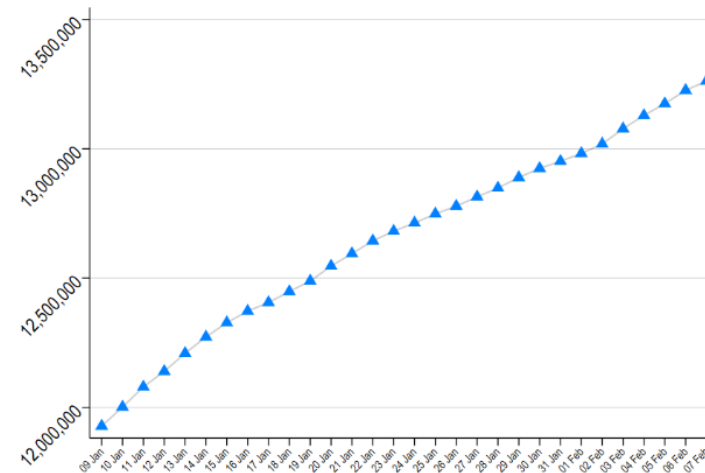
Individual State/Territory

ALL ⌄

TOTAL COVID19 Cases in Last 30 Days

TOTAL COVID19 Recoveries in Last 30 Days

TOTAL 14-day Moving Average for New COVID19 Cases
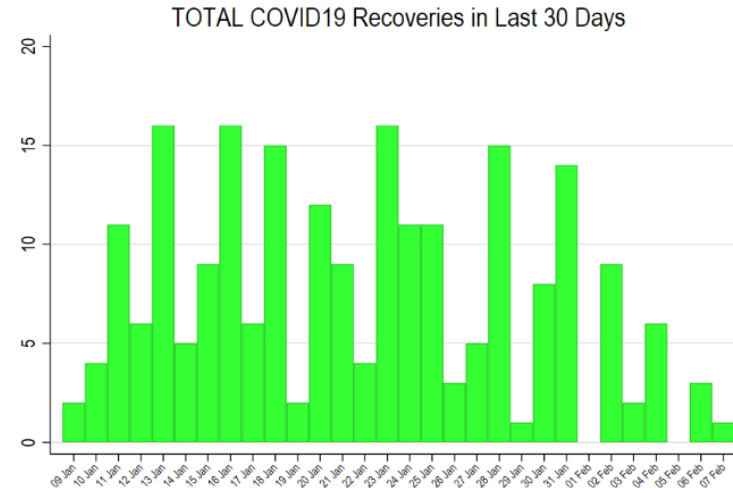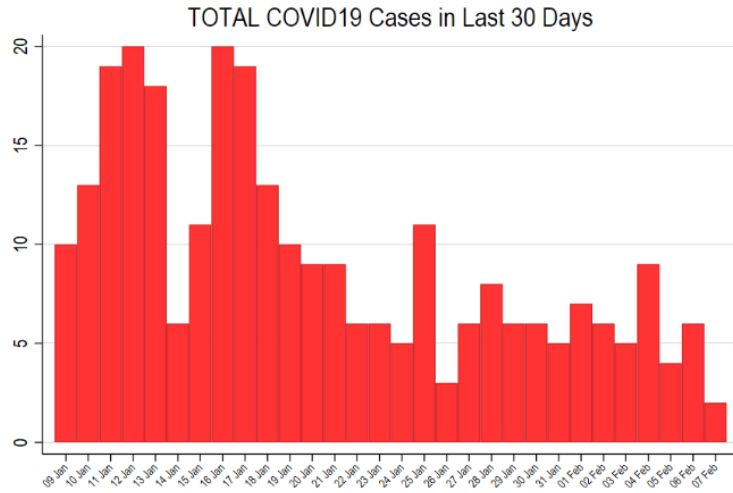
ANOVA of Cases per Day Over Last 30 Days

