

# Presenting SAS output in PDF

Euan Kennedy  
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# This presentation...

- Aims to introduce and discuss ways to use ODS PDF to produce PDF documents from SAS
- Is a bit 'hand-coding'-oriented
- Includes stuff that is applicable to nearly any SAS task or procedure that produces ODS output

# The ODS PDF destination

- Allows for PDF documents to be created in SAS, by SAS (no Acrobat licence needed)
- Is not as highly developed as other ODS destinations
- Works like other ODS destinations: open the destination, run PROCs, close the destination

# The ODS PDF destination...

- Supports many PDF capabilities (e.g. bookmarking, flyover comments)
- But not others (e.g. security)
- Has some quirks (see later)
- Is fast

# The basics: ODS PDF statement

```
ods _all_ close; First, close all other ODS destinations...  
/* THE ODS PDF STATEMENT */  
ods pdf ...open the PDF destination...  
    file=fileref | "A:\physical\file-specification.pdf";  
    ...tell SAS what file to create where...  
/* PUT ODS OUTPUT-GENERATING CODE HERE */  
    ...PROC away...  
ods pdf close;  
    ...then close the PDF destination...
```

 EG Demo...

# ODS PDF statement: review

- Set many characteristics of the document and its behaviour on the initial ODS PDF statement
- Some interactions with global OPTIONS
- Look at other ODS PDF options in documentation, play around (e.g. COLUMNS= setting)
- Forget about CONTENTS 😞

# Tidying up PROC-based bookmark names

- Note the default names for PROCs etc. in the bookmarks – not all that informative!
- There are two parts – the procedure label (level 1) and the ‘contents’ (level 2)
- fix these using

```
ODS PROCLABEL "Your text here!";  
PROC PRINT  
  DATA=<data>  
  CONTENTS="Your text here!";  
RUN;
```

➔ EG Demo...

# TEXT, and inline style definitions

- You can put in lines of text anywhere you like:

```
ODS PDF TEXT="Your text here!";
```

- And soon you'll appreciate the need to format your text...
  - Can do this by altering the style template
  - But for changes and subtleties, use in-line style definitions. Set `ODS ESCAPECHAR="^";`

 EG Demo...

# Anchor point links

- ODS PDF supports insertion of anchor points and 'links' to them, throughout the document
- Set anchor points throughout document using `ODS PDF anchor="anchor_name"` ;
- Links can be anywhere you can set a style element, e.g. in ods pdf text, a table cell, a header row, etc.

➡ EG Demo...

# Flyovers

- ODS PDF supports the insertion of ‘flyover’ comments throughout the document
- This can be pretty irritating, so go easy!
- Set using style element ‘flyover’
- Can even be set using formats

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# Page X of Y

- Easily done:

```
footnote j=r "Page ^{thispage} of ^{lastpage}";
```

- Add a bit more...

```
footnote f=Arial h=8pt
  j=1 "%sysfunc(today()),ddmmyy10."
  j=r "Page ^{thispage} of ^{lastpage}"
;
```

➡ EG Demo...

# Single-page magic: ODS REGION

- ODS LAYOUT and ODS REGION allow for precise layout of 'regions' for output to go to, on a single page PDF
- Requires (lots of) planning
- Output must 'fit' in the region or it will fail
- Can produce some very nice results
- Limitations for multiple page documents

➡ EG Demo...

# Quirks

- Titles & footnotes
  - Are sent to the top (& bottom) of the page
  - Can only have one of each at a time
- Can't set security on PDF documents
- Can't change orientation within a document
- Sometimes the bookmark anchors aren't quite aligned with their objects
- ODS REGION only for single-page PDFs

# ODS PDF vs. SAS/GRAPH

- Some serious quirks when using GRAPH
- Requires lots of massaging and try-and-see development
- Nitty-gritty details are a little outside the scope for today (but come & chat!)
- White space issues
- These quirks can be overcome though!

➡ EG Demo...

# Other stuff

- Improvements in SAS 9.2
  - New style attributes
  - Nested in-line style attributes
  - Unicode symbols
  - Contents collapsing (etc...)
- Other Demos (if time permits)
  - Special characters

# References & resources

- Lots of SUGI/SGF papers, especially
  - 092-31 PDF can be Pretty Darn Fancy (Pete Lund)
  - 090-31 Multi-media wizardry (LeRoy Bessler)
  - 159-31 ODS Layout is like an onion (Rich Mays)
  - ODS LAYOUT: Arranging output as you see fit (SAS Institute)
  - TS751 Presentation-Quality Tabular Output via ODS
  - 117-27 Using ODS to Create Adobe PDFs from SAS/GRAPH output
  - Resources from SAS support knowledgebase
- Contact me! u3299500 at ANU dot EDU dot AU