Cambridge Centre for Housing & Planning Research

Estimating and comparing income distributions of singles in independent households and in Houses in Multiple Occupation (HMO) at district level

Using the FRS in the local housing context

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Family Finance Surveys User Conference 2018: London, 26 June 2018

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Introduction

1. The need for income distribution at local authority level

1. Estimation drawing on Family Resources Survey (FRS)

2. Example – income distributions in Birmingham

1. The need for income distribution at local authority level

- The English social housing regime gives landlords the freedom to set rents for new lettings and some re-lets.
- Compared to those in out-of-work households whose rent is fully subsidised, rent settings are aimed at affordability for in-work yet low-income households who could be ineligible for Housing Benefit (or Universal Credit) are complex.
- Moreover, Affordable Rent, which allows stock to be segmented into housing for those able to afford higher (albeit not market) rents, complicates rent setting.
- Detailed income information distributions (e.g. by household type) could help assess the optimal rent levels and the potential size of sub-markets with such intermediate rents.
- Also when assessing a market size of shared ownership homes, income information on targeted households is required in and around the housing development area.

However, the information currently available in the public domain has some drawbacks:

- Insufficient breakdown by locality, household (HH) type, economic status or tenure
- Uses gross income, rather than income net of Housing Benefit, Universal Credit or income-related benefits
- Uses point statistics (e.g. average), not distribution
  – e.g. masks a population of lone parents in a targeted income cohort
- There is a time-lag between data collection and data availability

2. Drawing on FRS data – the estimation process

There are four preliminary stages:

1. From FRS data: identify variables of HH characteristics significantly related to income
2. From census data: identify the equivalent variables, and
3. Calculate a proportion of HHs with each of the characteristics, multi-dimensionally, for the local authority area (LA)

   - where necessary, updating adjustments
4. Using these proportions, assign a weight* for each case in FRS to convert the dataset to virtually cover all HHs in the LA
   - weights are produced by econometric/statistical techniques (e.g. logistic regression, ranking method and Bayesian estimation)
   - NB there is no 'one size fits all' solution

Drawing on FRS data - the validation process

The virtual LA dataset (i.e. the weighted FRS) needs to be validated:

- Compare key income levels drawn from the weighted FRS to the equivalents from other local income datasets, e.g., the Annual Survey of Hours and Earnings (ASHE) drawn from PAYE records

- From the weighted FRS, select cases and calculate earning levels to agree with ASHE specifications, which are
    - full-time employees
    - on adult rates
    - in the same job for more than one year
    - excluding self-employed
    - excluding any jobs within the armed forces
    - Inflation-adjusted to a pay period in April 2017

