University of Oxford

The SDMA Tableau Style Guide

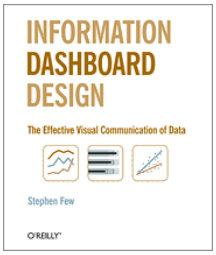
"The best design is invisible; the viewer should not see your design. They should only see your content."
Edward Tufte, London, May 2010

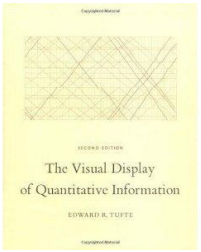
What is a good visualisation?

Excel is sometimes a bad choice for charts and/or tables. It isn't always, but it often is.

For a background into some of the reasons for this, and much more on theory of how to effectively present information, you should read chapters 3-7 of *Information Dashboard Design*, by Stephen Few.

We also have other books by Stephen Few, Edward Tufte and Stephen McDaniel:





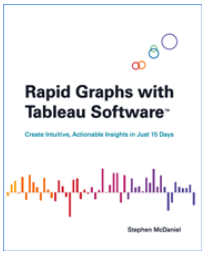


Tableau have, since the first draft of this document, also published their own Visual Guide which is definitely worth a read:

http://www.tableausoftware.com/asset/tableau-visual-guidebook

General information

Why do we need a Tableau Style guide? In the time since we started using Tableau, many lessons have been learnt. This style guide is intended to help pass on some of the knowledge that already exists in SDMA.

We have also established several styles (e.g. default colours, fonts, etc) – these should be used in all our reports in order to maintain consistency.

Andy, Jackie and Jane have all contributed to this document.

What follows are guidelines. There may be occasions where it is appropriate to go against the guideline. So long as you have considered the reasons for doing this, and can justify it, that's fine.

This document has **three** sections:

i. **Summary**
   This is an overview, listing the guidelines and, sometimes, a very short explanation.
ii. **Reference**
   This section is a detailed reference area explaining each item.
iii. **Data defaults**
   This section goes through the common dimensions and measures and defines the default colours, data formats, aliases, etc, that we use.

Tableau Style guide – i. summary

(details follow in the reference section)

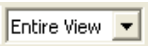
Data connections

- **Using an extract speeds up the workbook**
  It makes the workbook smaller, faster, and more secure.
- **Extract only the data you need**
  Hide unused fields, and filter out records that will not be needed

Dashboards: layouts

- **A dashboard must print onto one screen/page**
- **Dashboards should have a fixed size of 900×500**
  Dashboards being embedded into ox.ac.uk webpages should fit the relevant column width
- **There will be no scrollbars on any worksheets on a dashboard**
  Some content won't print and it will confuse the user.
- **Never create a dashboard with a horizontal scrollbar**
- **Manually set the dashboard to a Landscape orientation**
  This maximises the size of the dashboard on the printed page.
- **In general, put filters on the upper left-hand side of the dashboard**
  That way, users see them.
- **The dashboard must look elegant however many filter items are chosen**
  Whether the user chooses to show one item or all items – it should fit.

Worksheets and workbooks

- **Do not save multiple versions of workbooks to the server**
  The user is linking to a web page. Our workbooks are made for them. Don't expose your version history.
- **Printability: consider how a user will print the worksheet**
  Will it break across pages? Is it feasible to force it to fit on one page? Show the Caption?
- **Never set a filtered worksheet to fit** 

- **Ensure your worksheet fits on a screen of 1024×768, however many filters are on or off**
  If I select 1 or 100 programmes on my filter, does it still display correctly?
- **Avoid filtering Dimensions that are placed on the Columns shelf**
  Losing control of the width of your sheet could cause problems
- **A worksheet must never have a horizontal scrollbar.**
- **Captions should contain abbreviation definitions, data source information, creation date**
- **Titles should not contain filter values (worksheets only, not Dashboards)**
  Tableau Server will use the Title value as the text for the link to the view. This can lead to much confusion.
- **How many worksheets? Depends on the audience**
  Keep the number of worksheets as small as possible (specialist audiences may be happy with many)

Charts

- **Make the gaps between bars small**
- **Colours should work on screen and when printed**
- **Don't use more than 5 colours.**

Filters

- **If using multiple filters, set one to only show relevant values**
  For example, if you have a division and department filter, set the department filter to "Only Relevant Values"
- **Use a "Compact List" filter when you need to save on screen space**
- **Use a "Slider" filter for single-select, time-based filters**
- **Edit the title of the filter if the purpose is not clear.**
  Sometimes "Choose division:" is a better filter title than "Division"

Formatting

- **Fonts: Use Arial.**
  Arial Narrow is okay if you are pushed for space.
- **Titles: align left; Arial bold, 10pt**
  Set subtitle text as Arial, not bold, 8pt
- **Captions: align left; Arial, 8pt**
- **Percentages: maximum to one decimal place.**
  Don't be afraid of rounding to the nearest whole percentage, if you wish:
- **Numbers: don't put decimal places where they are "impossible"**
  For example, show numbers of students as **17**, not **17.0**
- **Make Subtotals and Totals bold**
  This makes it easier for the user to distinguish the different part of the table:
- **Set sorting, colours and number formats on the dimension itself**
  That way, the change is the same everywhere the dimension is used.

Frontsheet and Notes (packaged workbooks only)

- **Adding a Frontsheet or Contents page helps navigation on complicated workbooks**

Use the Annual Programme Statistics as a guide.

- **Add a Notes sheet if there is a lot of background notes.**
- **Save the workbook on the view you want the user to see first**
  Doing this means that when another user opens the workbook, it opens on the correct page.

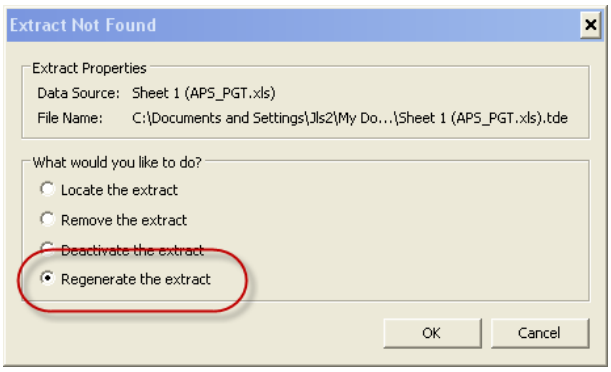
Data connections

Using an extract speeds up the workbook

It makes the workbook smaller, faster, and more secure.

When you have connected to your data, choose *Data…Extract* from the menu and create an extract. Consult the Tableau help for more information on extracts.

