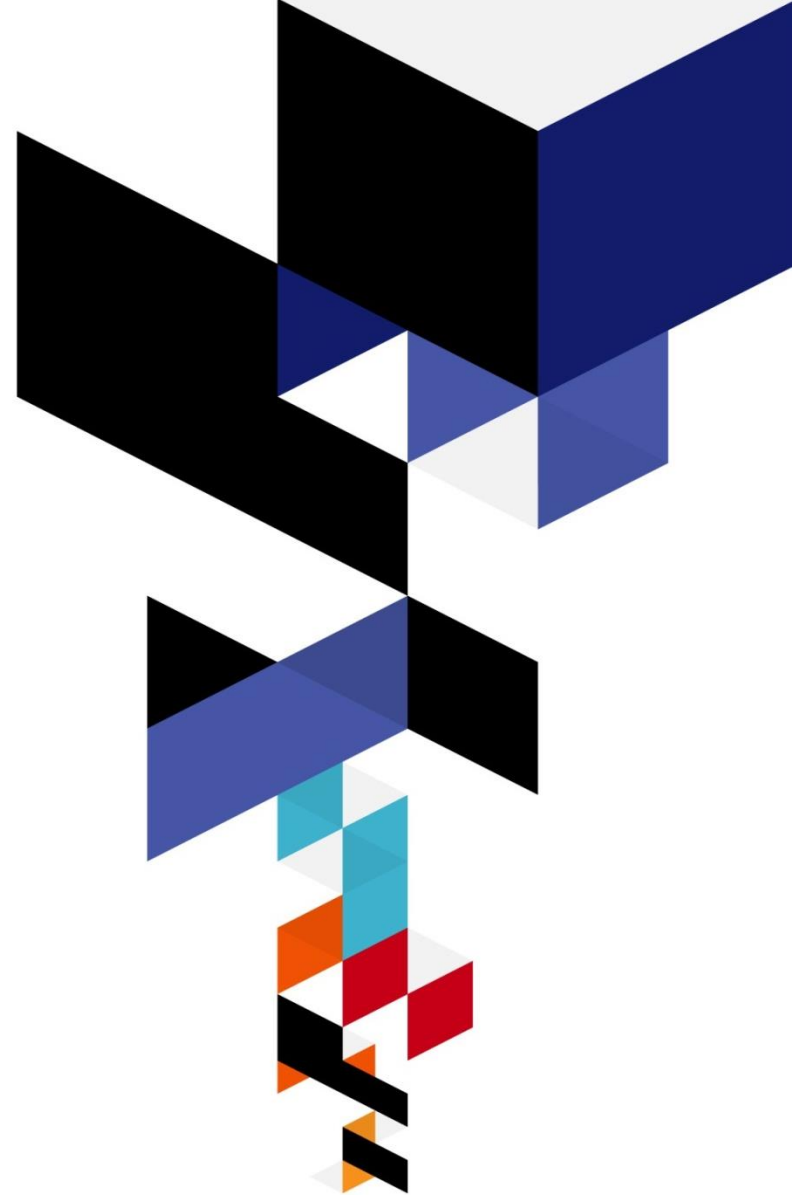


# Subpopulation estimates

## What's the impact of re-issuing cases?

Joel Williams, *TNS BMRB*, March 2016



# What is the impact of fieldwork effort on subpopulation estimates?

*General* model of the impact of fieldwork effort finds only modest effects

May hide larger effects on subpopulation estimates

More homogeneous but:

- Correlation between response propensity and measured characteristics may be greater
- Variance of response propensity may be greater
- Response rate may be lower

# What is the impact of fieldwork effort on subpopulation estimates?

Hard to estimate impact of fieldwork effort on subpopulation estimates because systematic effects may be confounded with random sampling error

The large scale Crime Survey of England & Wales is an exception

Sufficient power to detect relative changes in a mean or proportion of 10% and, in most cases, much smaller changes than that

