

Writing with Quantitative Data

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Overview

- Starting points:
 - Who is the audience?
 - Telling a story
- Working with/in a structure and style
- Showing data
 - Volume
 - Good table manners
 - Visualising data
- Writing a discussion: summary of, or theorising with, data

Who is the audience?

And what kind of story do they want?

- Examiner: comprehensive and detailed
- Peer-reviewed journal (fellow academics): robust and innovation
- Policy and practitioners: clear and evidenced
- Conference: performance, visual
- Media: novel, controversial and easy
- Read examples before you start

Telling a story: the data-theory dialogue

- What are the key messages?
- How do these dictate the literature reviewed (the foundations for the story)?
- Which data are needed to tell the story, and in what order do they need to be presented (a linear narrative?)?
- Concluding the story
 - Summary?
 - Interesting and simple? or
 - Interesting and complex?
- Example: explaining gender differences in depression →
- Example: is marital violence a problem of male violence against women, or of violence in relationships and violent spouses? →

Nazroo (1997) Gender inequalities in depression

- Introduction, literature review
 - Consistency of findings on gender differences in depression
 - Challenge some explanations: artefact, alternative disorders and biological difference
 - Value of a focus on gender roles: role strain, cost of caring and identity relevant stressors
 - Key hypotheses
- Methods: why a study of couples, why a focus on life events, sample, measures
- Results
 - Women more likely to have an onset of depression
 - Difference entirely a consequence of events in the 'domestic' arena
 - Clear gender differences in domestic roles
 - Men under-report the significance of events in the 'domestic' arena, and women are more likely to blame themselves for the occurrence of such events
 - For couples with minimal differences in roles there are no differences in the impact of events in the 'domestic' arena
- Discussion
 - Summarise findings
 - Theoretical implications: caring work and role identity, not a generic greater vulnerability
 - Consistency with other literature
 - Unique contribution of this paper, ability to precisely test relevant explanations
- ← Possible limitations of this study

Nazroo (1995) Gender and Marital Violence

- Introduction, literature review
 - Feminist literature on marital violence
 - Survey evidence suggesting women are as violent as men
 - Positivist critique of feminist methodology, then critique of positivistic survey methods
 - Different orientations to gender-relations, patriarchy and power
- Methods: combining within one study sample qualitative approaches, positivistic survey methods, and quantitative coding of meaning and context
- Results
 - Survey methods: women more aggressive than men
 - Quantitative coding of meaning: men's aggression is much more dangerous, intimidating and harmful than women's
 - Qualitative findings: detailed, credible and evocative accounts of abusive relationships that resonate with feminist accounts
- Discussion
 - Summarise findings
 - Implications for methodology
 - Implications for theoretical orientations
- Conclusion
 - Highly misleading results from quantitative surveys
 - Critique of positivistic orientation to data



Working with/in a structure and style

- Science, positivism and social science: what does your audience expect?
- A classic structure, the IMRaD style:
 - Introduction (with questions/hypotheses)
 - Methods
 - Sample
 - Measures
 - Analytical approach
 - Results
 - Discussion and conclusion
- Example, guidance from the British Medical Journal →
- Writing within sections, and writing certain types of (precise) sentences

British Medical Journal suggested structure

- Objectives and aim, hypothesis or research question
- Design, setting, participants
- (Interventions and main outcome measure)
- Results
- Structured discussion:
 - Statement of principal findings
 - Strengths and weaknesses of the study
 - Strengths and weaknesses in relation to other studies, discussing important differences in results
 - Likely explanations and implications for policy and practice
 - Unanswered questions and future research
- Conclusions are important, because this is often the only part that readers look at (do not go beyond the data in the article)



Volume of data

- How much data can there be?
- Example: tables in the ELSA wave 1 report →
- Presenting data parsimoniously
 - Which bits of data are needed for the story?
 - Which bits of data are redundant in tables and figures?

