15th Annual Conference of the
National HIV Nurses Association (NHIVNA)

National HIV Nurses Association

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Quantifying experiences:
quantitative data collection and analysis within nursing research

NHIVNA 28 June 2013

What is your data for?

Research: discover new, generalisable knowledge

Clinical audit: measure service against a standard or set baseline for a standard

Service evaluation: measure service without reference to a standard

Telling the difference

Is the aim to derive generalisable new knowledge? → research

Is the treatment/service new, lacking existing evidence? → research

Does the study involve allocation and/or randomisation? → research

Does the study seek to measure against a standard of care? → audit

Does the study measure service, but without a standard? → evaluation

Governance

- Research, clinical audit and service evaluation can all raise ethical and governance issues.
- Usually, only research requires formal ethics approval.

Types of data

Numerical:

defined size, can be added/subtracted: eg ages, weights, dates

Ranked categories:

ordered, but can't be added/subtracted: eg levels of education

Unranked categories:

specified values, but no order: eg sex, ethnicity

Uncategorised:

not quantitative: eg text comments

Null or indeterminate:

eg question not answered.

Exclusive and non-exclusive categories

Exclusive, eg “Tick one”:

- Generates one data point with value of ticked answer
- Use software to enforce if possible

Non-exclusive, eg “Tick all that apply”:

- Generates multiple linked data points with values of yes/no or true/false
- Easy to measure frequency – which are the commonest answers?
- Combinations can get complicated!

Discussion point: "forcing" data types

From ranked categories to numerical	
Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

From qualitative to unranked categories
Reasons for poor adherence [tick all that apply]:
Drug/alcohol use
Mental health problems
Domestic violence
Feeling well, see no need for ART
Fear of adverse effects

Methods of data collection

- Structured query of existing database(s)
- Case-note/record review and transcription
- Questionnaire/survey: can combine closed quantitative and more open qualitative questions
- Direct measurement/observation.

Choosing your method(s)

- Representativeness: sampling and bias
- Cost/convenience
- Intrusiveness
- Reliability/accuracy
- Completeness

Planning your data collection

What questions do you want to answer, eg:

- What proportion of non-adherent patients were discussed in MDT?
- Did this vary by sex/ethnicity?
- What were the reasons for non-adherence?

Define:

- Denominator
- Numerator
- Individual data points and allowed values for each

What is your denominator:

- What are the criteria for defining non-adherence?
- How can you identify patients who meet these criteria?
- What time period will give you enough data to be useful, while still relevant?

Planning your data collection

Use a separate question for each item:

- Not: “Had the patient changed ART and if so when?”
- Rather: “Had the patient changed ART?”
- “If ‘Yes’, when was this?”

Start with straightforward, non-sensitive data:

- For staff completion: patient sex/age is easy: start of questionnaire
- For patients: personal details are sensitive: end of questionnaire

Follow a logical flow, divide up with sub-headings.

Planning your data collection

Use qualitative data to close down answer options:

- Interview, focus group: why do [you] sometimes find it difficult to take your medication?
- Staff brainstorm: in your experience, why do patients find it hard to adhere?
- Review of literature.

→ Was the patient non-adherent because of [tick all that apply]?

Consider “Other, please state:” option.