However, findings may not be generalisable because of topic specificity

# A project for ONS

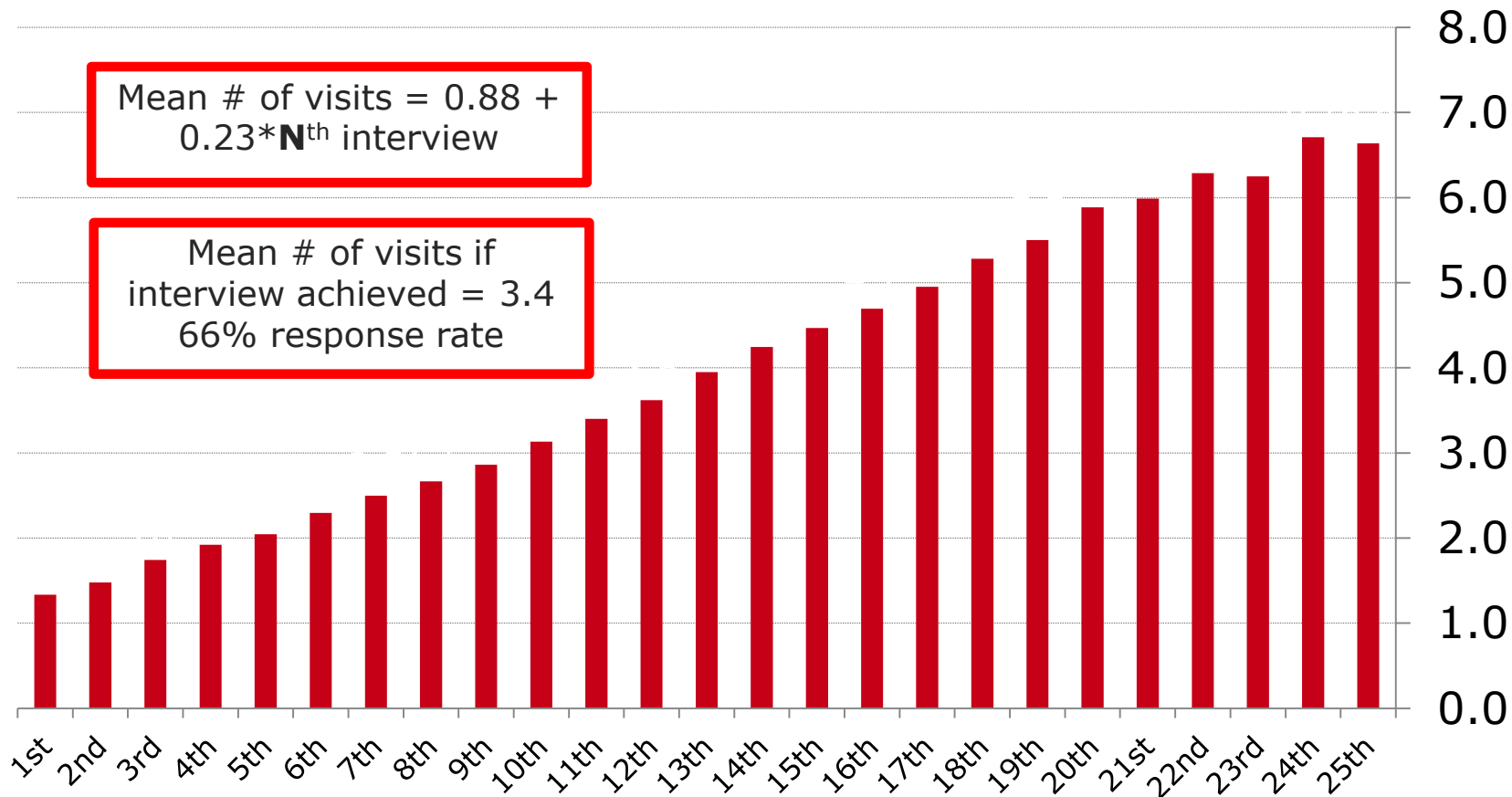
After a fall in response rate, ONS asked us to explore the impact of a lower response rate on the headline statistics they publish

We used data from the 2012-14 period and stripped off the interviews obtained after re-issuing initially unproductive cases, transforming the response rate from 74% to 66%

Putting in less fieldwork effort (by not reissuing) is not the same as putting in the same amount of effort but obtaining a lower response rate - but similar enough to roughly equate the two?

Reissues are a disproportionately costly element of fieldwork with very high per-interview pay rates

# Number of visits made per address, crossed with interview position within assignment sequence (original issue)



# The enormous cost of reissuing initially unproductive cases

After the original issue stage the response rate is 66% and each interview took on average 3.4 visits to achieve

After all the reissue stages the response rate goes up from 66% to 74% but each of these additional interviews has taken an average of 18.6 visits before success was obtained

Over 45% of all visits are made at the reissue stage

High pay for reissue interviews is the norm as survey agencies seek to hit contractual response targets

The additional value of this additional work needs to be obvious...