If you open a TWB file that was created by someone else, and it uses extracts, Tableau will not be able to find the extract. It will ask what you want to do, using the following form. You should choose to regenerate the extract:

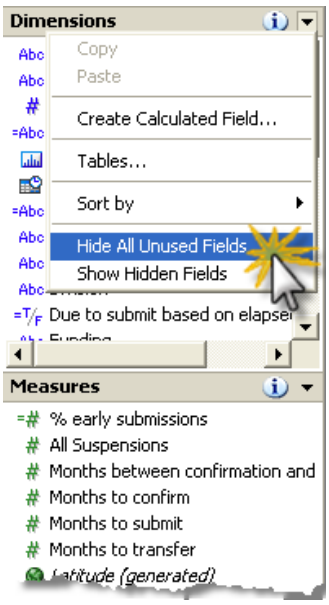


Once you have created an extract, the data is static. Therefore, if the underlying data changes, you should choose *Data…Refresh Extract* to use the latest data.

Extract only the data you need

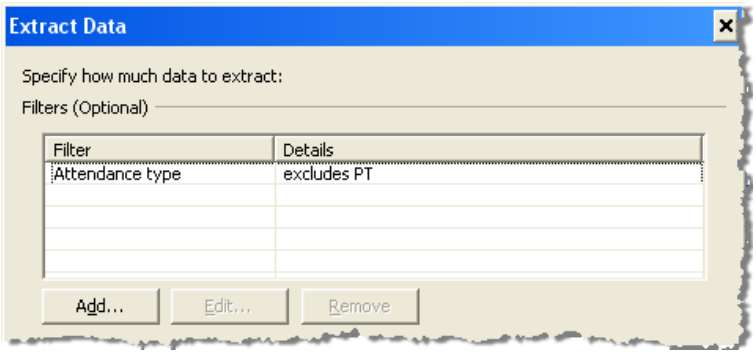
Hide unused fields, and filter out records that will not be needed

To hide unused fields: This ensures that the extract only contains information that is necessary to build the visualisations.



To exclude unnecessary data. If your underlying dataset has more records than you will ever need, you can use an Extract filter to reduce the amount of data in the connection. For example, in the screenshot below, I have connected to the Annual Programme Stats data, but I know that this

connection will only ever consider Full-Time students. Therefore, I have set a filter on the Attendance type field that excludes Part-time (PT) students:



This step shouldn't be seen as mandatory. Extract filters restrict your dataset, but the filters are a little "concealed" from the user. Also, your underlying query could be edited to only use the data you want.

Dashboards: layouts

A dashboard must print onto one screen/page

Otherwise it is not a dashboard. If it can't fit on one piece of paper you should rethink your design. This applies however many items are shown or hidden using any filters you put on the dashboards.

Dashboards should have a fixed size of 900×500

Dashboards being embedded into ox.ac.uk webpages should fit the relevant column width

In SDMA, we have large monitors, but many users in Divisions and Colleges do not. A survey carried out in May 2010 gave us the following info about users' screen sizes (I have hidden some of the screen resolution used by very few people):

Screen resolutions of university report viewers

Screen resolution	% of respondents	No. of respondents
1280x1024	43%	106
1024x768	14%	36
1680x1050	11%	27
1920x1200	6%	14
1440x900	5%	12
1280x800	4%	11
1600x1200	4%	10
1920x1080	3%	8

Note that in colleges, the proportion of users with 1024×768 screens is much higher:

Screen resolutions of university report viewers (colleges only)

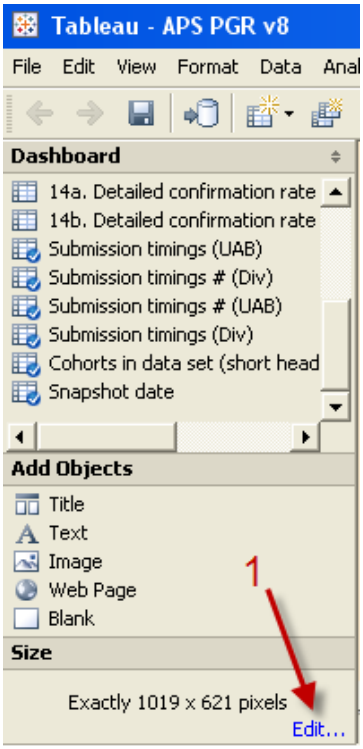
Screen resolution	% of respondents	No. of respondents
1280x1024	46%	21
1024x768	24%	11
1680x1050	15%	7
1920x1080	4%	2
1920x1200	4%	2

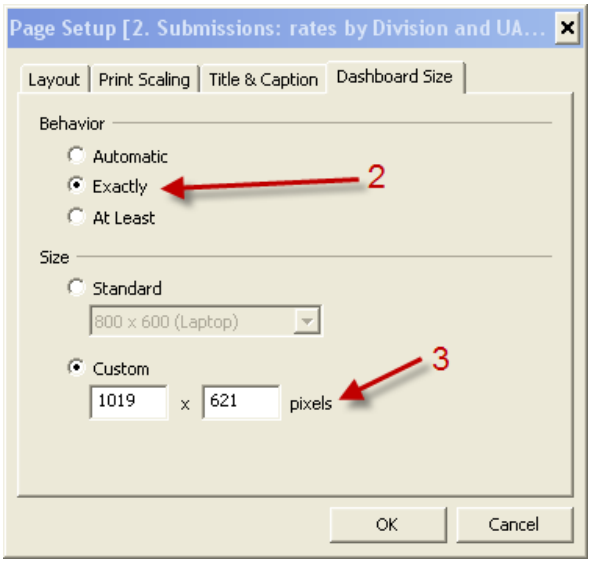
Based on this, dashboards are designed to fit in a default Firefox window (standard menu, status bar, bookmarks toolbar visible) running on a desktop with screen resolution of 1024×768.

If the dashboard will primarily be viewed using Tableau Server

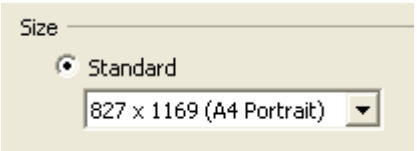
A dashboard of 990×500 fits on a Tableau Server window in a Firefox browser on a screen size of 1024×768.

To change the dashboard size, click Edit… and then change the Behaviour and Size settings as shown below:





You can "break" this rule occasionally if you know the dashboard is likely to be printed. It might be appropriate to set the size to A4 portrait:

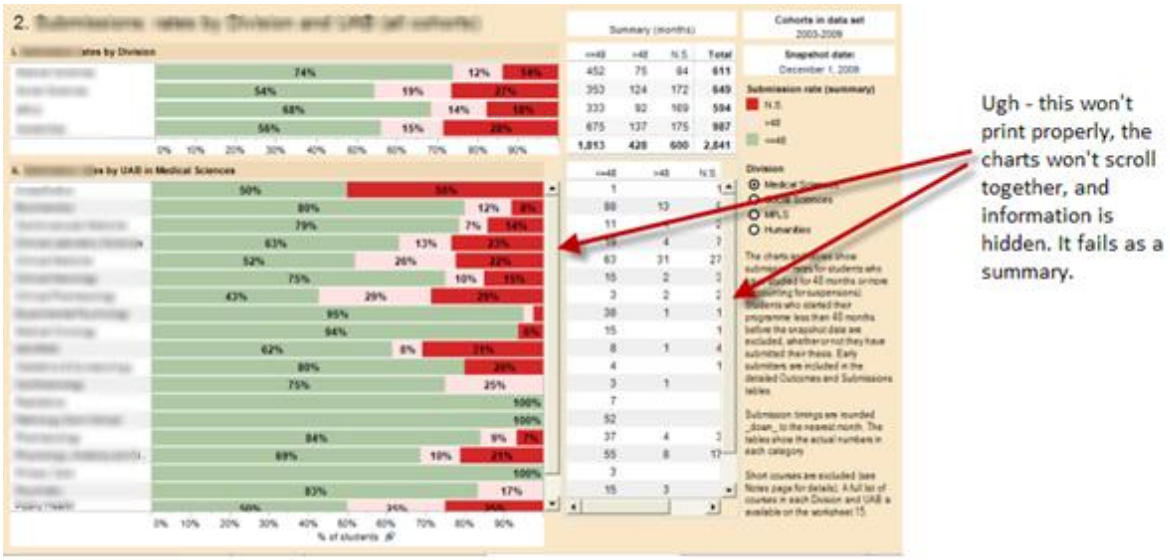


If the workbook will primarily be viewed using Tableau Public or Tableau Server "guest" accounts

Tableau Public views should be designed to be embedded in a blog/news story. If there is a specific news site that the view is being designed for, set the width to be appropriate for that site. If the view could be embedded in multiple pages, it might be appropriate to set a range of sizes, and test the dashboard works at each extreme.

There will be no scrollbars on any worksheets on a dashboard

Some content won't print and it will confuse the user.



There are two exceptions:

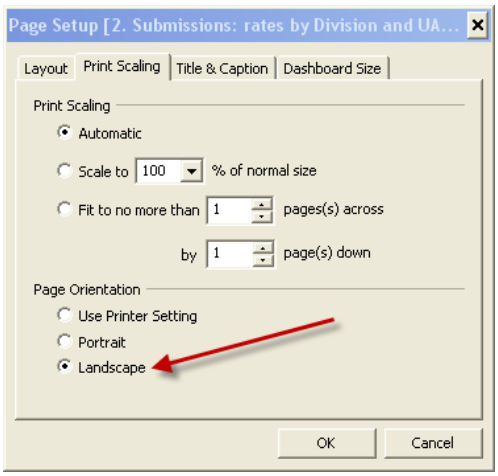
1. If the worksheet behaves as a filter for the rest of the dashboard, it can be acceptable for it to have a scrollbar
2. If it is known that the audience of your visualisation will only use the view on screen, and not print it out, a vertical scrollbar might be appropriate.

Never create a dashboard with a horizontal scrollbar

Studies show that we don't register horizontal scrolling very well. We can cope with up/down vertical scrolling, but not left-right. More info on Jakob Nielsen's site. (Jakob Neilsen is a leader in web usability and design)

Manually set the dashboard to a Landscape orientation

This maximises the size of the dashboard on the printed page.



It may sometimes be necessary to set the Print Scaling to fit 1×1 page, but this should not be the case if you have a 1019×621 dashboard.

In general, put filters on the upper left-hand side of the dashboard

That way, users see them.

Where a filter only changes one particular section of a dashboard, it might be appropriate to put the filter above/to the left of that section.

The dashboard must look elegant however many filter items are chosen

Whether the user chooses to show one item or all items – it should fit.

Before publishing a dashboard, it must be tested to ensure it works properly with all or one item in each filter selected.

Worksheets and workbooks

Do not save multiple versions of workbooks to the server

The user is linking to a web page. Our workbooks are made for them. Don't expose your version history.

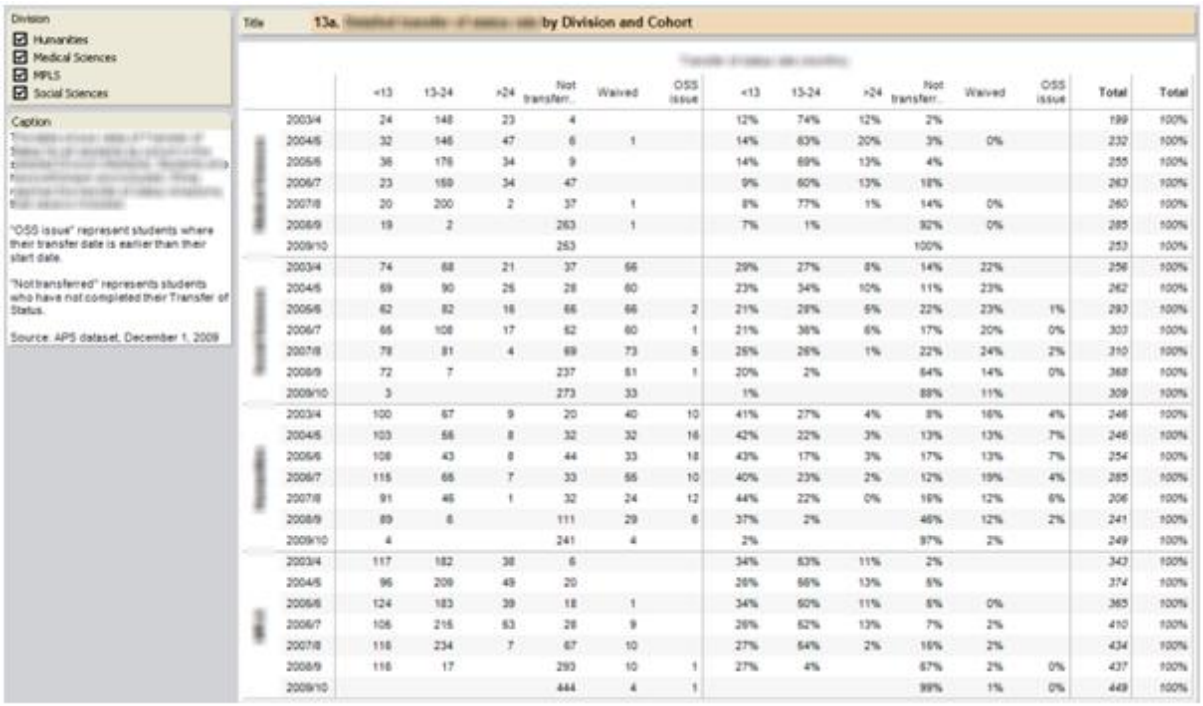
When you visit www.bbc.co.uk you do not find a v1, v2, v3 at the end of the page. And when you bookmark a page at the BBC, you expect to go back to that bookmark and see the latest version of that page.

With Tableau Server, we are also creating webpages for users. They happen to contain Tableau worksheets/views. Don't overwhelm the server with you version history. Save it somewhere else, but the only version of your workbook on the server should be the most recent release. Where you are doing a major upgrade and don't want to disturb the original, publish the new version to the *Student Sandbox* project, with permissions given to just the SDMA Writers group of users.