Planning your data collection

Ideally, prepare analysis schedule before finalising questionnaire

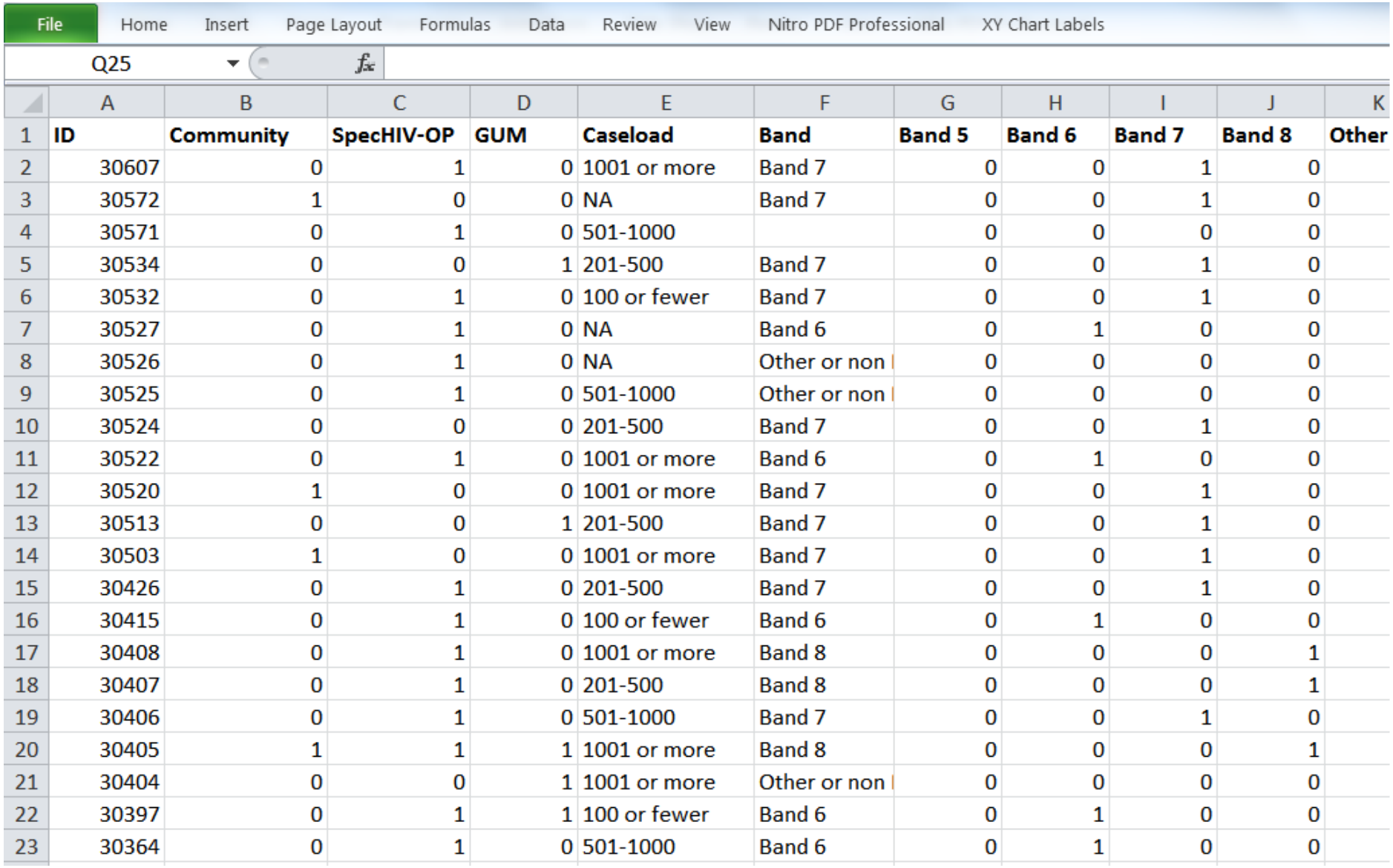
Pilot:

- Colleagues not involved in designing study
- Input some real data
- Look at the data, does it make sense?
- Feedback: is it understandable, do-able?

Revise… but not ad nauseam.

Analysing data

What does a data-sheet look like?



File Home Insert Page Layout Formulas Data Review View Nitro PDF Professional XY Chart Labels

Q25

	A	B	C	D	E	F	G	H	I	J	K
1	**ID**	**Community**	**SpecHIV-OP**	**GUM**	**Caseload**	**Band**	**Band 5**	**Band 6**	**Band 7**	**Band 8**	**Other**
2	30607	0	1	0	1001 or more	Band 7	0	0	1	0	
3	30572	1	0	0	NA	Band 7	0	0	1	0	
4	30571	0	1	0	501-1000		0	0	0	0	
5	30534	0	0	1	201-500	Band 7	0	0	1	0	
6	30532	0	1	0	100 or fewer	Band 7	0	0	1	0	
7	30527	0	1	0	NA	Band 6	0	1	0	0	
8	30526	0	1	0	NA	Other or non	0	0	0	0	
9	30525	0	1	0	501-1000	Other or non	0	0	0	0	
10	30524	0	0	0	201-500	Band 7	0	0	1	0	
11	30522	0	1	0	1001 or more	Band 6	0	1	0	0	
12	30520	1	0	0	1001 or more	Band 7	0	0	1	0	
13	30513	0	0	1	201-500	Band 7	0	0	1	0	
14	30503	1	0	0	1001 or more	Band 7	0	0	1	0	
15	30426	0	1	0	201-500	Band 7	0	0	1	0	
16	30415	0	1	0	100 or fewer	Band 6	0	1	0	0	
17	30408	0	1	0	1001 or more	Band 8	0	0	0	1	
18	30407	0	1	0	201-500	Band 8	0	0	0	1	
19	30406	0	1	0	501-1000	Band 7	0	0	1	0	
20	30405	1	1	1	1001 or more	Band 8	0	0	0	1	
21	30404	0	0	1	1001 or more	Other or non	0	0	0	0	
22	30397	0	1	1	100 or fewer	Band 6	0	1	0	0	
23	30364	0	1	0	501-1000	Band 6	0	1	0	0	