# Which sub-groups to track?

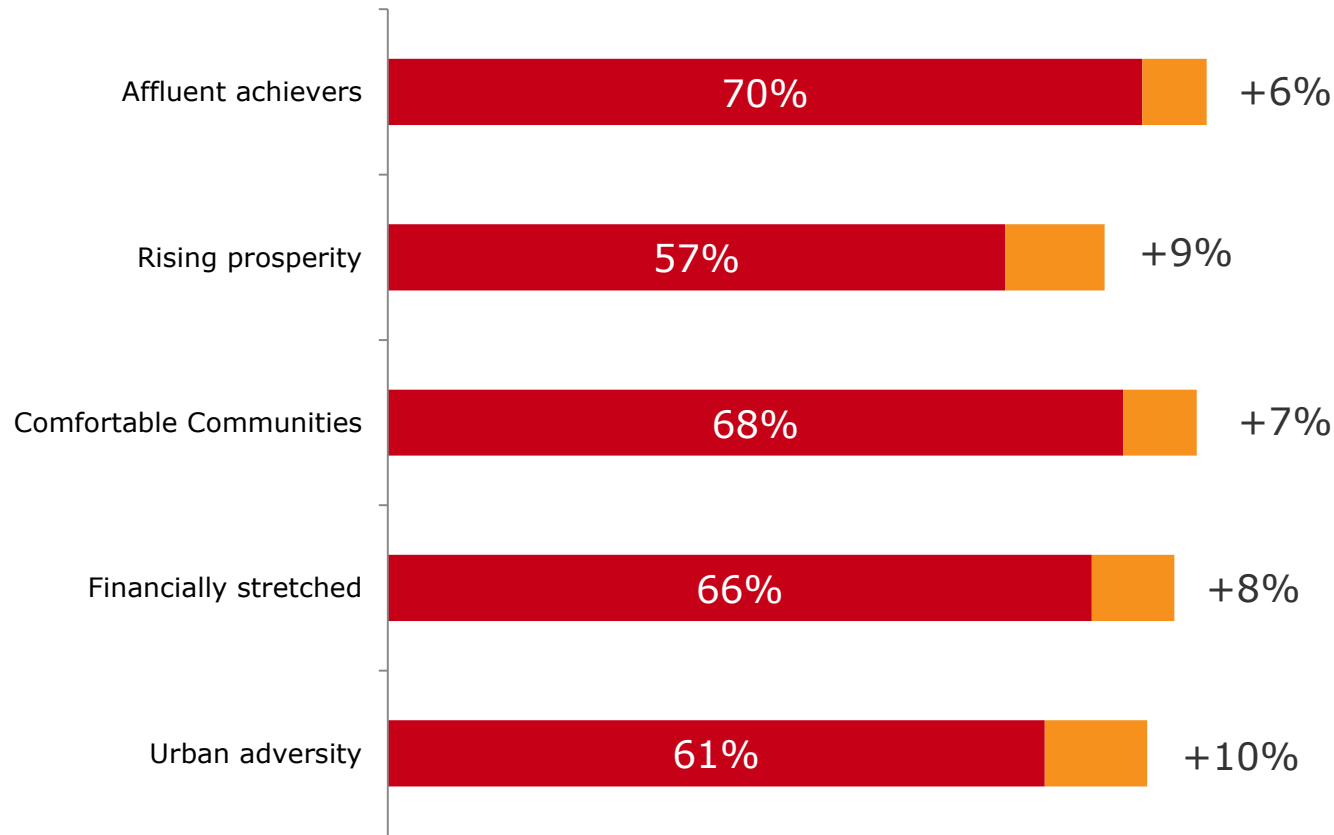
After discussion with ONS, we identified 3 variables defining subpopulations. These were selected because of the apparent variability in response rates between each sub-population

Other sub-populations could have been selected!

- Age group (16-24, 25-44, 45-64, 65-74, 75+)
- ACORN category (a 5-category postcode segmentation based on multiple sources)
- Housing tenure

For age group and ACORN group, formal response rates can be calculated, showing progress over the various fieldwork stages