	COEFF.	P-VAL.	BETA
ACT	0.00		0.00
NSW	4.20	<0.001	0.66
NT	0.43	0.316	0.07
QLD	1.33	0.002	0.21
SA	0.60	0.166	0.09
TAS	0.00	1.000	0.00
VIC	1.87	<0.001	0.30
WA	1.10	0.011	0.17

The dyndoc Command
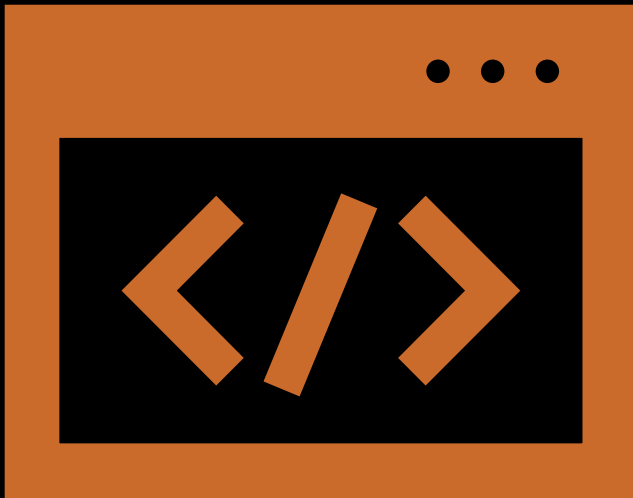
- Converts markdown syntax to word or html formatting

- Reads and interprets dynamic tags and Stata commands

- Creates a Word document or HTML webpage

- Syntax is:

  dyndoc *textfile(*.do/*.txt)* [*arguments*], *options*

- Options are:

  - saving(*targetfile(*.docx/*.html*)

  - replace

  - hardwrap

  - nomsg

  - nostop

  - embedimage

  - docx

Markdown Syntax and Dynamic Tags

- All markdown formatting is converted to HTML formatting
- Most important for dashboards are markdown tables
- You can include your own HTML for more control
- Stata dynamic tags allow seamless movement between Stata commands and dashboard formatting
- The dynamic tags in this dashboard:
  - <<dd_do>> and <</dd_do>> for Stata commands
  - <<dd_display>> for inclusion of macros in markdown table formatting
  - <<dd_graph>> for inclusion of Stata graphs
  - <<dd_include>> for inclusion of tables or other text files

Markdown Tables

- Use pipes | to denote columns and return/newline to denote rows
- Under the heading row use – between pipes to denote the above row as a heading
- For example:

| Column A | Column B | Column C |

|-------------|-------------|--------------|

| 1st Row A | 1st Row B| 1st Row C |

| 2nd Row A| 2nd Row B| 2nd Row C|

Column A	Column B	Column C
1st Row A	1st Row B	1st Row C
2nd Row A	2nd Row B	2nd Row C

The jdbc Command

- Introduced in Stata 17
- Connect to databases allowing you to load or insert data
- Execute SQL statements on a connected database from within Stata
- Connecting to a live database allows you to load up-to-date information into Stata at any time
- To connect, place the JAR file for your JDBC driver along your adopath
- Then connect with:
  - jdbc add *name*, jar(*filename*) driverclass(*classname*) url(*databaseURL*) user(*userID*) password(*password*)
- View, load, and insert data:
  - jdbc showtables
  - jdbc load, table(*tablename*)
  - jdbc insert [*varlist*] [*if*] [*in*], table(*tablename*)

The HTML that Makes the Dashboard

- A special HTML style called "grid" allows for dashboard creation with ease

- Place this HTML section at the top of your dyndoc file

- To place an item in your dashboard:
  - <div>
  - **return/enter**
  - *Dynamic tags/markdown*
  - **return/enter**
  - </div>

- To close out the dashboard, place a second </div> below your last item followed by a blank line

```
<head>
<style>
.divgrid {
display: grid;
grid-template-columns: 1fr 1fr;
}
code {
font-size: 65%;
}
</style>
</head>

<div class="divgrid">
```