Showing data (Marsh 1988)

- For clarity we prefer visual displays, and we leave out extraneous detail to focus attention on the story line
- To allow others to inspect and possibly reinterpret the result we want to leave as much of the original data as possible in numerical form
- Data must be explained, do not assume that the reader understands the methods used and how the presented data relate to this

Showing data: good table manners (Marsh 1988)

- The title *should* be the first thing the reader looks at:
 - Summarise contents
 - When, where and who (date, geographical unit, and unit of analysis)
- Source of the data and unit of measurement
- Labels for rows and columns (not variable mnemonics)
- Missing data (cases, responses, items from a scale)
- It should always be possible to convert a percentage table back to raw cell frequencies – need base numbers (and maybe weighted bases)
- Show which way proportions/percents run
- Layout, order columns/rows to make comparison easier
 - Which do you want the reader to compare?
 - Which are theoretically next to each other? or
 - Order according to size of effect

Household incomes of mixed and non-mixed children

	White		Indian		Pakistani		Bangladeshi		Black Caribbean	
	Mixed ethnicity? No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Household income, column %										
> £52,000	6.9	15.8	7.9	25.4	1.7	0.5	0.2	16.8	0.6	2.1
£31,201-52,000	17.0	22.6	12.1	22.8	3.3	13.3	3.4	5.1	7.4	15.9
£20,801-£31,200	22.0	24.3	15.2	10.4	6.1	12.9	3.6	0.0	11.2	20.0
£10,401-£20,800	29.4	22.6	31.9	17.1	35.6	17.3	28.4	15.3	23.2	20.1
£0-£10,400	18.3	6.8	17.8	13.4	36.3	35.6	37.5	30.6	46.4	34.8
Mean equivalised income (£)	12389	16966	10573	19079	5717	8352	4844	12927	6934	9753
Income unknown/refused, %	6.4	8.0	15.1	10.9	17.1	20.4	26.8	32.2	11.2	7.1
<i>Base</i>	<i>13,604</i>	<i>544</i>	<i>371</i>	<i>68</i>	<i>715</i>	<i>47</i>	<i>268</i>	<i>17</i>	<i>217</i>	<i>225</i>

Millennium Cohort Study, sweep 1 (cohort members aged on average 9 months)

Household incomes for children in different ethnic groups: the implications of mixed ethnicity