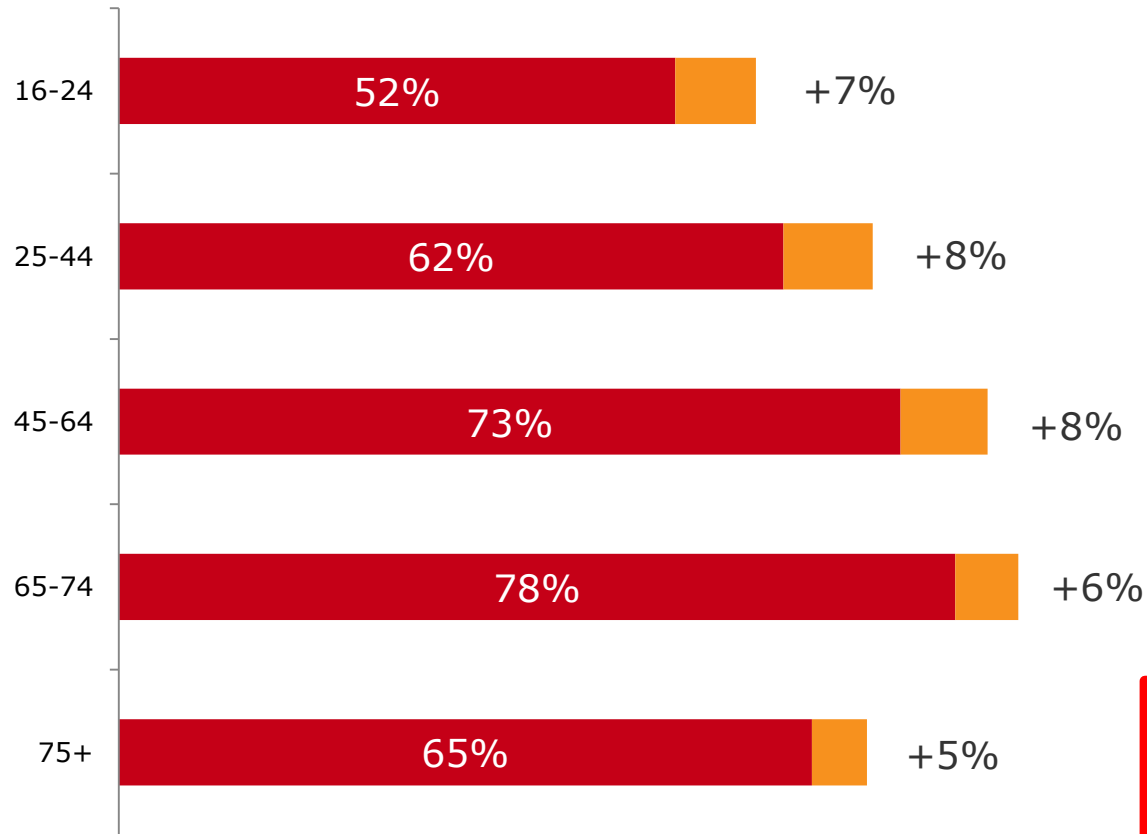
# Original issue response rate by ACORN category (+ reissues) – as calculated from sample frame



Between-group  
SD = 5.3%  
before reissues,  
3.8% after



# Original issue 'response rate' by Age group (+ reissues) – as implied by mid-year population estimates



Between-group  
SD = 10.1%  
before reissues,  
9.7% after

# Which variables to track?

ONS wanted us to look at all the key published estimates – mixture of (i) prevalence/incidence of crimes, (ii) behaviours, (iii) reported attitudes

37 variables, 5 metric & 32 categorical (each with k-1 categories): 5 means + 72 proportion estimates

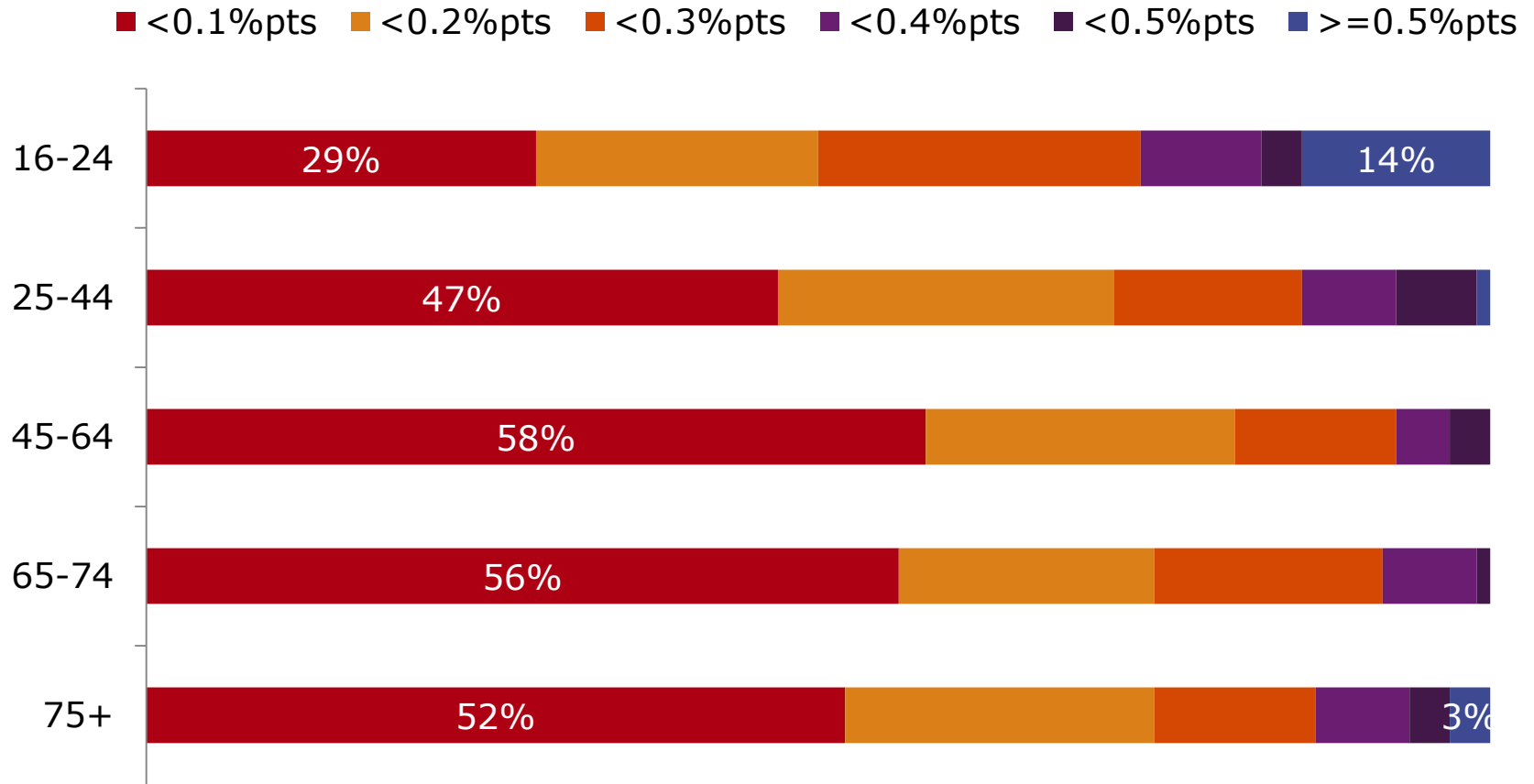
Not a random selection of variables but covering most ‘ask all’ modules within the adult questionnaire