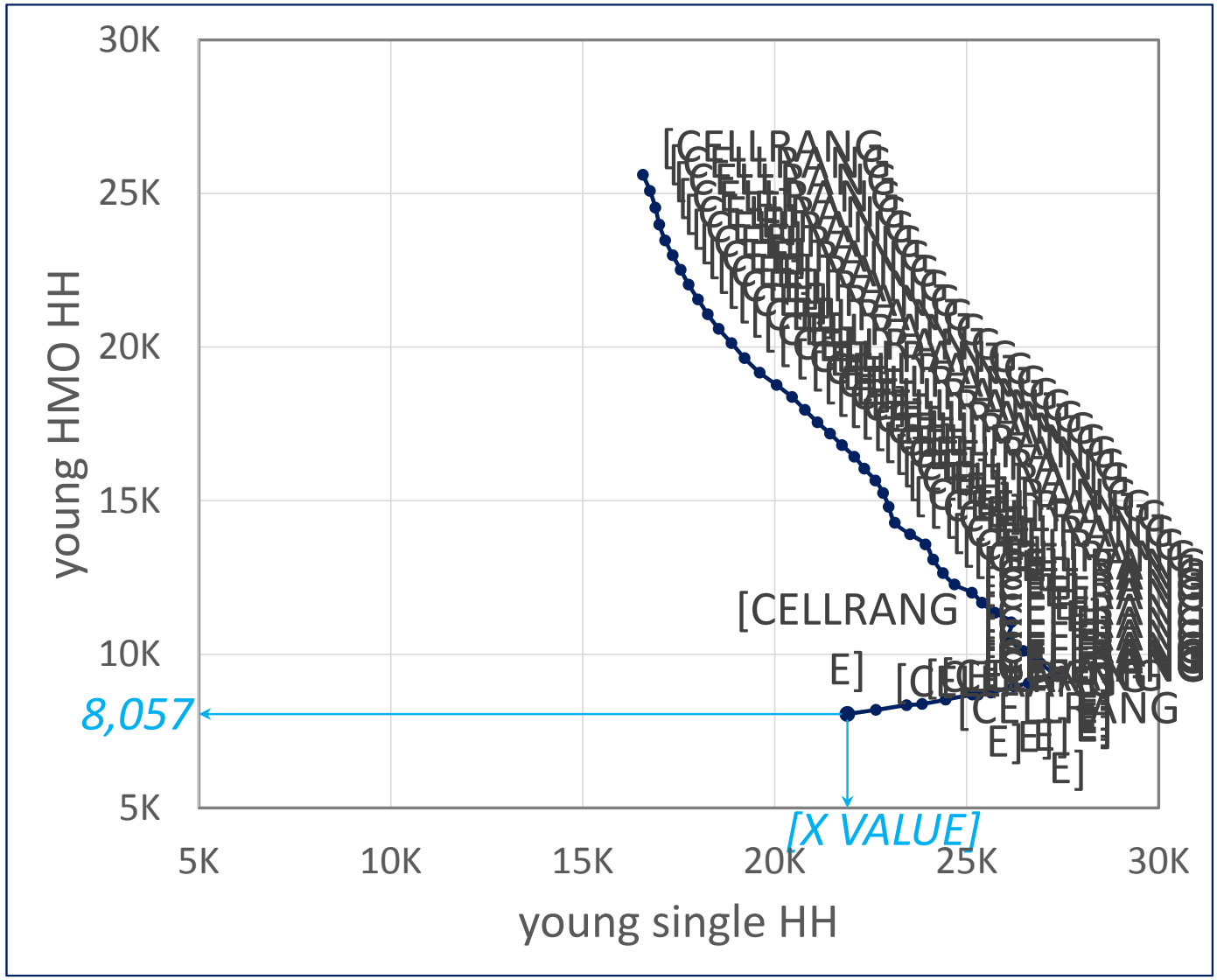
Validation results: an example

model 7	ASHE			Estimate from FRS	verdict		Birmingham
		95% CI				didfference	E08000025
	number	lower	upper		FRS in AHSE95%CI?	(FRS - ASHE)/ ASHE (%)	
10 percentile	299.70	294.41	304.99	296.69	yes	-1.0	
20 percentile	344.40	337.65	351.15	343.29	yes	-0.3	
25 percentile	**362.80**	**351.42**	**374.18**	**365.67**	yes	0.8	
30 percentile	383.30	370.53	396.07	388.15	yes	1.3	
40 percentile	434.10	418.78	449.42	437.32	yes	0.7	
Median	**480.80**	**461.01**	**500.59**	**496.36**	yes	3.2	
60 percentile	545.50	519.84	571.16	560.96	yes	2.8	
70 percentile	621.10	580.93	661.27	641.39	yes	3.3	
75 percentile	**670.80**	**622.15**	**719.45**	**691.23**	yes	3.0	
80 percentile	728.30	666.92	789.68	751.82	yes	3.2	
90 percentile	900.80	736.6	1,065.0	943.93	yes	4.8	

3. Example: income distributions in Birmingham

- Income distribution for singles in independent households (IND)
- Income distribution for singles in Houses in Multiple Occupation (HMO)
- Why select theses as an example?

Birmingham: household estimates & projections



Source: Ministry of Housing, Communities & Local Government. 2014-based Household Projections
Note: Reference person's age: 16-34 years old. HMO HHs were estimated from the sum of HHs which do not contain couple(s) and/or lone parent(s).