Pivot tables!

Pivot tables summarise data rapidly

Cross-tabulate automatically

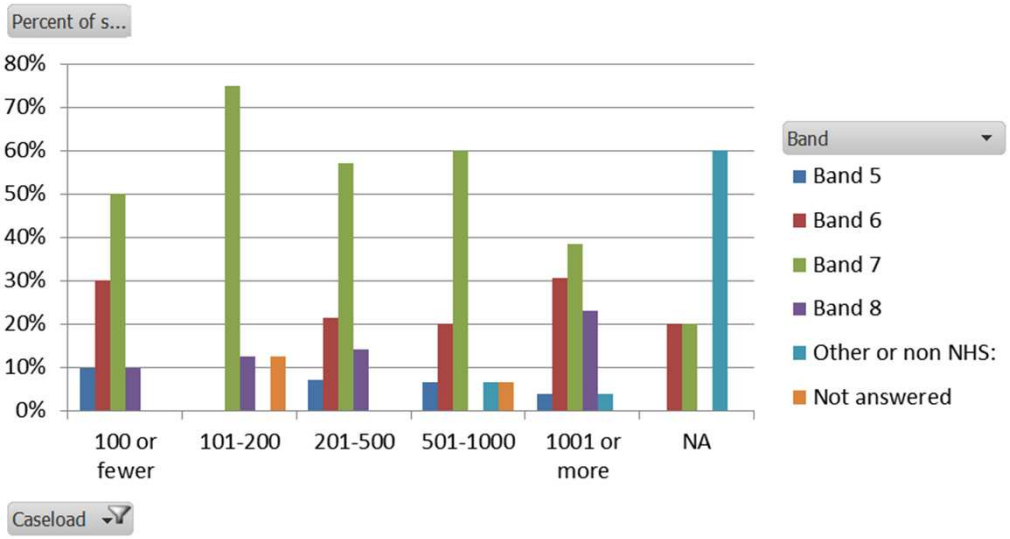
Change row/column items with a couple of clicks

Filter, re-order and re-label categories

Summarise by number, percentage of column or row, rank etc.

Count of ID	Column Labels						
Row Labels	100 or fewer	1001 or more	101-200	201-500	501-1000	NA	(blank)	Grand Total
Band 5	1	1		1	1			4
Band 6	3	8		3	3	1		18
Band 7	5	10	6	8	9	1		39
Band 8	1	6	1	2				10
Other or non NHS:		1			1	3		5
(blank)			1		1			2
Grand Total	**10**	**26**	**8**	**14**	**15**	**5**		**78**

	Cas													
	100 or fewer		101-200		201-500		501-1000		1001 or more		NA		Total N	Total %
Band	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Band 5	1	25%		0%	1	25%	1	25%	1	25%		0%	4	100%
Band 6	3	17%		0%	3	17%	3	17%	8	44%	1	6%	18	100%
Band 7	5	13%	6	15%	8	21%	9	23%	10	26%	1	3%	39	100%
Band 8	1	10%	1	10%	2	20%		0%	6	60%		0%	10	100%
Other or non NHS:		0%		0%		0%	1	20%	1	20%	3	60%	5	100%
Not answered		0%	1	50%		0%	1	50%		0%		0%	2	100%
Total	**10**	**13%**	**8**	**10%**	**14**	**18%**	**15**	**19%**	**26**	**33%**	**5**	**6%**	**78**	**100%**