Estimates after original issue and after reissues have both been post-stratified as standard practice

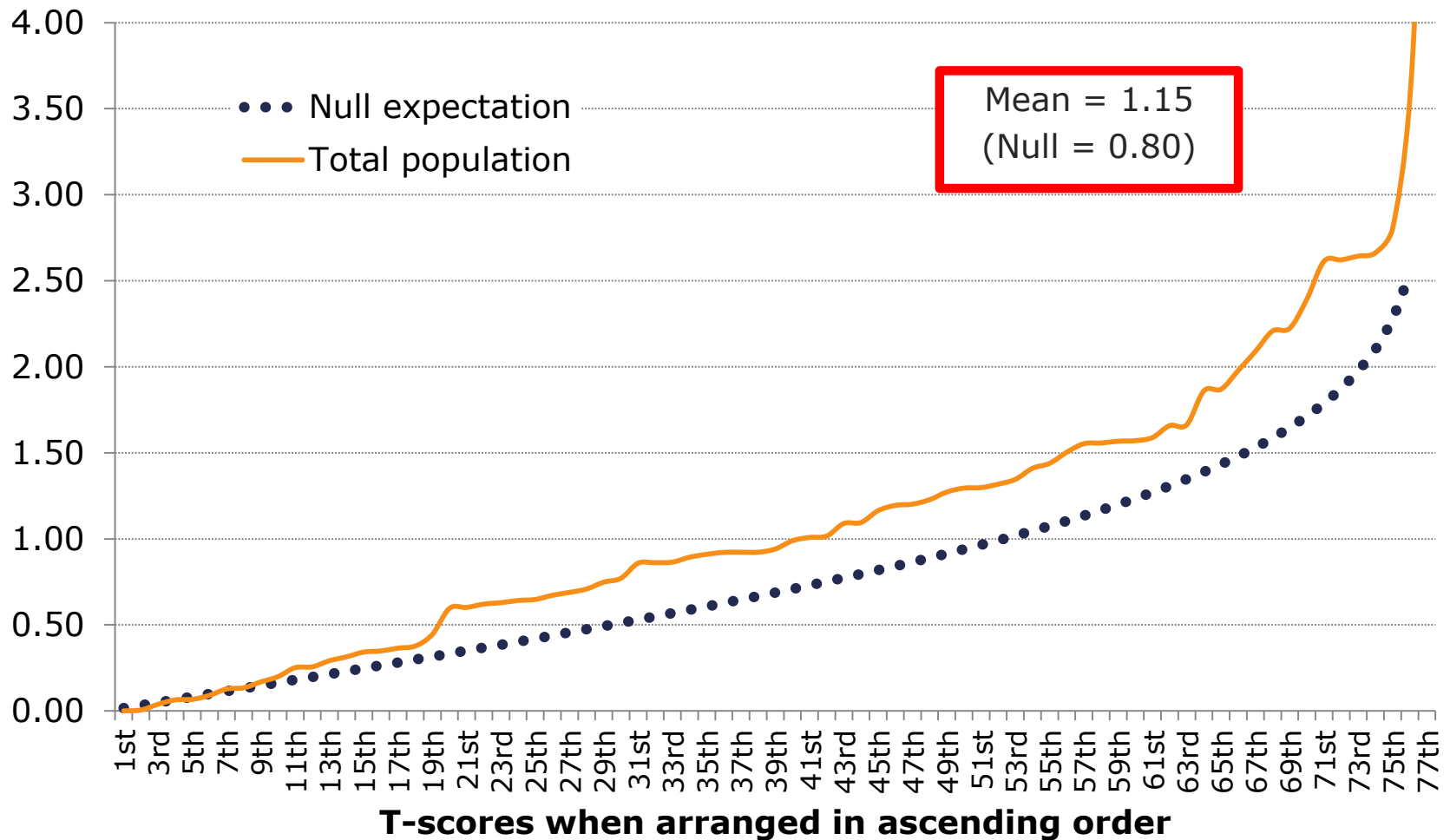
Also standardised differences into t-scores so can summarise across groups with different sample sizes and across variables with different measurement properties