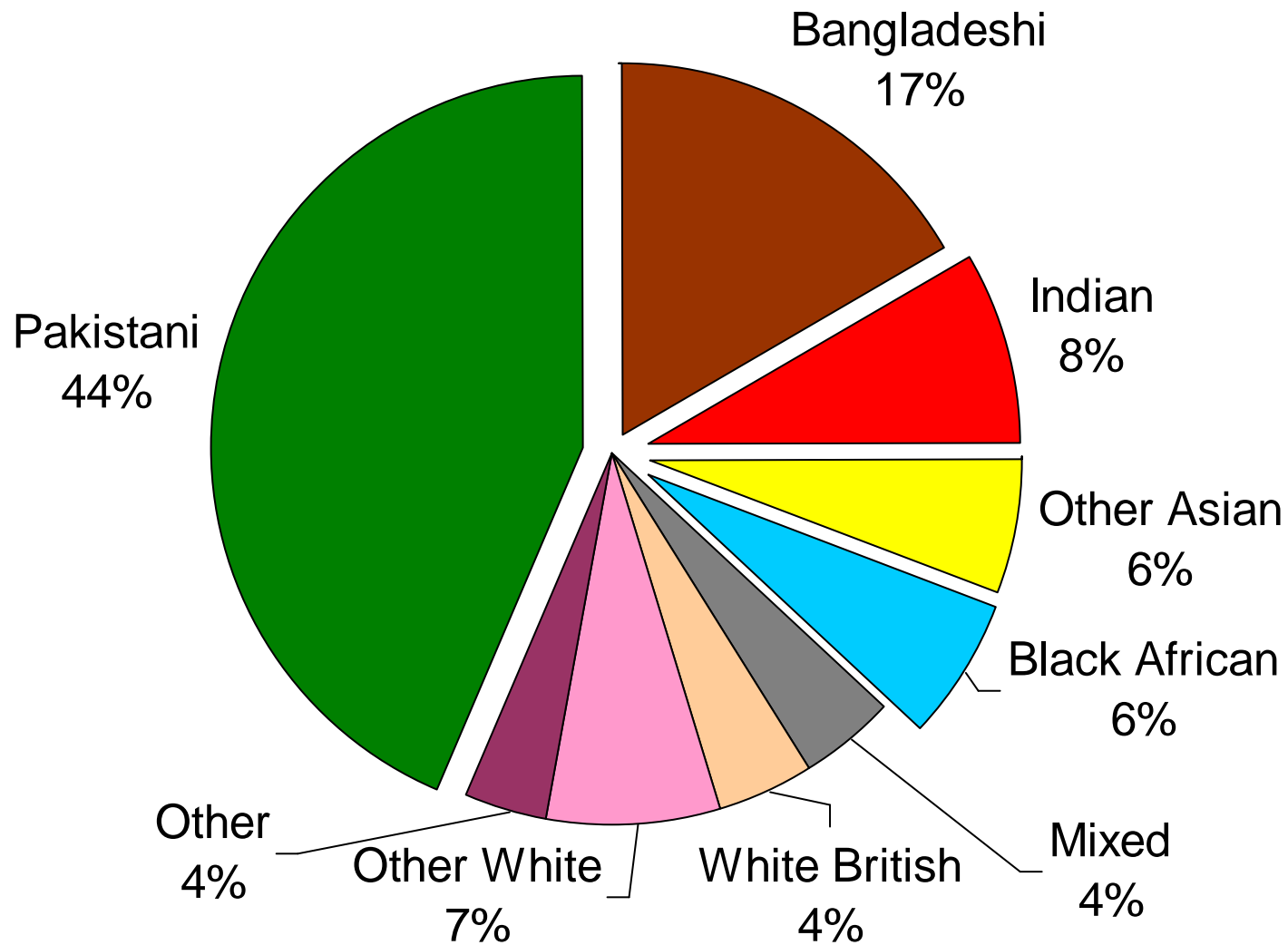
	Not mixed					Mixed				
	White	Indian	Pakist- ani	Bangla -deshi	Caribb -ian	White	Indian	Pakist -ani	Bangla -deshi	Caribb -ean
Household income, column %										
> £52,000	6.9	7.9	1.7	0.2	0.6	15.8	25.4	0.5	16.8	2.1
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£10,401-£20,800	29.4	31.9	35.6	28.4	23.2	22.6	17.1	17.3	15.3	20.1
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Millennium Cohort Study, sweep 1 (cohort members aged on average 9 months)