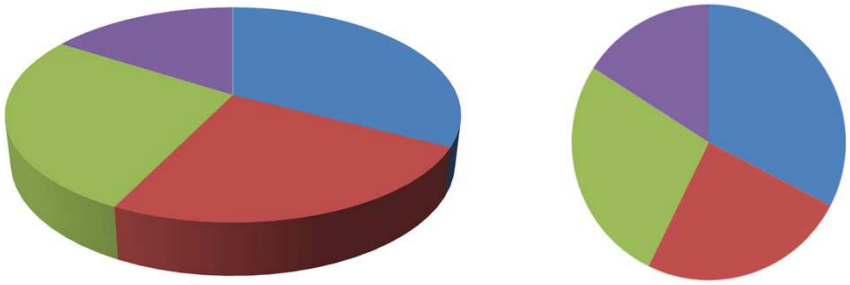
Discussion point: displaying data

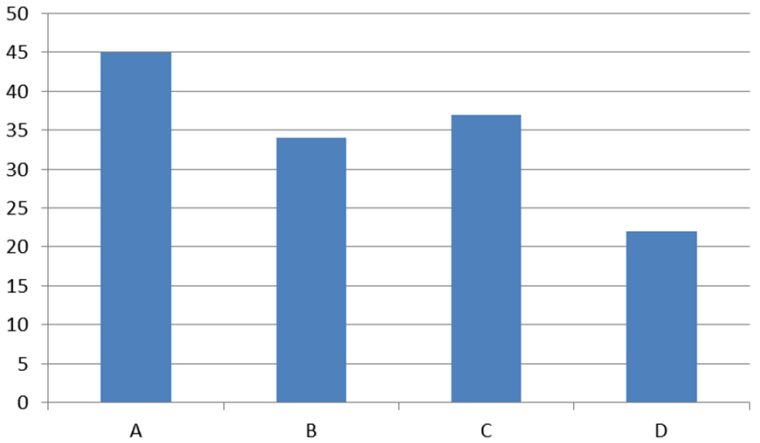
Use as little “ink” as possible to get the information across.

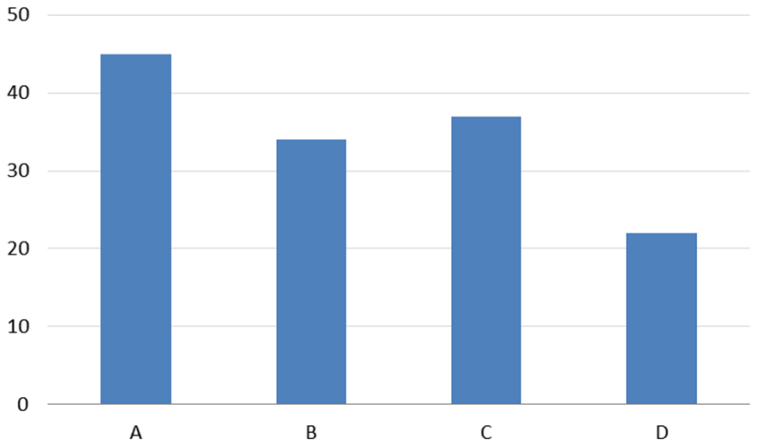
Choose shapes that the eye can compare.