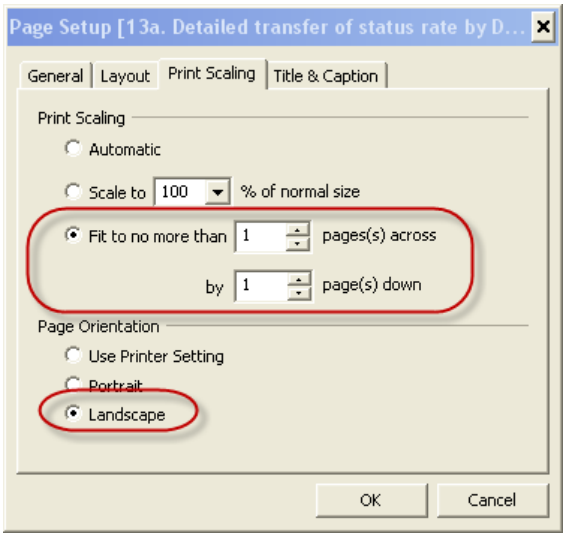
Printability: consider how a user will print the worksheet

Will it break across pages? Is it feasible to force it to fit on one page? Show the Caption?

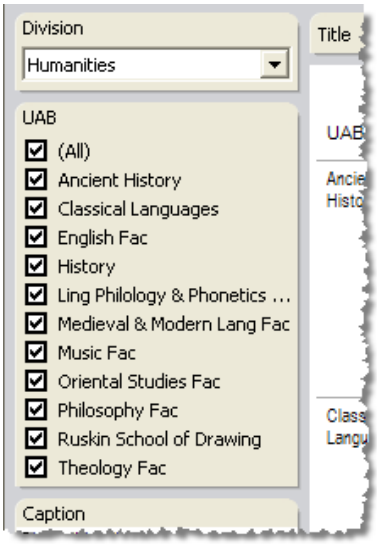
Print scaling The example below has Print Scaling set to be 1×1 page, whatever the filters are:



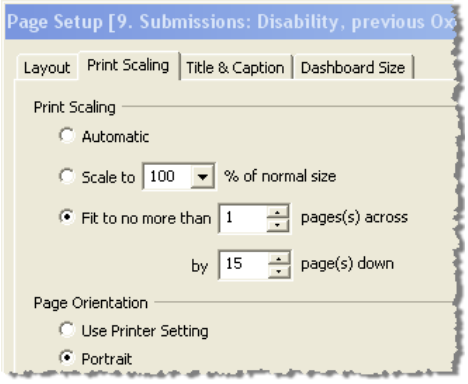
Why is it set to one page only? Because the maximum amount of information (all 4 division filters selected) will only ever be about the size of A4 landscape. Therefore, print scaling forces the page to print that way:



Sometimes, however, you may have a table that could be very very long (vertically). In this case, you need to set the page to fit one page wide by an arbitrarily large number of pages down. For example a table with filters like those shown below could end up being extremely long:

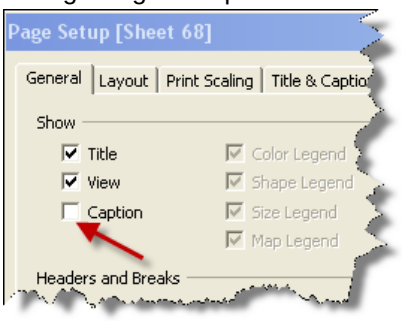


Therefore, on a worksheet with filter options similar to the above, its print scaling is set to 1×15:



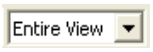
Captions: By default, a worksheet's Caption will be printed, whether or not you display it on screen, or edit it. Therefore, you should either:

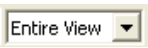
- Change Page Setup and untick the Caption checkbox:

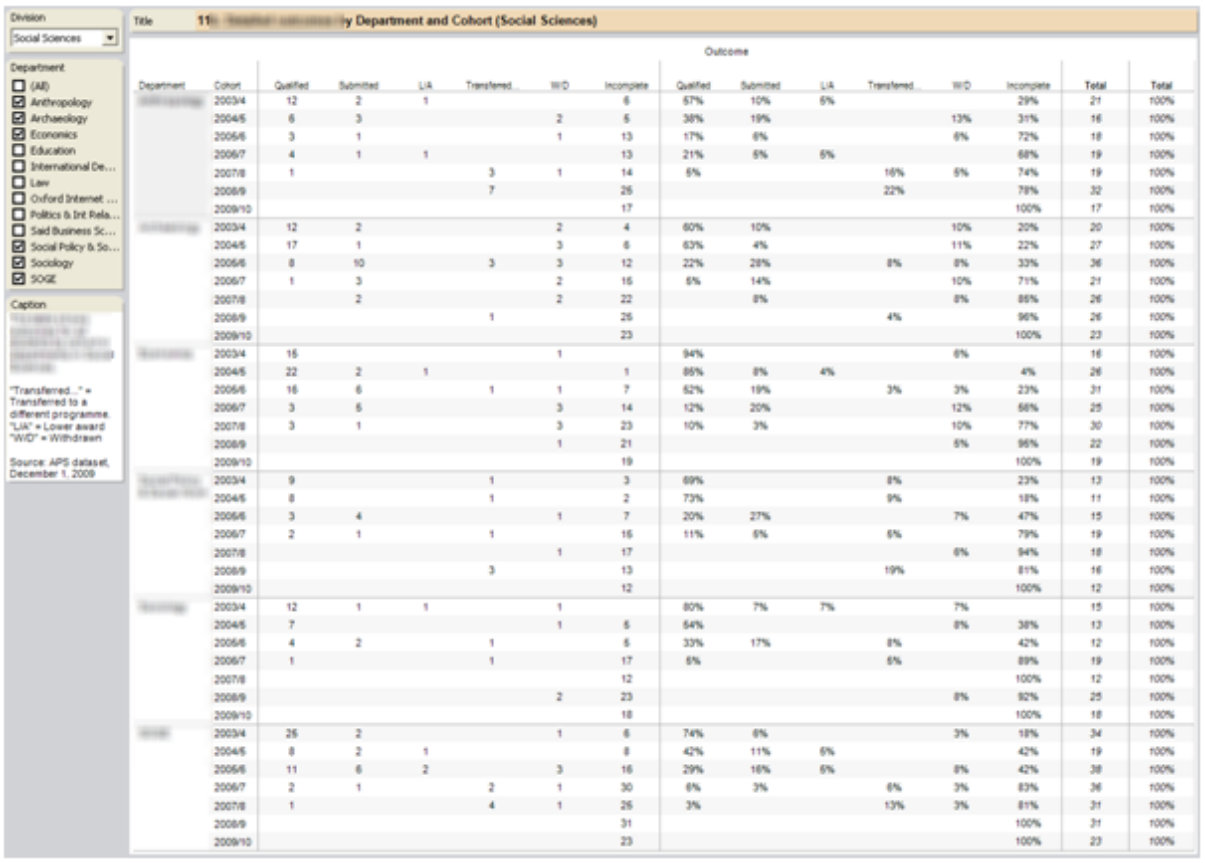


- Edit the caption to be a meaningful explanation of the table/chart

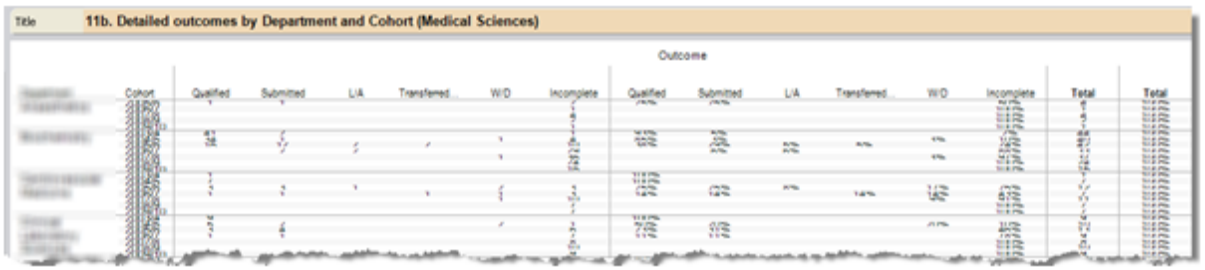
Never set a filtered worksheet to fit



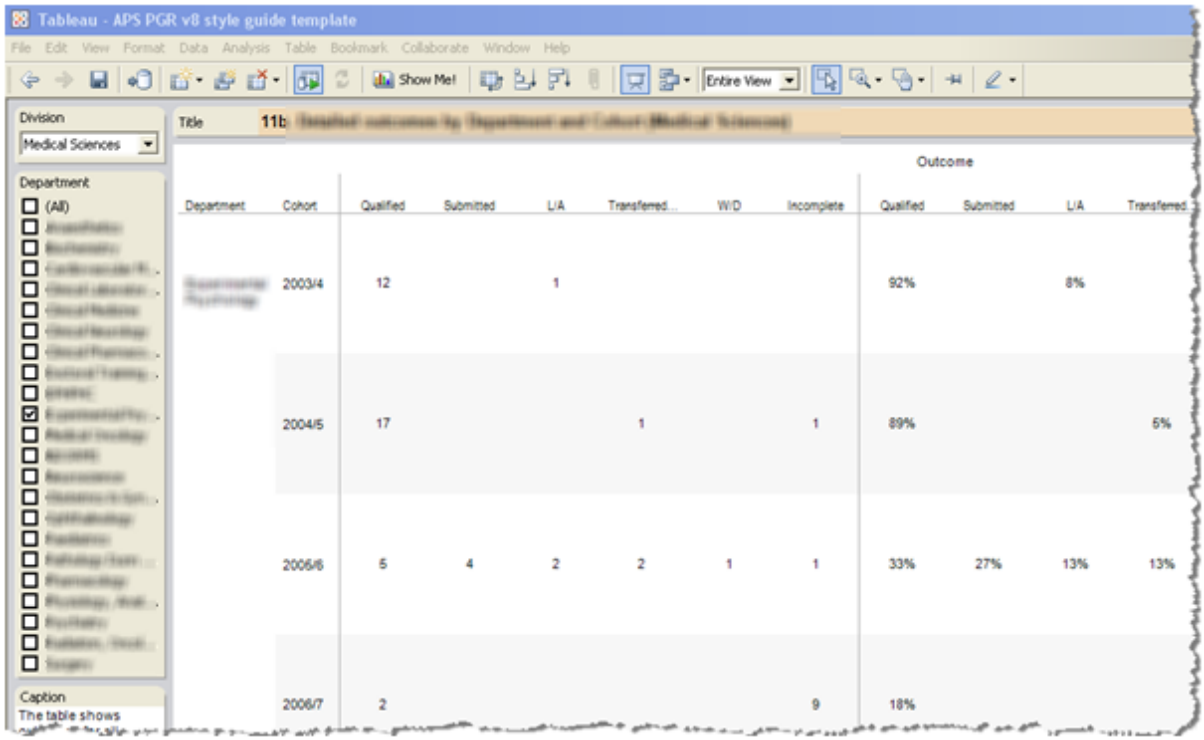
This worksheet looks okay, on  on my screen with only 6 (out of a possible 12) departments showing:



However, if I show all the available options in the filter, or move it to a smaller screen, things go wrong – there's too much to fit on the screen:



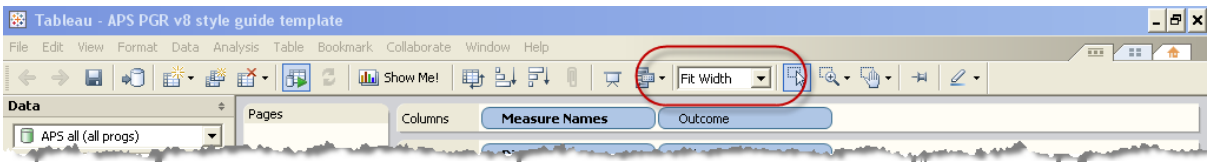
Or, if I show only one or two options, there's too much white space:



Using Layout Containers on dashboards can help you allieviate some of these problems, if the situation allows it.

Ensure your worksheet fits on a screen of 1024×768, however many filters are on or off

If I select 1 or 100 programmes on my filter, does it still display correctly?



If there are more than 5 or 6 columns, it is normally good practise to set the view to Fit Width. Vertical scrolling is a natural thing for users to do, so it's not too bad if the user has to scroll down.

Avoid filtering Dimensions that are placed on the Columns shelf

Losing control of the width of your sheet could cause problems

If you filter an item on the columns shelf, the width of the sheet is controlled by the user. Depending on the number of items in your column filter, you could easily let them create a worksheet that does not scale gracefully.

Tableau Style guide – ii. Reference

A worksheet must never have a horizontal scrollbar.

Captions should contain abbreviation definitions, data source information, creation date

Titles should not contain filter values (worksheets only, not Dashboards)

Tableau Server will use the Title value as the text for the link to the view. This can lead to much confusion.

A view might well contain, for example, a filter on Exam Name. You can make the view more readable when using Tableau Reader by putting that value in the Title, as below:

Title: Table of student marks by gender (B2. Civil Engineering, ENSC0020)

Exam pap...: B2. Civil Engineering, ENSC0020

	results in decile			% results in decile		
decile	FEMALE	MALE	Total	FEMALE	MALE	Total
90-100	1	2	3	2.0%	1.2%	1.4%
80-89	6	26	32	11.8%	15.8%	14.8%
70-79	8	33	41	15.7%	20.0%	19.0%
60-69	9	30	39	17.6%	18.2%	18.1%
50-59	12	36	48	23.5%	21.8%	22.2%
40-49	7	18	25	13.7%	10.9%	11.6%
30-39	6	14	20	11.8%	8.5%	9.3%
20-29	1	4	5	2.0%	2.4%	2.3%
10-19	1	2	3	2.0%	1.2%	1.4%
0-9						
Grand Total	51	165	216	100.0%	100.0%	100.0%

However, if you publish this to server, this is what the link looks like:

Feedback from the pilot indicated that this confused users – they didn't click the link as they thought the report was specific for the named Exam.