Possible reasons for the increase in young singles in HMO

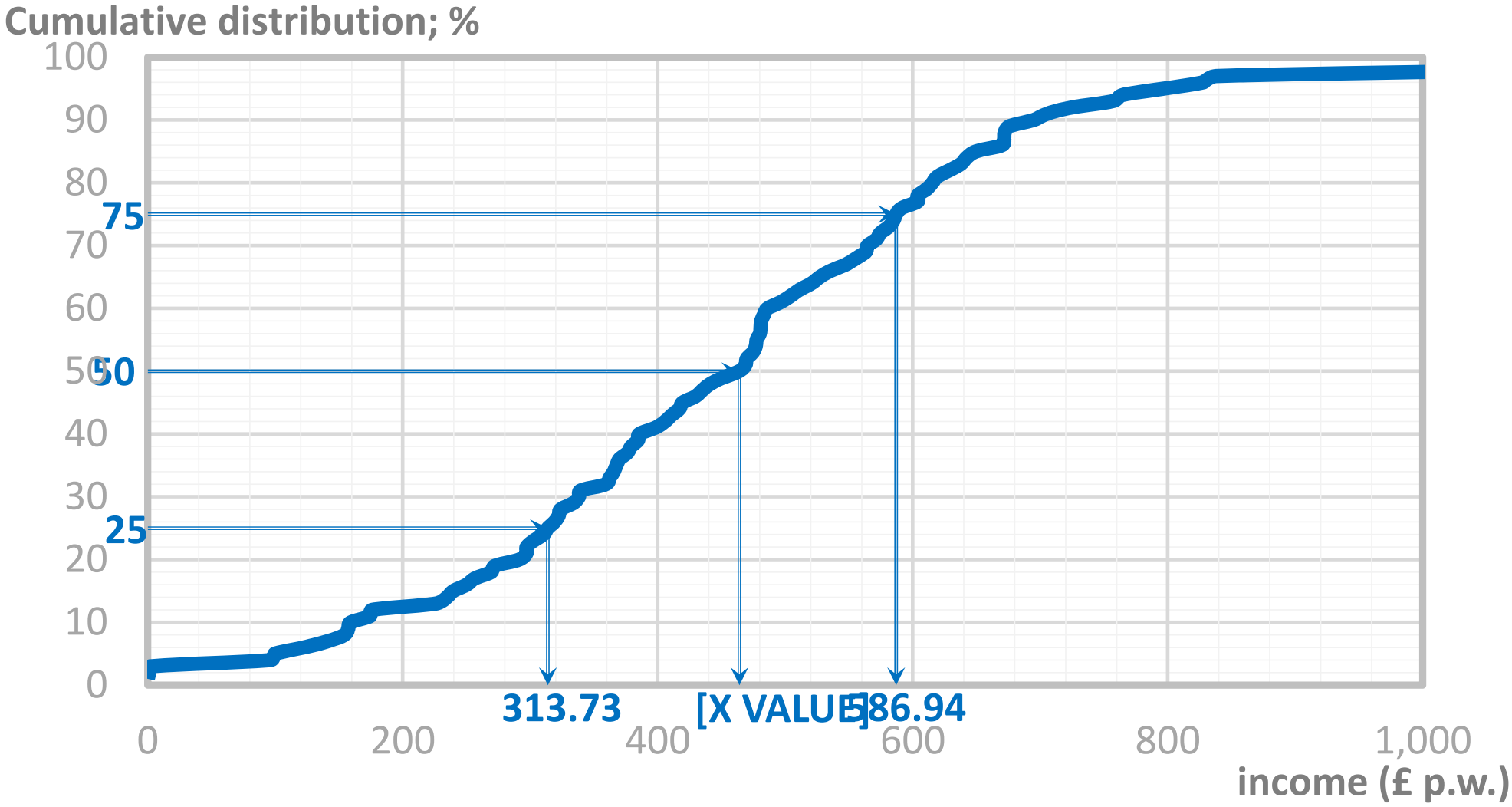
- Economic:
  - Incomes of HMO singles more frequently distributed towards the lower section than those of IND singles

- Non-economic: e.g. lifestyle change
  - Income distribution of HMO singles covers the section high enough to rent a one-bedroom (i.e. non-sharing) property