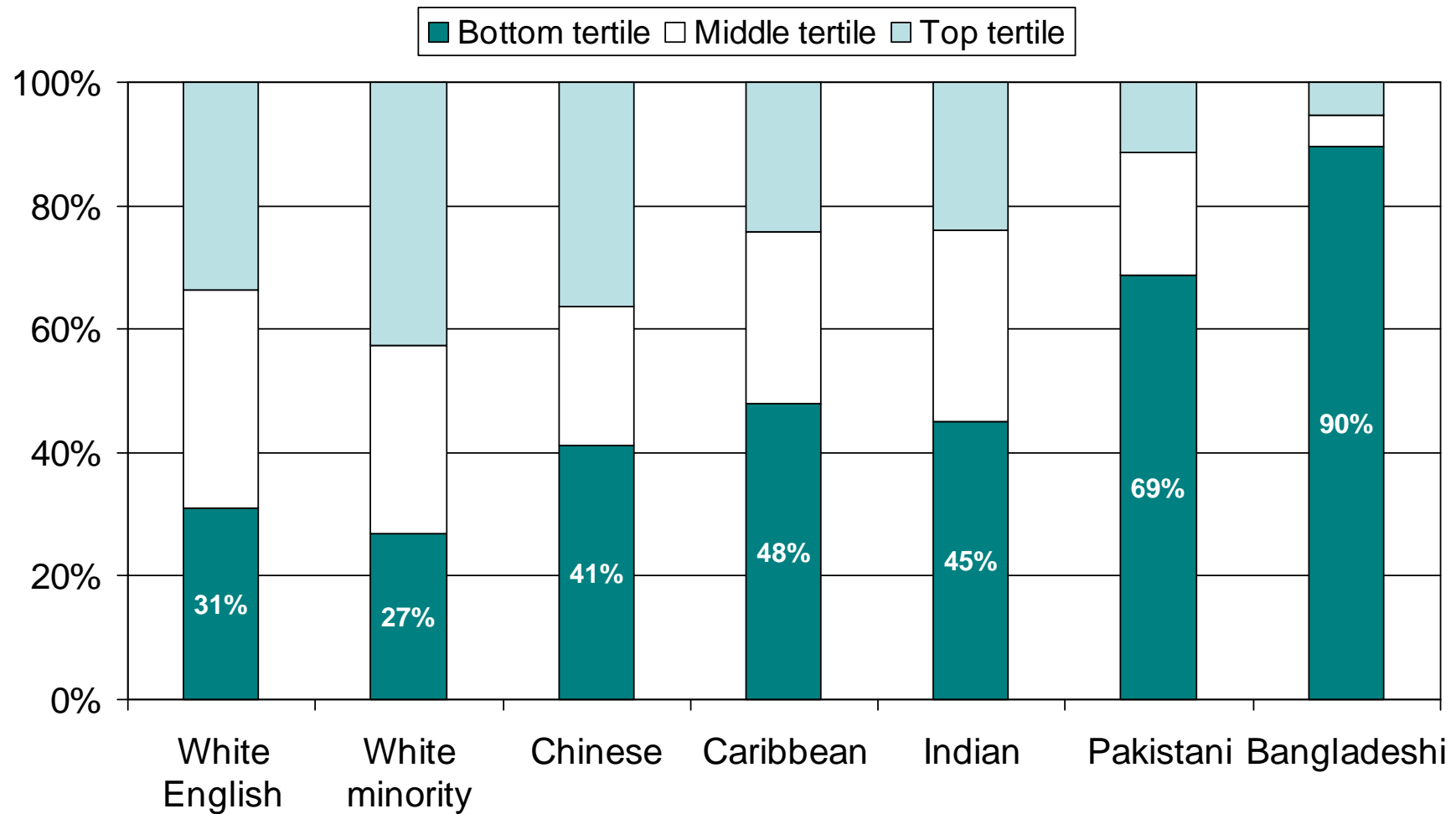
Showing data: visualising data

- Why show graphs when they take more space for less information?
- Using the correct type of graph (scatterplot, pie chart, bar chart, stacked bar, line, etc)
- It is good practice to begin numerical axis at zero, otherwise you should clearly label the axis
- Use simple subdivisions of the scale, single units, twos, or (multiples of) fives
- Importance of layout, make comparisons easy, as for tables
- Examples