# The impact on most proportion estimates is very small

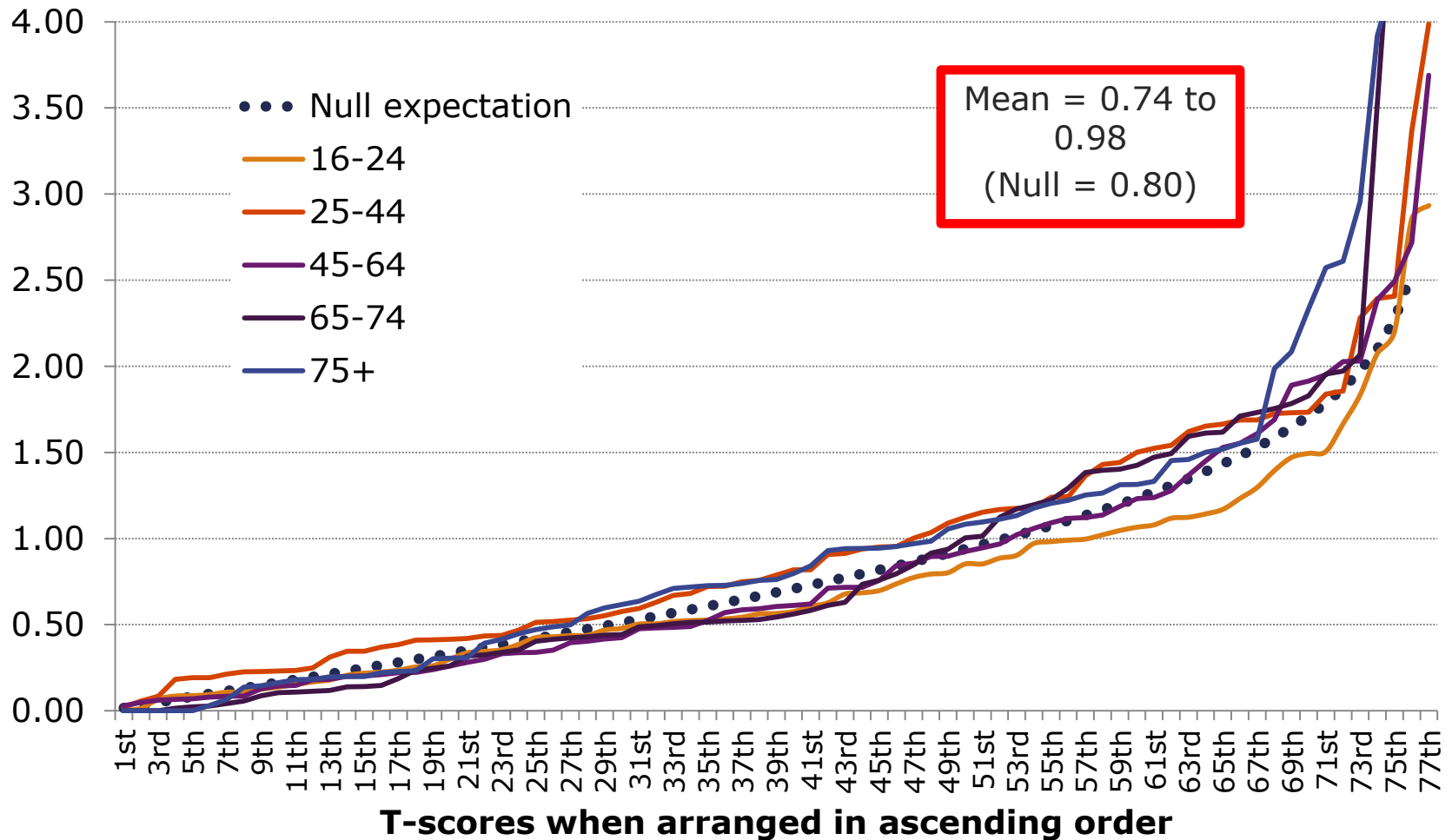
