



Understanding Society

THE UK HOUSEHOLD LONGITUDINAL STUDY

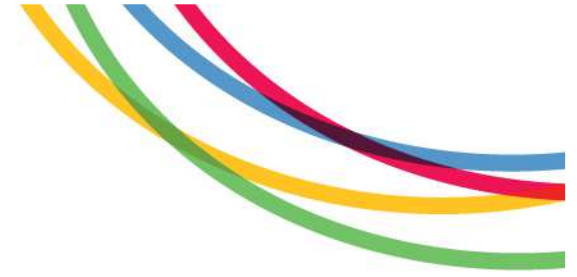
Can summary screens improve income reporting in surveys?

Thomas Crossley, Paul Fisher, Alessandra Gaia
and the “Understanding Household Finances” Team
Funding from the ESRC through grants
which support the Understanding Society Innovation Panel,
(RES-586-47-0001 and RES-586-47-0002) and through the
ESRC Transformative Research scheme and the National Centre for
Research Methods (ES/N006534/1).

An initiative by the Economic and Social Research Council, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by NatCen Social Research and TNS BMRB



Motivation (1)



- Household income a critical item for Understanding Society and similar socioeconomic surveys.
 - Lots of evidence that income is under-reported in surveys.
 - Also high item non-response.
 - Item-level edit checks help (eg, Lugtig and Jäckle, 2014.)
 - within wave.
 - across wave (dependent interviewing).
-

Motivation (2)



- Best practice for household income is to aggregate over individuals and income sources.

Understanding Society does this.

- Another item that is often aggregated over categories is household spending.
- **Editable Summary Screens (ESS)** have been shown to improve spending data collected in surveys.

Hurd and Rohwedder, 2013: reduce outliers.

Blake *et al.*, 2014: reduce nonresponse in totals.

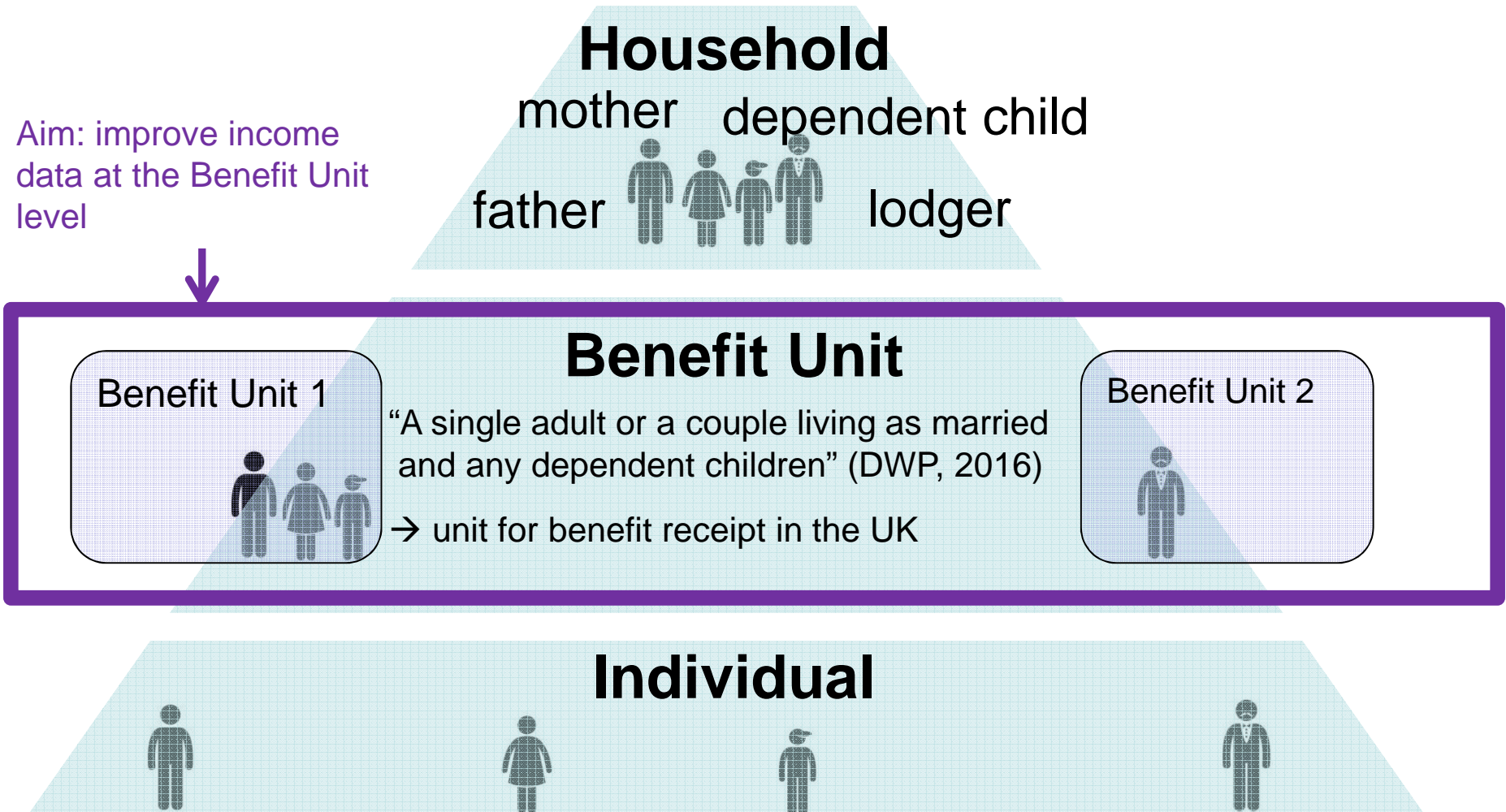
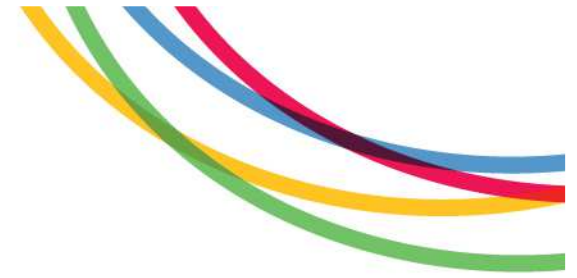
- ***Not previously tried for household income.***
-