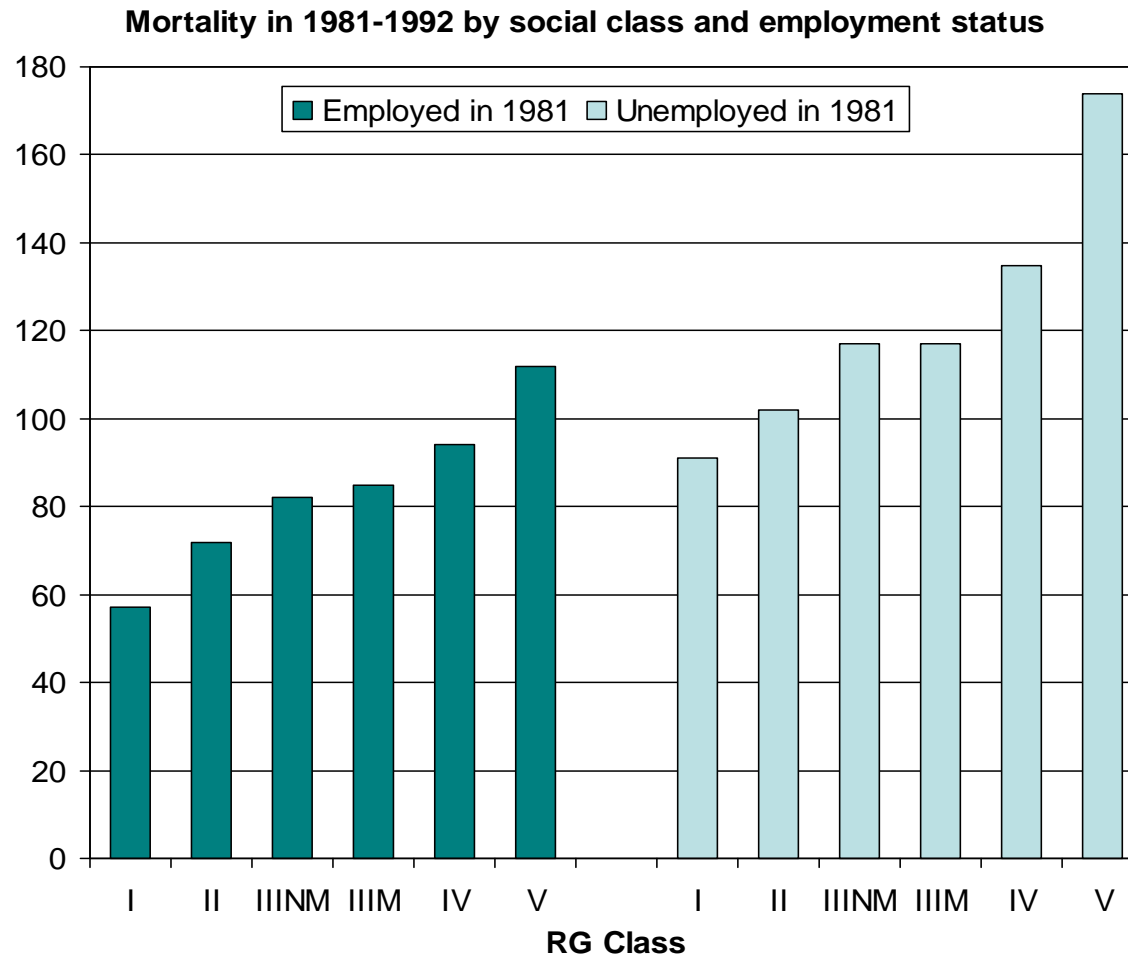
The ethnic make-up of the UK Muslim population 2001 Census



Ethnic differences in equivalised household income



Visualising data: the importance of layout



Fair Society, Healthy Lives: The Marmot Review (2010)