Therefore, you need to put the Filter values in the Caption. Or embed the sheet on a dashboard, if this is possible (Server uses the Dashboard title, not the Worksheet title for the link name). Neither of these are optimal, but do avoid the problem.

How many worksheets? Depends on the audience

Keep the number of worksheets as small as possible (specialist audiences may be happy with many)

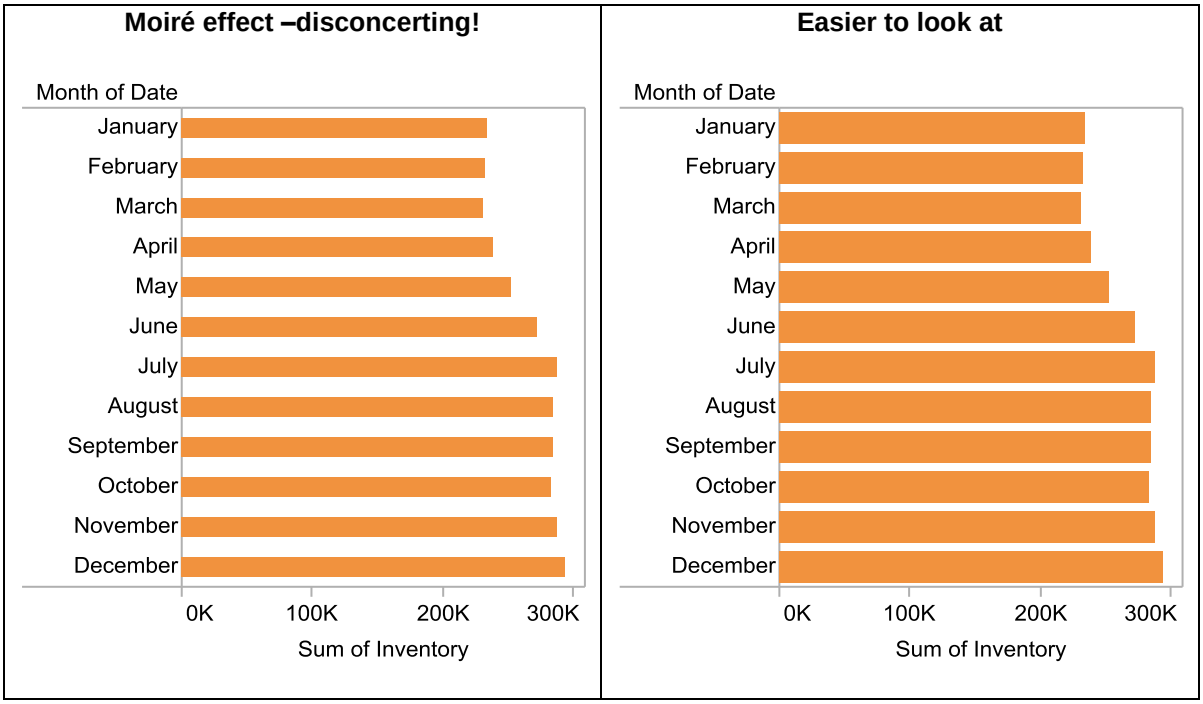
Some of our Annual Programme Statistics workbooks contain over 40 worksheets. In some ways, this is unworkable, but because the audience for these reports need to see data in many different ways, this was necessary.

However, for a general report intended to be viewed by a casual viewer, usually for summary data, you should try to keep the number of worksheets low (less than 5?)

Charts

Make the gaps between bars small

If you leave the Tableau default, you can get a disorienting Moiré effect:

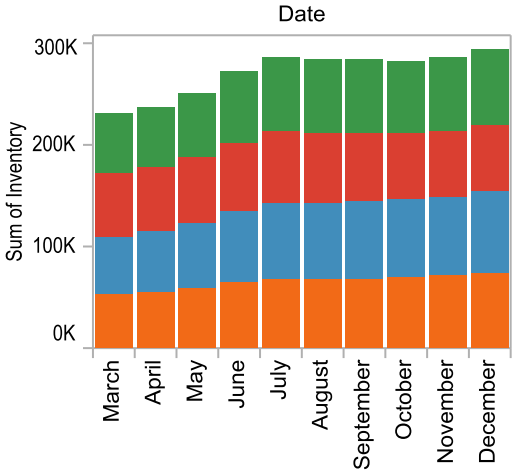


(Note – from Tableau 5.1 onwards, the default bar size is wider, solving this problem)

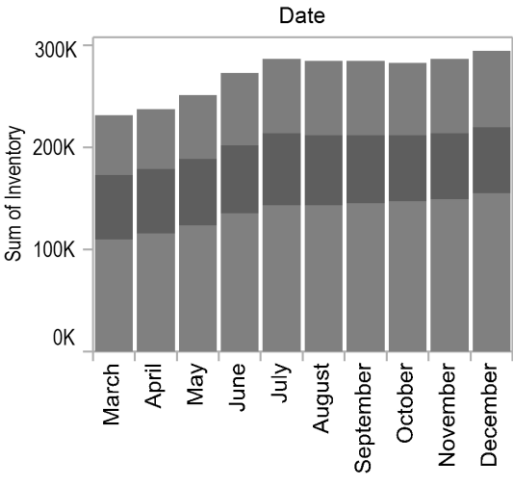
Gap size is controlled using the Size slider on the Marks shelf:

Colours should work on screen and when printed

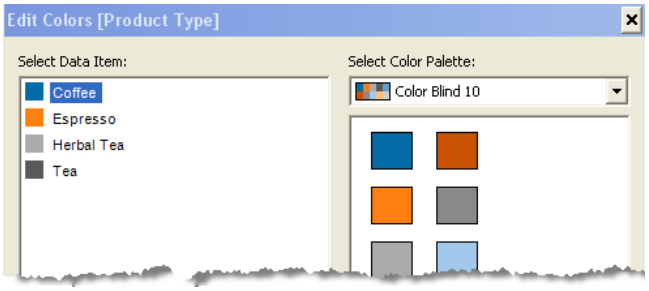
This colour scheme may look okay on screen:



But if you print it in black and white, it will look like this:

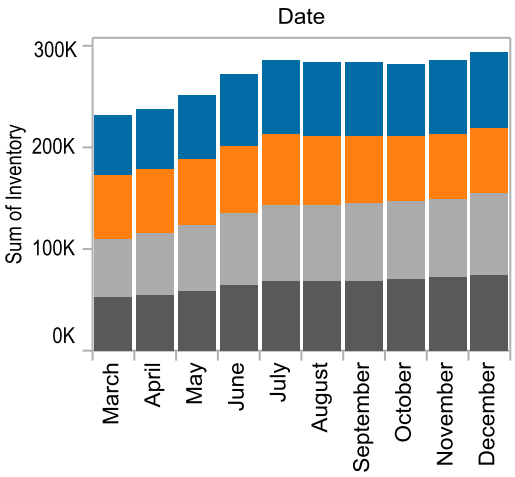


Also, you can easily fall foul of colour-blind users. You should use the Tableau's "**Color Blind 10**" palette.