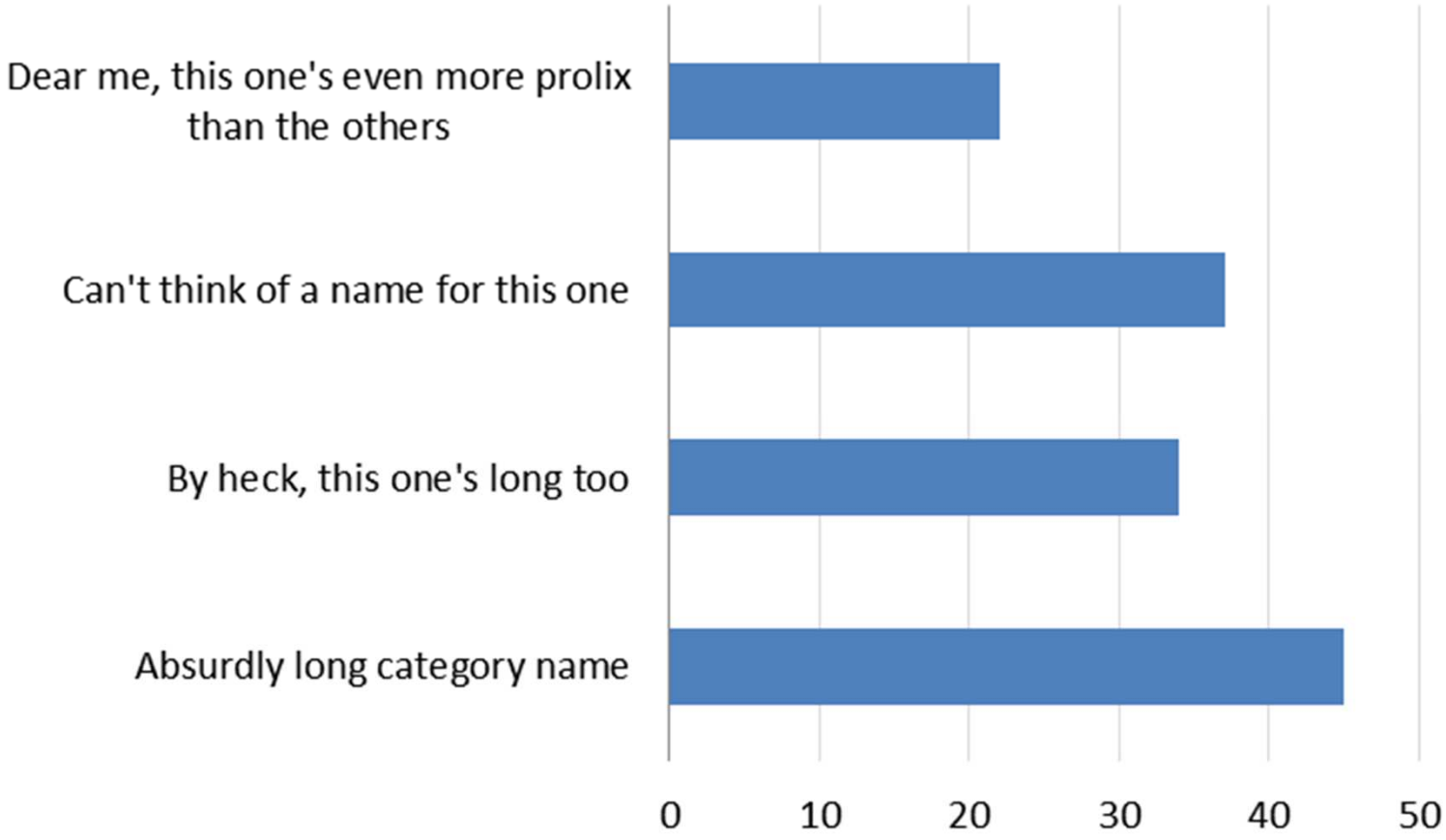
Don’t rely solely on colour.

Excel pre-sets look horrid.








Dear me, this one's even more prolix than the others
Can't think of a name for this one
By heck, this one's long too
Absurdly long category name
0
10
20
30
40
50

So, when *should* one use a pie-chart?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Dot Plot
Quick XY Chart
Custom Charts
Edit Series Formulas
Label Last Point
Match Label Colors
Add Next Series
Copy Series Formats
Export Chart
Chart Tools
Loess
Data Tools
New Chart Utility for Windows
Using Pivot Tables and Pivot Charts in Microsoft Excel
This introduction has been contributed by Debra Dalgleish, Excel MVP.
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Check out Debra's Excel Tips and Techniques.
Introduction to Pivot Tables in Excel
Debra takes a brief look at Pivot Tables -- what they are and how they work.
Pivot Table and Pivot Chart FAQs
Debra's Answers to Frequently Asked Questions (on Contextures).
Pivot Tables - Special Topics
Debra's list of Pivot Table Topics (on Contextures).
Working with Pivot Charts in Excel
Debra's tips and techniques for working effectively with Pivot Charts.
Pivot Tables, Pivot Charts, and Real Charts
Jon's TechTrax Article focused on abilities and shortcomings of Pivot Charts, and how to use regular charts to overcome their deficiencies (ar
Pivot Table Programming

For all your Excel learning needs…

*http://peltiertech.com/Excel/

*I have not been paid to say this by Jon Peltier, Microsoft, nor anyone else.