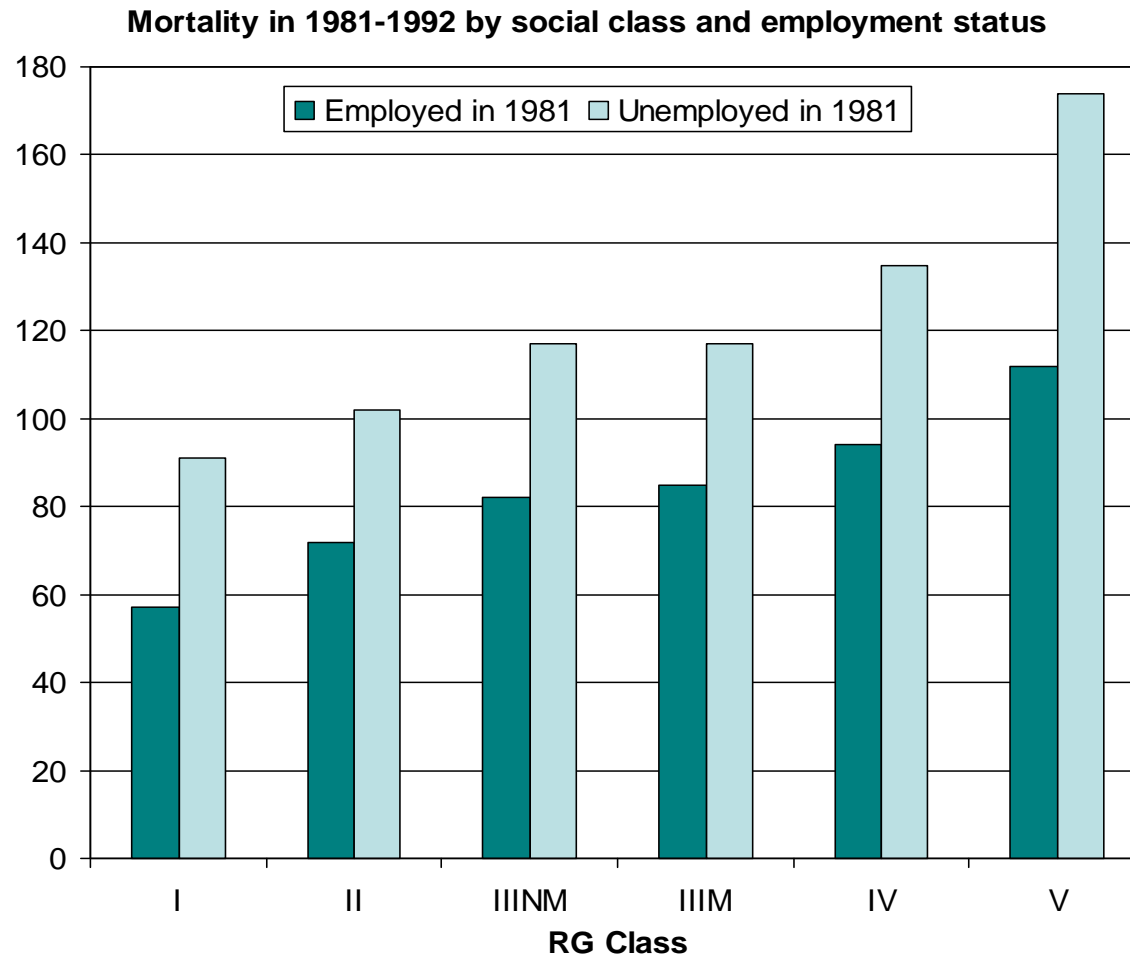
Visualising data: the importance of layout



‘The Figure shows the social gradient in the subsequent mortality of those that experienced unemployment in the early 1980s. *For each occupational class, the unemployed have higher mortality than the employed*’

Fair Society, Healthy Lives: The Marmot Review (2010)

Visualising data: the importance of layout



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Discussion: summarising, or theorising with, data

- Clear links between methods, data and conclusions
- How important is it to theorise, rather than summarise? Pushing the data beyond description to explanation
- Use the introduction to set the discussion up
- Make connections with existing empirical literature to create the space to explore similarities and differences in findings, which then require explanation and allows for theoretical development
- Example: How publically provided healthcare (the NHS) minimises ethnic inequalities

Nazroo *et al.* (2009) Ethnic inequalities in access to and outcomes of healthcare in the UK

- Summary of findings: few ethnic differences in access to and outcomes of primary health care in the UK
- Similarity with findings in other studies, and why there are differences with others
- Contrast between these UK findings and findings in the US
- Limitations: conditions covered, sample representativeness
- Strengths: uniqueness of this work in methods and coverage
- Concluding comments
 - Few ethnic differences in the UK
 - But marked differences in the US
 - Role of insurance in the US
 - Likelihood that differences between the UK and US are healthcare system driven

Concluding thought

Working with, rather than in, a structure and style

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