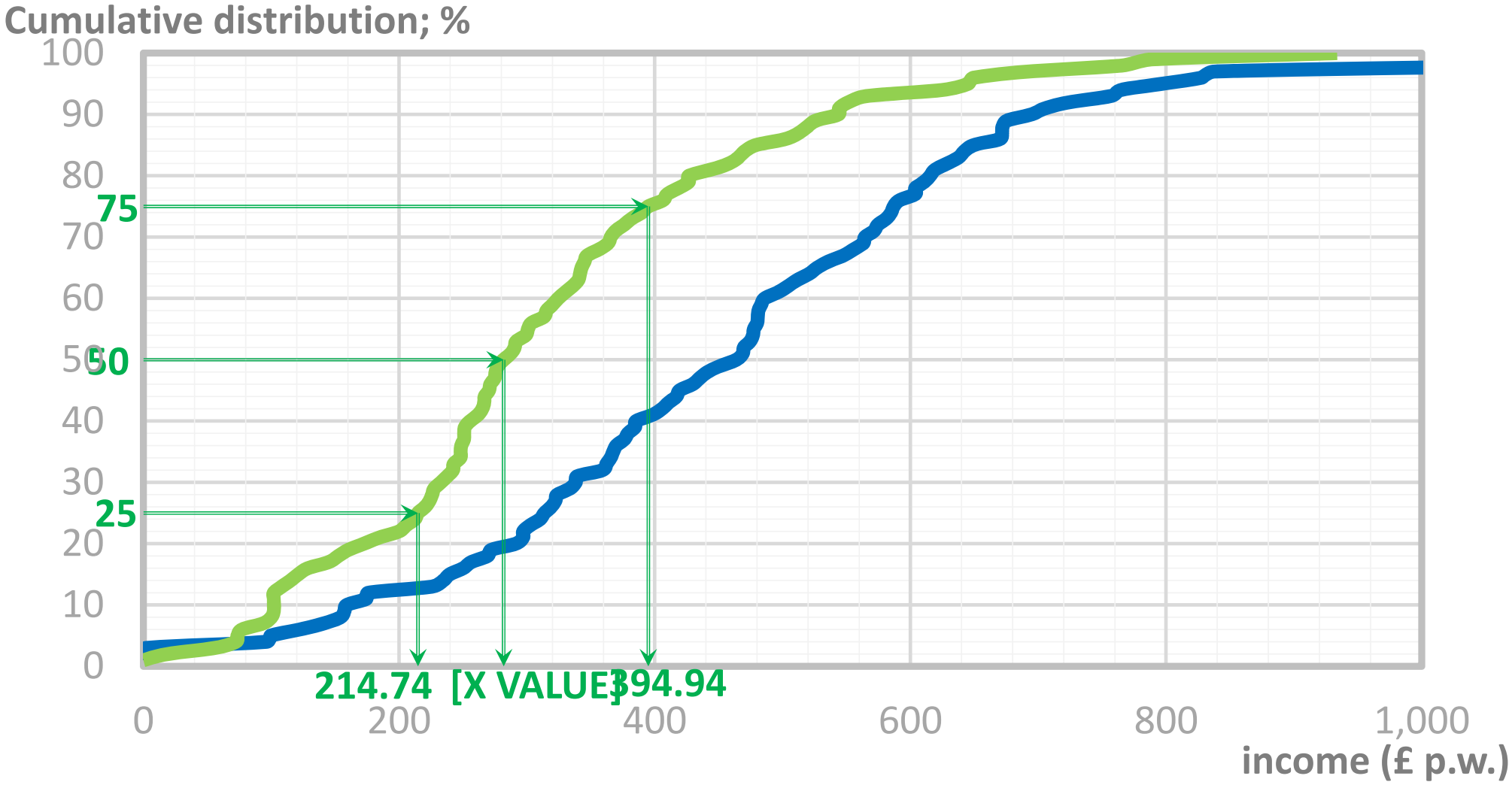
Specifications of the subjects

- Private renting singles, in employment
- Age: 16 to 34 years old
- Income net of income-related benefits (notably, housing benefit or Universal Credit)
- Inflationary adjustment to March 2018 price - deflator/inflator drawn from different sources, e.g.,
    - For income from employment: average weekly earnings (ONS)
    - For income from investment: household deposit interest rate (BoE)

Estimated income distribution, Birmingham: Private Renting Singles IND



Estimated income distribution, Birmingham: Private Renting Singles HMO



Income distribution in the local housing context

Assumption

$$\text{housing cost} \leq 35\% \, of \, income$$

$$\downarrow$$

Minimum income to make the rent affordable:

$$income = \frac{rent}{0.35}$$

Median private rent: one-bedroom property in Birmingham

£138 p.w.