More Helpful HTML

- Use the **<link>** tag to link a style sheet
- Within the .divgrid class:
  - grid-column-gap: x%;
  - grid-row-gap: x%;
  - grid-template-columns: minmax(300px, 1fr) minmax(300px, 1fr);
  - place-items: center;
- Create a .title class for the first div with:
  - grid-column: span 2;
- Create different classes for different types of dashboard items
- Apply a class to your dashboard div items with:
  - <div class="classname">
  - **return/enter**
  - *Dynamic tags/markdown*
  - **return/enter**
  - </div>

```
<head>
    <link rel="stylesheet" type="text/css" href="stmarkdown.css">
    <style>
        .divgrid {
            display: grid;
            grid-column-gap: 3%;
            grid-row-gap: 5%;
            grid-template-columns: minmax(300px, 1fr) minmax(300px, 1fr);
            place-items: center;
        }
        .tablewrapper {
            overflow: auto;
            min-height: 120%;
            align-self: center;
        }
        .title {
            grid-column: span 2;
        }
        img {
            max-width: 100%;
        }
    </style>
</head>
```

The COVID19 Dashboard

Automating the Dashboard

- You can run Stata commands via command line
- Stata commands run via command line can be saved in a batch file
- A batch file can be created in Notepad and saved using "Save As…"
- A batch file can be set to run automatically with Windows Task Scheduler
- My batch file "daily-covid-dashboard.bat" contains the following single line:

```
"C:\Program Files\Stata17\StataMP-64" /e /b dyndoc
^"C:\Users\LauraWhiting\Documents\Dashboard/daily-covid-dashboard.txt^"
`=td(^"'`c(current_date)'^")-730'
^"C:\Users\LauraWhiting\Documents\Dashboard^", replace
```

Windows Task Scheduler

Create Basic Task Wizard

Create a Basic Task

Create a Basic Task
Trigger
Action
Finish

Use this wizard to quickly schedule a common task. For more advanced options or settings such as multiple task actions or triggers, use the Create Task command in the Actions pane.

Name: Daily Covid19 Dashboard

Description: Run a batch file to generate a dashboard from an analysis of the day's updated COVID19 case numbers.

< Back   Next >   Cancel

When running the task, use the following user account:

Actions

Task Scheduler Library

Create Basic Task...

Create Task...

Import Task...

Display All Running Tasks

Enable All Tasks History

New Folder...

View   ▶

Refresh

Help

Selected Item

Run

End

Disable

Export...

Properties

Delete

Create Basic Task Wizard

Task Trigger

Create a Basic Task

Trigger

Action

Finish

When do you want the task to start?

- ⦿ Daily
- ○ Weekly
- ○ Monthly
- ○ One time
- ○ When the computer starts
- ○ When I log on
- ○ When a specific event is logged

< Back | Next > | Cancel

Create Basic Task Wizard

Daily

Create a Basic Task
Trigger
Daily
Action
Finish

Start: 9/02/2023 ▢▾ 12:00:00 PM ▴▾ ☐ Synchronize across time zones

Recur every: 1 days

[< Back] [Next >] [Cancel]

Create Basic Task Wizard

Action

Create a Basic Task
Trigger
 Daily
Action
Finish

What action do you want the task to perform?

(•) Start a program

( ) Send an e-mail (deprecated)

( ) Display a message (deprecated)

[< Back] [Next >] [Cancel]

Create Basic Task Wizard

Start a Program

Create a Basic Task

Trigger

  Daily

Action

  Start a Program

Finish

Program/script:

`\Users\LauraWhiting\Documents\Dashboard\daily-covid-dashboard.bat`

Browse...

Add arguments (optional):

Start in (optional):

< Back   Next >   Cancel

Create Basic Task Wizard

Summary

Name: Daily Covid19 Dashboard

Description: Run a batch file to generate a dashboard from an analysis of the day's updated COVID19 case numbers.

Trigger: Daily; At 12:00 PM every day

Action: Start a program; C:\Users\LauraWhiting\Documents\Dashboard\daily-covid-da

☐ Open the Properties dialog for this task when I click Finish

When you click Finish, the new task will be created and added to your Windows schedule.

< Back   Finish   Cancel

Questions?

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