Contribution

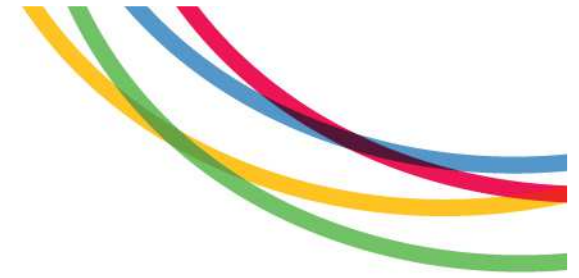


- Evaluate editable summary screens (ESS) for household income in IP9.
More precisely: benefit unit (BU) not household
 - Experiment with two designs:
ESS in the individual interview (total individual income),
ESS in a new **benefit unit interview** (total benefit unit income).
 - ESS in the BU interview:
Correct double counting and omissions for couples.
But requires double consent.
 - *We take improving data on total income at the BU level as the aim.*
-

Benefit Unit



Research questions



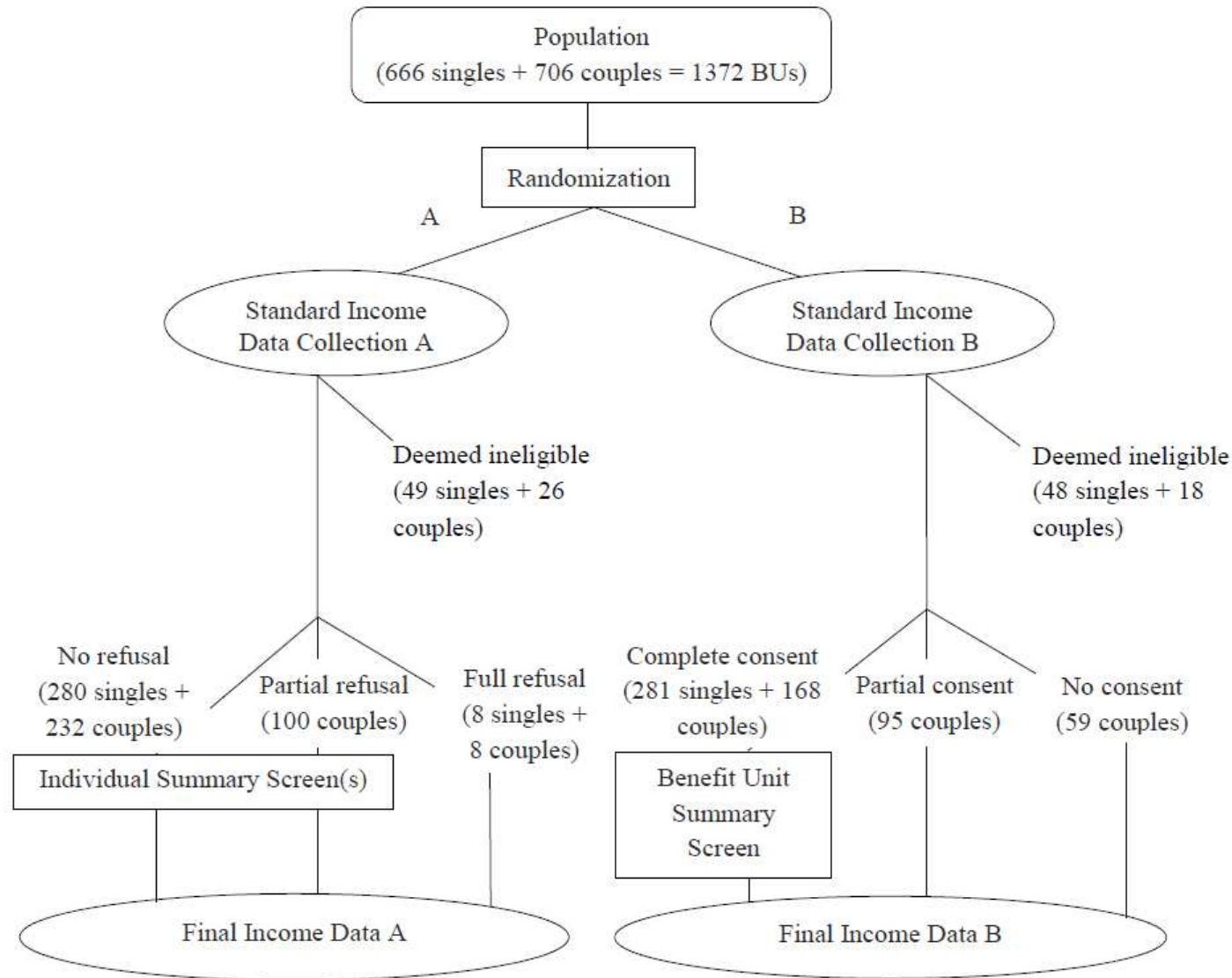
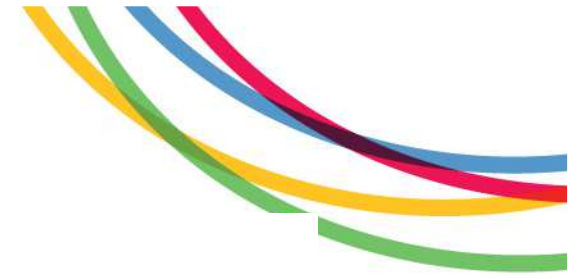
1. Are respondents willing to review and revise their income reports – do ESSs lead to revisions?
 2. Which sources of income are revised, how much and in which direction?
 3. What do the revisions suggest about the prevalence of different kinds of error in income data?
 4. Which summary screen (individual or BU) is most effective *overall*?
-

Data



- Understanding Society Innovation Panel
- IP9: 2016
- Mixed-mode: Web, F2F, and Tel
- Detailed individual level questions on income receipt

Experimental Design



Individual ESS (1)



Test - v38



Thank you for telling us about these types of income. Here is a summary of what you have told us you received last month after tax and deductions. Please take a look and select whether this summary is accurate. If not, you will have an opportunity to update the amounts in the boxes.