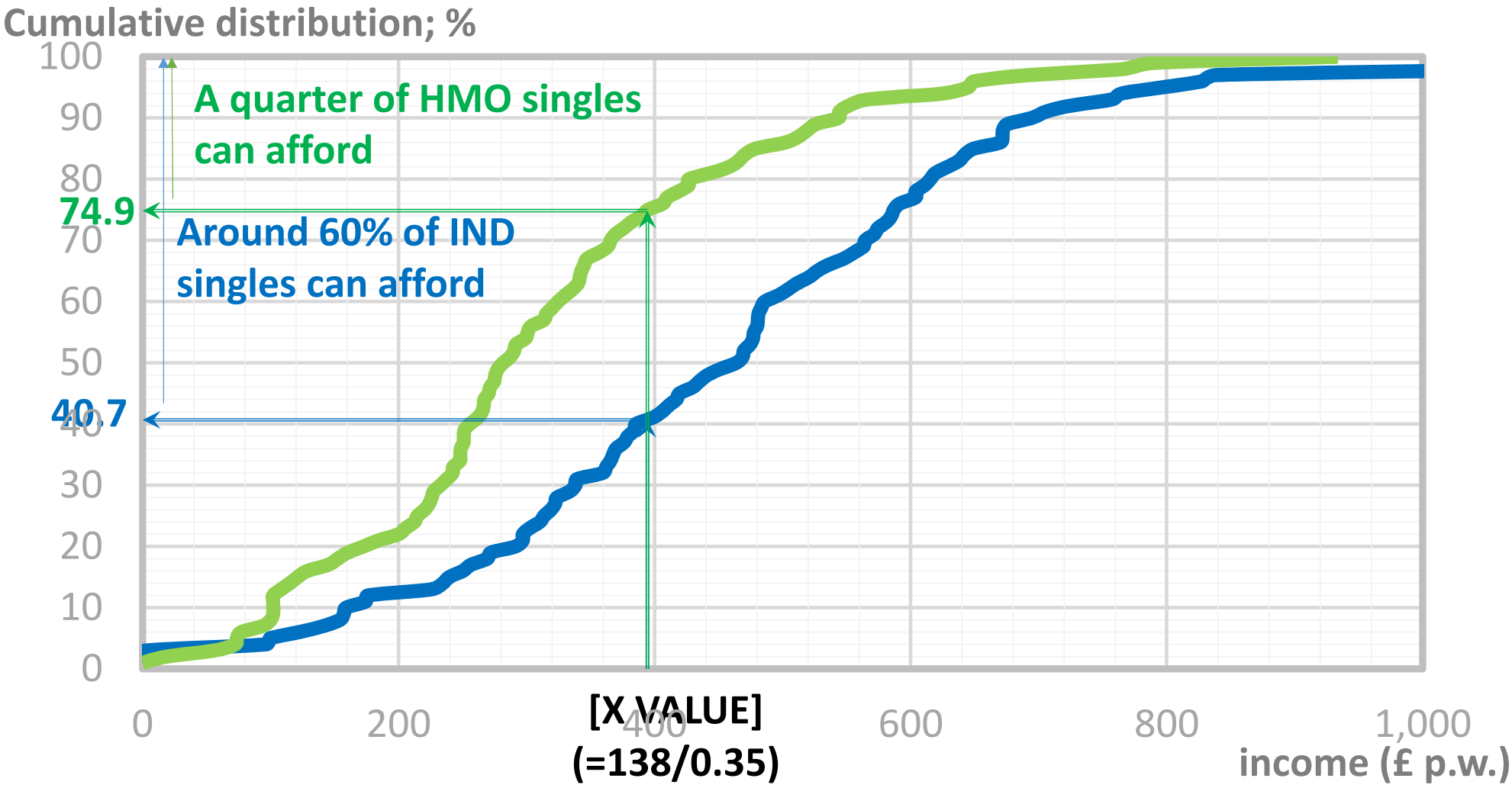
Note & source: recorded between 1 April 2017 and 31 March 2018, Valuation Office Agency.

