

Quantitative Data Analysis

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Quantitative Data Analysis and Presentation – Consider your argument

Overview

- Consider your argument
- Common mistakes
- The role of quantitative data in the thesis
- Charts and illustrations
- Summary

consider your argument

What do I mean by
'consider your
argument'?

Think about the trajectory of the dissertation and
the role of any data before you choose to include it.
DO NOT PUT YOUR DATA FIRST

Don't look for answers in the data just because
the light seems to be brighter there

Remember to use statistics like the drunk
leaning against the lamp post - for support not
illumination

How do you structure your argument?

- Overall: aim for clarity of title, questions and abstract
- Focus on addressing your research questions
- Jot down key findings on a first 'sweep'
- Look for explanations → why??
- Further exploration to test hypotheses
- Revise any initial assumptions if necessary
- Consolidate your argument and plan tables/charts
- Review and refine if necessary
- Overall: it's iterative but aim for coherence

common mistakes in thinking

Common mistakes in thinking

- 'Quants data will make my thesis look more scientific'
- 'I have to have some' (and terms like correlation etc)
- 'I've done it so I might as well include it'
- 'Not sure what this means but it should go in'
- 'This speaks for itself'

- Why are these mistakes?

- Get the balance between thinking & writing and charting right (most people do more charting)

the role of quantitative data

(Prescriptive) quantitative data in the thesis

1. Review (introduction, why the area is important, discussion of context – may include quantitative, *descriptive*, *secondary* data)
2. Methods (outline proposed methods & critique / develop – may include discussion of *secondary* data)
3. Operationalisation (data 'collection' – may include *descriptive* statistics)
4. Analysis (*contextualised* presentation and *discussion* of 'findings')
5. Discussion (interpretation and setting in a wider context 'the literature' – may refer back to / compare *primary* and *secondary* data)

Examples - review

- “There are approximately 22,000 local politicians (elected members) in England and Wales, with responsibility for running local government. Approximately half of all employees in the public sector (of a total of over 5 million) work in local government, and local authorities spend around £78 billion pounds per annum (Local Government Association, 2004).”

Examples - methods

- Discuss findings / sample size / response rates / reliability and other metrics from other instruments.
- Can become quite technical¹ but some numbers are useful to provide context.

¹Dichotomous measures reduce variance, such that the maximum effect size for a point-biserial correlation between a continuous variable and a dichotomous variable is 0.798

Example - operationalisation

- Overall 24 surveys were returned undelivered (Trust mailing details were incorrect). Eight surveys were excluded from initial analysis, because the respondents were not nurses (three cases), or they did not leave voluntarily (five cases). Eight more surveys were left out during data entry, either because there was too much missing data (three cases), or because turnover was involuntary (five cases). The final sample size is thus 352. This represents an overall response rate of 31%, which is high for this type of survey (Owen and Jones, 1994, p. 313). Most respondents were female (91%), their mean age was 35 and average tenure was 4.1 years. The vast majority of respondents (86%) were still working as nurses at the time of participating in the research. Almost three-quarters (71%) were still working as nurses in the NHS.

Example - analysis

Reliability Ratings (alpha ratings) for 7 of the Scales in the Warwick Political leadership Questionnaire were as follows:

•Public Values	0.825
•Questioning	0.729
•Decision Making	0.797
•Personal Effectiveness	0.815
•Strategic Thinking	0.832
•Advocacy	0.855

Example - discussion

“Although the item the IES uses seems on the face of it a reasonable indicator of potential interventions to reduce turnover, it is not consistent with evidence gained from asking actual leavers what the main basis for their decision to leave was. For example, although pay was a source of dissatisfaction for more than half the respondents to this survey, only six saw it as being the main reason they left (as reported above).... [because]”

charts and illustrations

Why use illustrations?

Can improve presentation of the argument

+

More efficient use of time and space

+

Flow / expectations / aesthetic

Commonly used techniques

- Table
- Bar chart
- Histogram
- Pie Chart
- Scatterplot
- 3d or not 3d
- cast thy nighted colour off?

Example

Table 1: Reliability Ratings (Alphas) For 7 scales in a questionnaire

Scale (abbrev.)	No of Items	Alpha
Public Values	7	0.825
Questioning	6	0.729
Dec'n Making	5	0.797
Pers. Effect'ness	6	0.815
Strategic Thinking	4	0.832
Advocacy	5	0.855

What if anything is wrong with the way in which this table is set out?

Examples

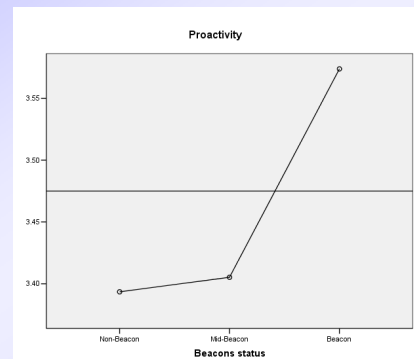
Table 2. Mean scores on shock items for clusters 1 and 2

Shock Dimension	Mean score for cluster 1 (50 leavers)	Mean score for cluster 2 (103 leavers)	t-scores (all p<0.001)
Expectedness	3.62	2.34	5.18
Negativity	4.46	1.33	21.93
Work-relatedness	3.86	2.10	8.69
Specificity	1.72	2.58	-3.79
Avoidability	2.50	4.25	-7.23

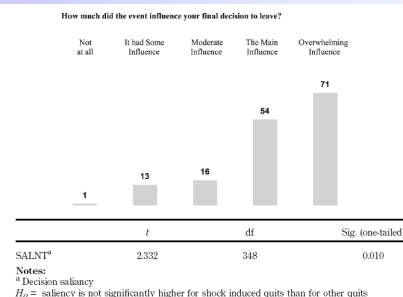
Note: Cluster 1 shocks are typically: more expected, more positive, more personal, more specific, less avoidable. Cluster 2 shocks are typically: less expected, less positive, more work-related, less specific, more avoidable.

What if anything is wrong with the way in which this chart is set out?

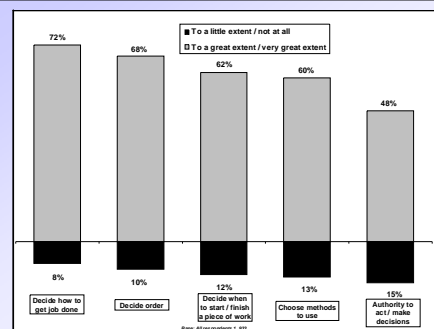
What if anything is wrong with the way in which this chart is set out?



Shock Influence

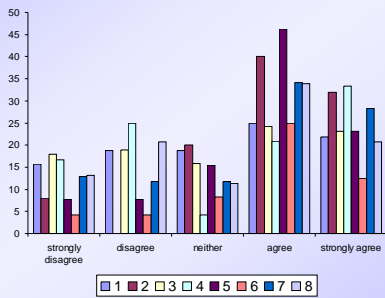


What if anything is wrong with the way in which this chart is set out?



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Simple rule when including 'illustrations'

- Have some text introducing, and at the *very least* referring to, the chart (illustration)
- Make sure it is correctly labelled and formatted and appropriately positioned
- Have some text describing and interpreting the data
- Always ask yourself
 1. 'why is it important to draw the reader's attention to that'
 2. 'How does it help my argument'

summary

Putting your argument first