[HELP](#)

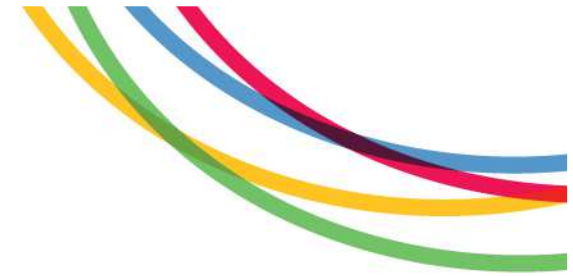
Employment income: Main job	£	1500	per	month	
Employment income: Second job	£		per	month	
Income from self-employment	£		per	month	
Total:	About £	1500	per	month	

Does this summary seem correct?

- Yes
- No



Individual ESS (2)



Test - v38

Thinking about your income after taxes and deductions, please correct the monthly amounts below.

Employment income: Main job	£	<input type="text" value="1500"/>	per	<input type="text" value="month"/>
Employment income: Second job	£	<input type="text"/>	per	<input type="text" value="month"/>
Income from self-employment	£	<input type="text"/>	per	<input type="text" value="month"/>
Benefit and Pensions				
Any other benefits	£	<input type="text"/>	per	<input type="text" value="month"/>
Any other income	£	<input type="text"/>	per	<input type="text" value="month"/>



Benefit unit ESS (1)



Below is a summary of the income you have reported for the last month. You reported a total of £2750 from earnings, benefits, and other income sources after taxes and deductions. Thinking about the money coming in, that is after any tax or deductions, does this seem correct? If not, you will have an opportunity to update the amounts in the boxes.

[HELP](#)

Employment income: Main job		
Matt	About £	1300 per month
Nicky	About £	1100 per month
Employment income: Second job		
Matt	About £	200 per month
Nicky	About £	per month
Income from self-employment		
Matt	About £	per month
Nicky	About £	per month
Benefit and Pensions		
Child Benefit (including Lone-Parent Child Benefit payments)	About £	150 per month
Child Tax Credit	About £	per month
Total net disposable income:	About £	2750 per month

Does this seem correct?

- Yes
 No

Benefit unit ESS (2)

Test - v38

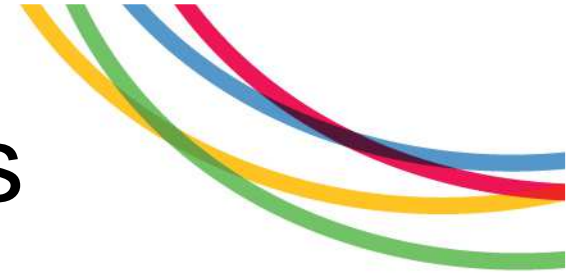
Thinking about your total income after taxes and deductions, please correct the summary below.

[HELP](#)

Employment income: Main job			
Matt	About £	<input type="text" value="1300"/>	<input type="text" value="per month"/>
Nicky	About £	<input type="text" value="1100"/>	<input type="text" value="per month"/>
Employment income: Second job			
Matt	About £	<input type="text" value="200"/>	<input type="text" value="per month"/>
Nicky	About £	<input type="text"/>	<input type="text" value="per month"/>
Income from self-employment			
Matt	About £	<input type="text"/>	<input type="text" value="per month"/>
Nicky	About £	<input type="text"/>	<input type="text" value="per month"/>
Benefit and Pensions			
Child Benefit (including Lone-Parent Child Benefit payments)	About £	<input type="text" value="150"/>	<input type="text" value="per month"/>
Child Tax Credit	About £	<input type="text"/>	<input type="text" value="per month"/>
Any other benefits	£	<input type="text" value="0"/>	<input type="text" value="per month"/>
Any other income	£	<input type="text" value="0"/>	<input type="text" value="per month"/>



Methodological Challenges



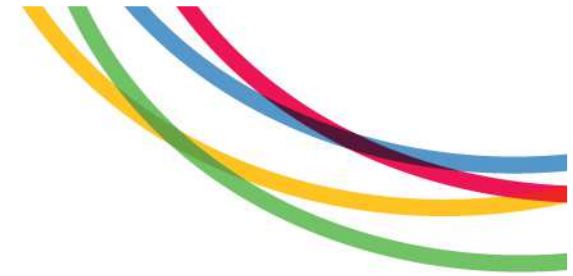
- No validation data
 - Take the following as improvements in data quality
 - corrections
 - reduced outliers (reduced coefficient of variation?)
- Treatment effect largest for significant errors (outliers)
 - Looking for treatment effects in the tails?