↓

Income required:

£394.29 (= 138 / 0.35)

Estimated income distribution, Birmingham: minimum income for 1-b rent



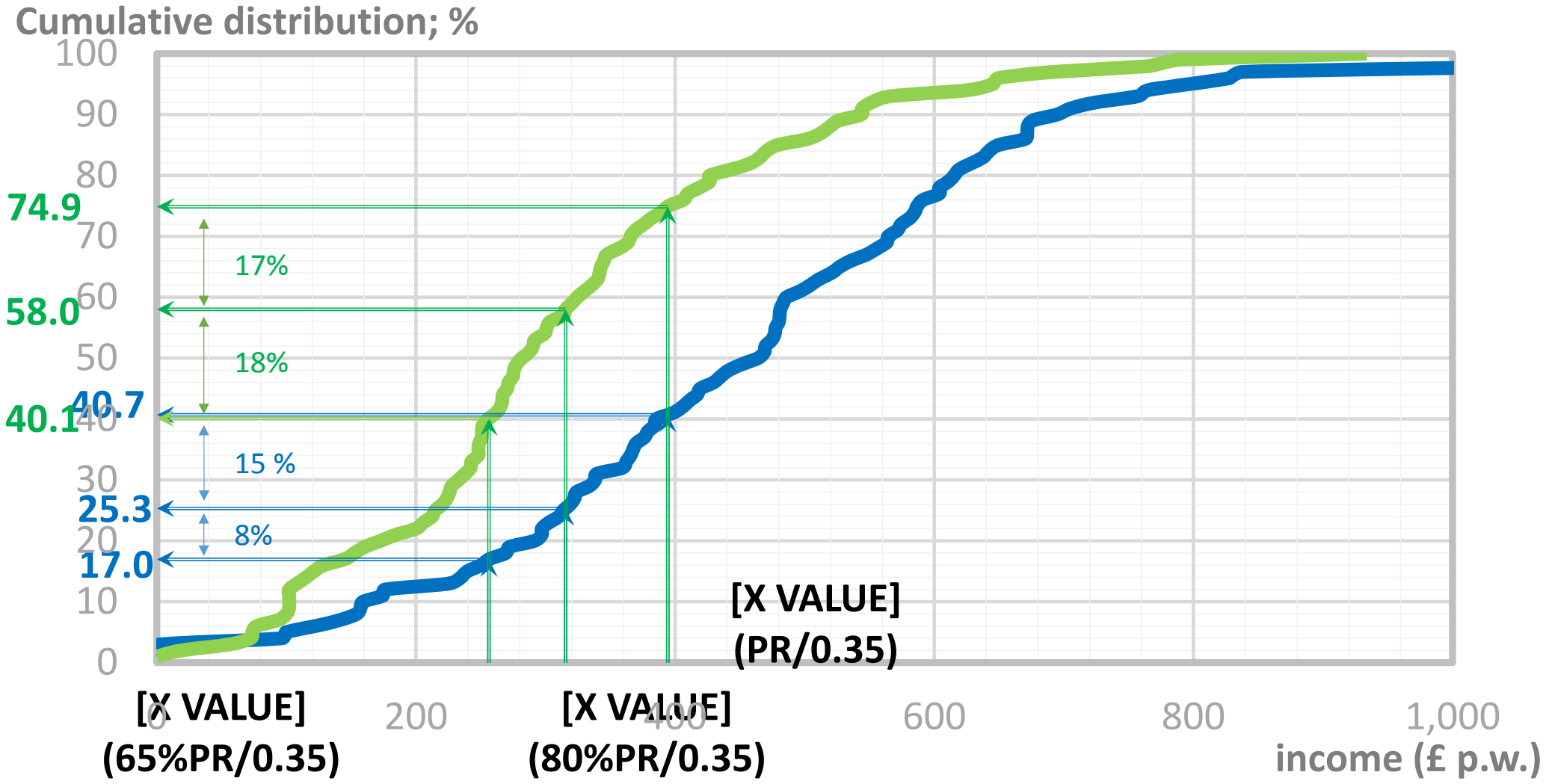
Application: Affordable Rent (AR) setting

- AR housing: a social rent product charging up to 80% of private rent

- AR range, often,

$$65\% \times median\ PR \leq AR \leq 80\% \times median\ PR$$

Estimated income distribution, Birmingham: minimum income for 1-b AR



Recap & Implications

- FRS contains the materials to estimate detailed income distributions at local authority level:
  - by household type, economic status or tenure
  - income net of Housing Benefit, Universal Credit or income-related benefits
  - range information, which will be more useful than point statistics (e.g. average)
  - more timely information – inflationary adjustment can be calculated for each income component (e.g. earning, interest receivable, etc.)
- The data could be of benefit to local housing planners, particularly, affordable housing planners who need to assess the likely impact size or sub-market sizes of new housing products.

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