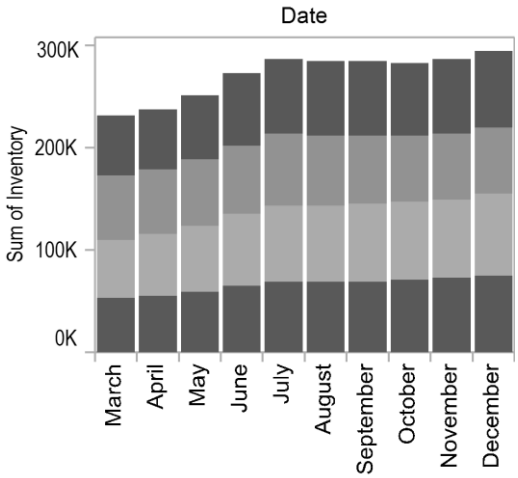


Now we get the following appearance:

Screen view



Print View



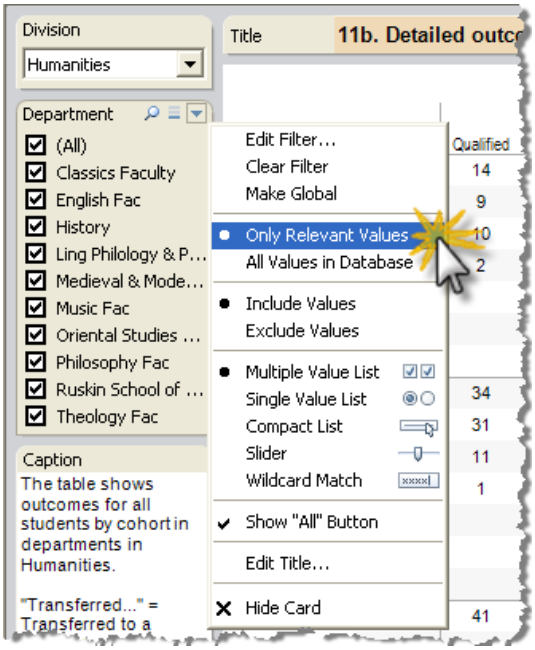
Don't use more than 5 colours.

Filters

If using multiple filters, set one to only show relevant values

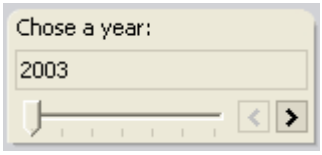
For example, if you have a division and department filter, set the department filter to “Only Relevant Values”

You often need a hierarchical set of filters, commonly for Division/Department/Course style charts. The highest in the hierarchy should be set to “All values in Database”. The filters beneath this one should be set to “Only Relevant Values”. This is done by clicking the arrow to the right of the filter, and selecting the relevant option:



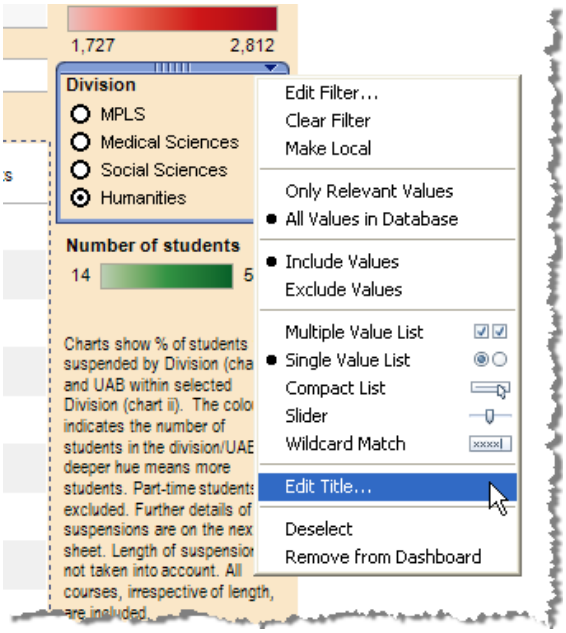
Use a “Compact List” filter when you need to save on screen space

Use a “Slider” filter for single-select, time-based filters



Edit the title of the filter if the purpose is not clear.

Sometimes “Choose division:” is a better filter title than “Division”



Formatting

Fonts: Use Arial.

Arial Narrow is okay if you are pushed for space.

Generally, the smallest font size you can use is Arial, 9pt. If you are really struggling to get your table/chart to display correctly, you could use 8pt for numbers within the table, or change the font to Arial Narrow.

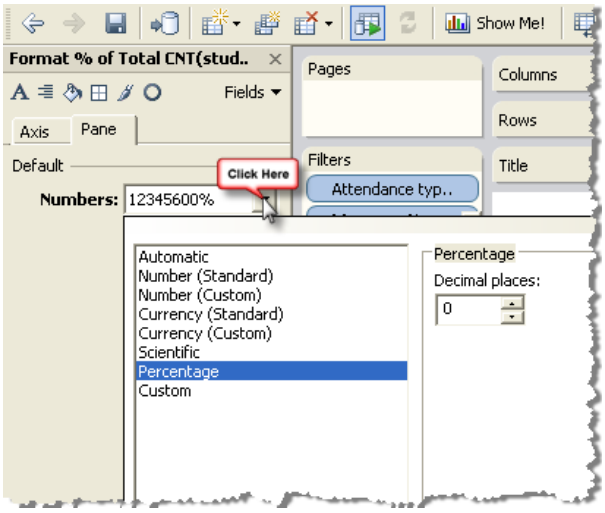
Titles: align left; Arial bold, 10pt

Set subtitle text as Arial, not bold, 8pt

Captions: align left; Arial, 8pt

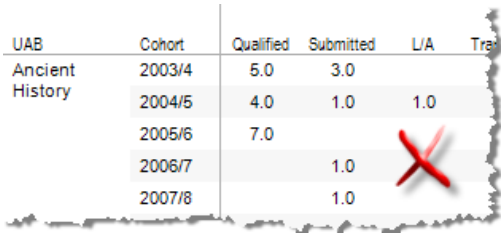
Percentages: maximum to one decimal place.