Results



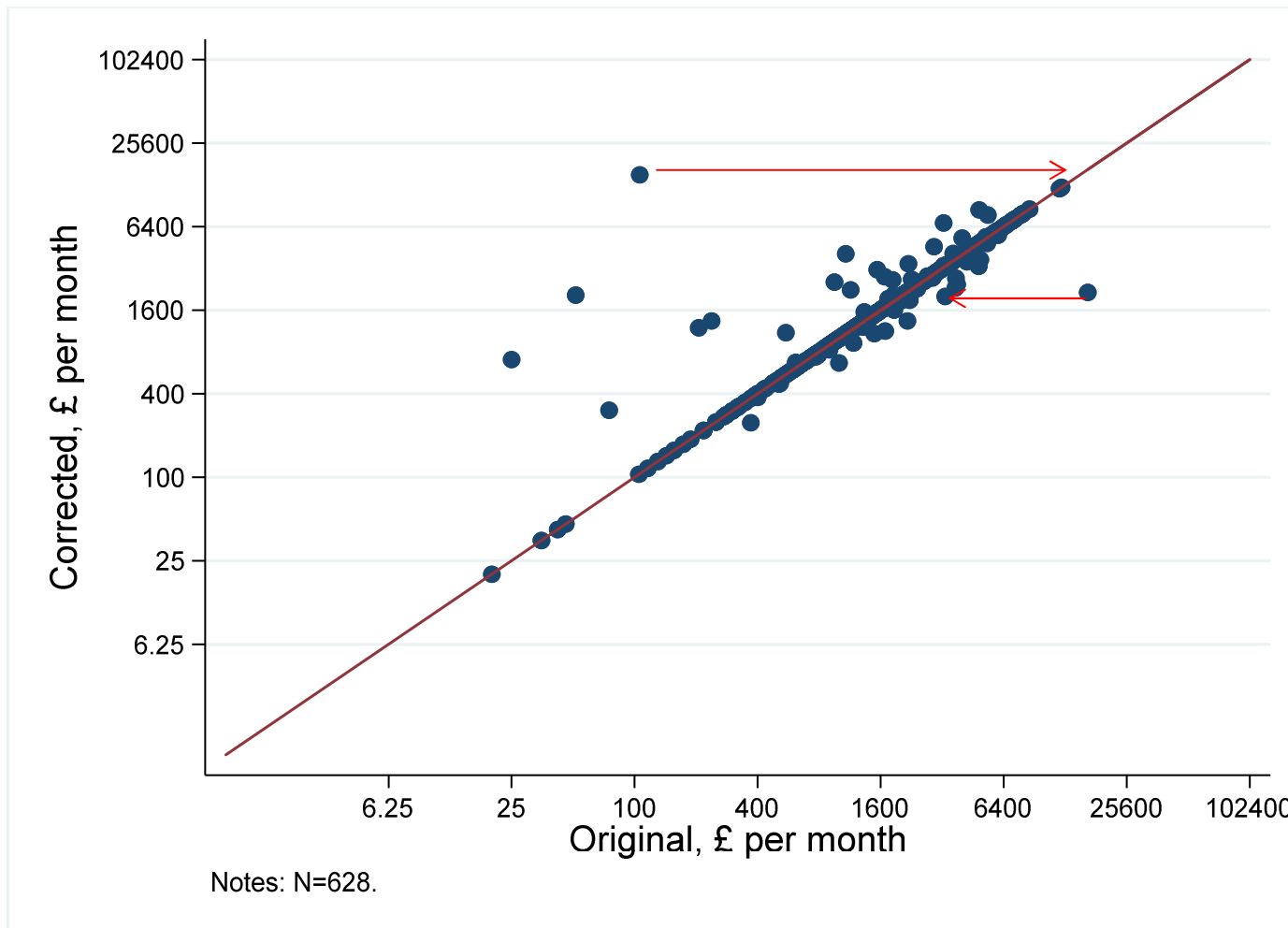