## Example: Age group



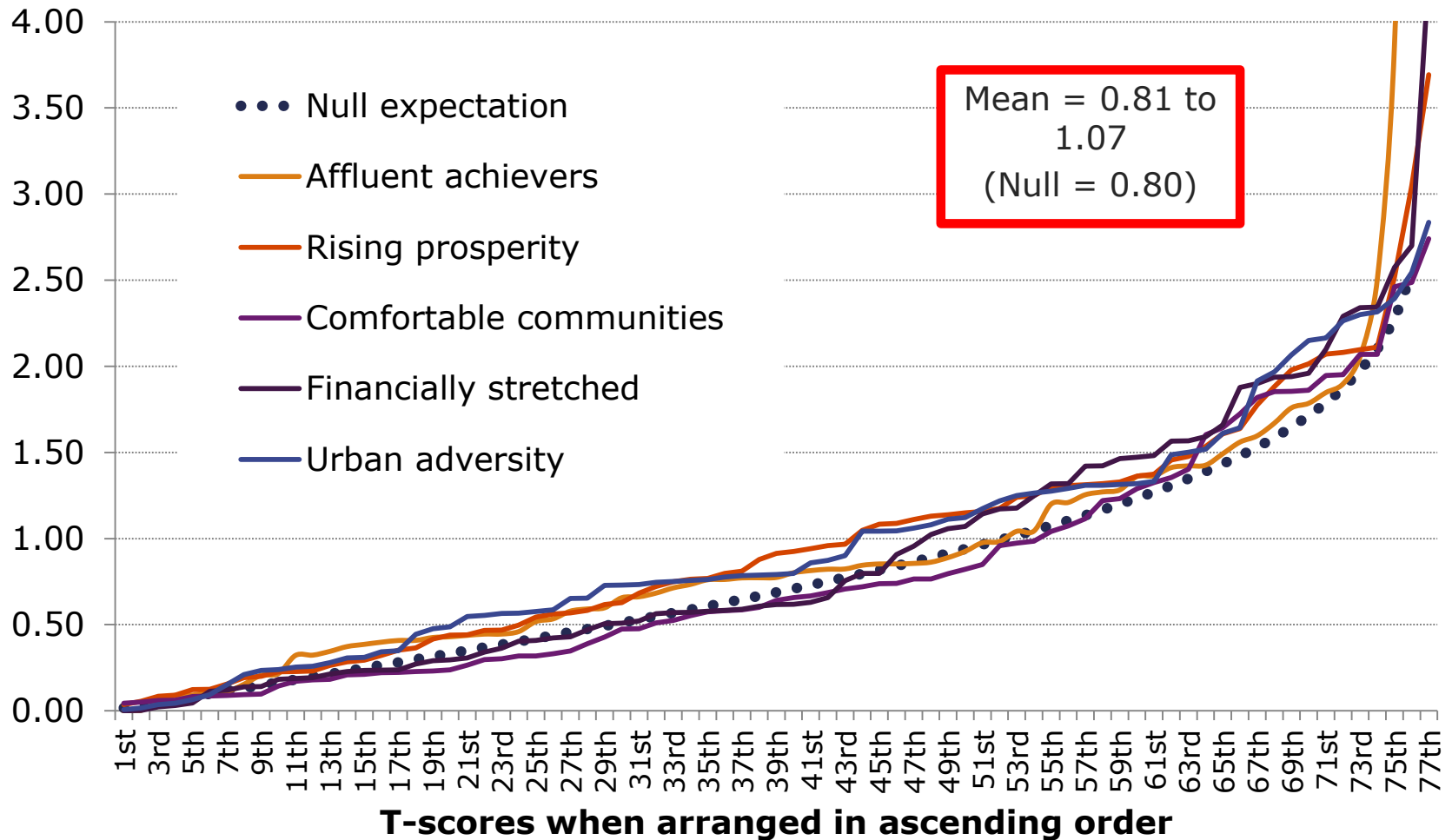
# Distribution of t-scores (total population)