Don't be afraid of rounding to the nearest whole percentage, if you wish:



Numbers: don't put decimal places where they are "impossible"

For example, show numbers of students as **17**, not **17.0**



UAB	Cohort	Qualified	Submitted	L/A	Tra
Ancient History	2003/4	5.0	3.0		
	2004/5	4.0	1.0	1.0	
	2005/6	7.0			
	2006/7		1.0		
	2007/8		1.0		

Make Subtotals and Totals bold

This makes it easier for the user to distinguish the different part of the table:

Compare:

	Division		
Cohort	MPLS	Humanities	Grand Total
2003/4	343	245	588
2004/5	374	243	617
2005/6	365	228	593
2006/7	410	264	674
2007/8	434	188	622
2008/9	437	228	665
2009/10	449	249	698
Grand Total	2,812	1,645	4,457

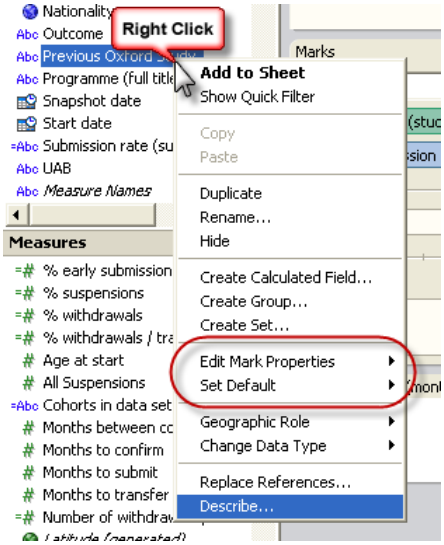
and

	Division		
Cohort	MPLS	Humanities	**Grand Total**
2003/4	343	245	**588**
2004/5	374	243	**617**
2005/6	365	228	**593**
2006/7	410	264	**674**
2007/8	434	188	**622**
2008/9	437	228	**665**
2009/10	449	249	**698**
Grand Total	**2,812**	**1,645**	**4,457**

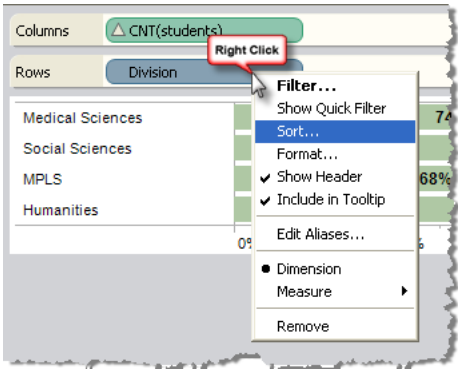
Set sorting, colours and number formats on the dimension itself

That way, the change is the same everywhere the dimension is used.

In the Data Sidebar, you can right-click on a Dimension or Measure and edit its Mark Properties or Default sort:



When you do this to the Dimension or Measure itself, the change is applied to every instance of that dimension. It is possible to apply a sort, colour format, or number format to a Mark on a shelf:



However, when you do that, it applies only to that instance of the Dimension (or Mark).

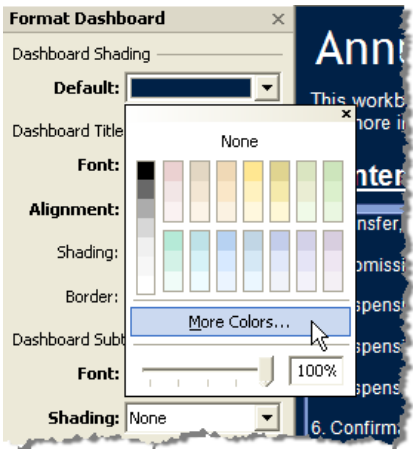
Frontsheet and Notes (packaged workbooks only)

Adding a Frontsheet or Contents page helps navigation on complicated workbooks

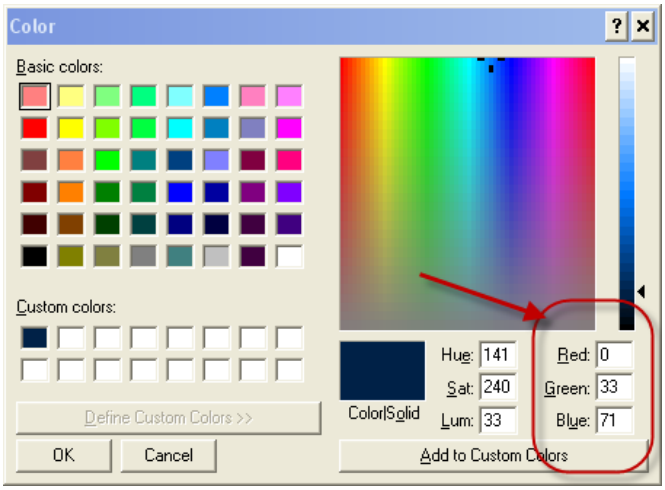
Use the Annual Programme Statistics as a guide.

If you want the background of your frontsheet to have the Oxford Blue colour (see the Annual Programme Statistics for examples), you can do this by choosing *Format…Dashboard…*

In the Dashboard Shading section, choose *More colors…:*



Then add the Oxford Blue colour RGB values (Red=**0**, Green=**33**, Blue=**71**) to the Colour form:



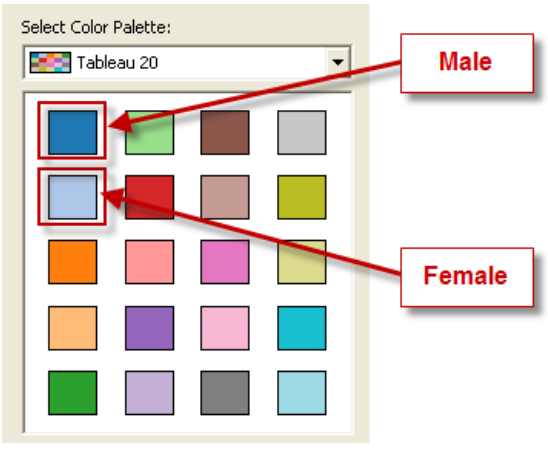
Add a Notes sheet if there is a lot of background notes.

Save the workbook on the view you want the user to see first

Doing this means that when another user opens the workbook, it opens on the correct page.

Data defaults (colours, aliases, sorts, etc)

Defaults are shown where they have been used in the APS or other published reports

Division	**Aliases/ Sort**	Medical Sciences Social Sciences MPLS Humanities Continuing Education (*or* OUDCE)	This ordering is the order of the Division code (and conveniently puts Continuing Education, the smallest Division, at the bottom)
	Colour:	Medical Sciences Social Sciences MPLS Humanities Continuing Education	These colours are the default colours assigned by the Colour Blind 10 palette
Fee Status	**Aliases/ Sort**	Home European Union Overseas Channel Islands	
Ethnicity	**Aliases/ Sort**	White BME Other Unknown	Explain the acronyms in the caption: BME = Black or minority ethnic (all non-white, including Mixed, but not "Other")
Disability	**Aliases/ Sort**	No disability SpLD Other disability	1. SpLD is a grouping of ADHD, ADD, Dyslexia, Dyspraxia, Dysgraphia 2. Explain the acronyms in the caption: SpLD = Specific learning disability
Gender	**Colour**	FEMALE MALE	
Nationality Group	**Aliases/ Sort**	UK EEA Overseas	EEA = European Economic Area; the group also includes Switzerland, Channel Islands and Isle of Man. Details in APS terms and definitions.doc in G:\Student Data Management & Analysis\Reporting\Reports (old stu inf sys)\Annual programme stats\Annual reports\Release procedure and documentation\
Names			Names should be in <First Name> <Last Name> format, e.g. John Smith. They should be sorted on Last Name.