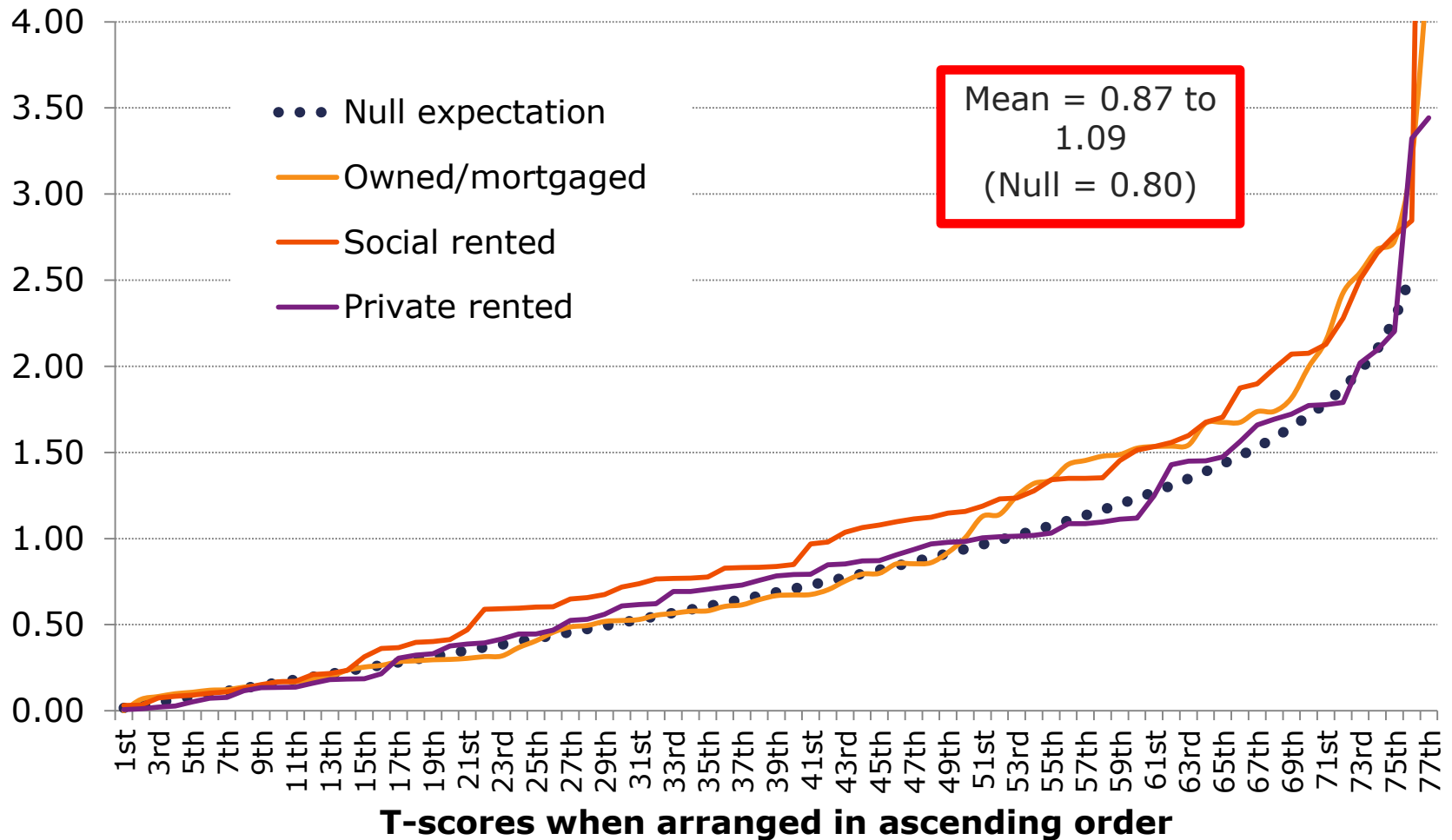
# Distribution of t-scores (age groups)



# Distribution of t-scores (ACORN categories)



# Distribution of t-scores (housing tenure)



# Which variables exhibit any change at all?

No 'large' differences on the topics of trust in the police, or personal experience of crime

Impact strongest around the topic of perception of local conditions but direction of impact is mixed

Cannabis use overstated without additional interviews (counter-intuitive)

Lack of systematic pattern suggests that random sampling error may be responsible for most of these larger differences (and they are still very small!)



# Conclusions

*General* limited impact of fieldwork effort appears to also be true of the subpopulations assessed for this study and for this survey

(Unclear how transportable these findings are but unlikely to be unique)

The original assignment / reissue assignment demarcation is the critical one so far as cost is concerned: at least 20% of the cost and 45%+ of the visits to get 10% of the interviews

It is hard to argue for re-issuing on statistical grounds but research commissioners like high response rates because they provide public credibility, an intangible that is worth a lot to them

However, targeting specific response rates lards surveys with cost and puts them out of reach of many research buyers