Consents and Corrections



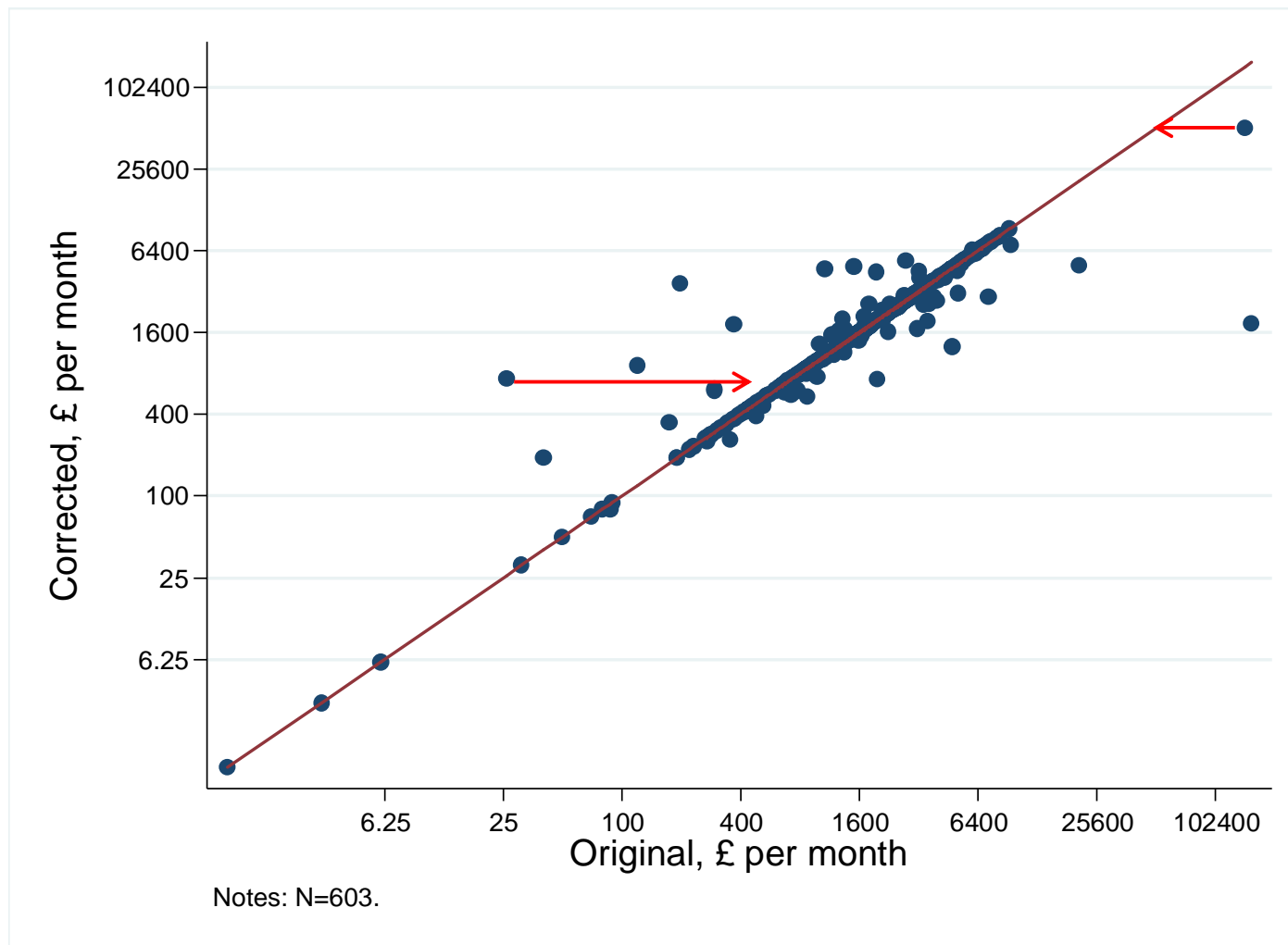
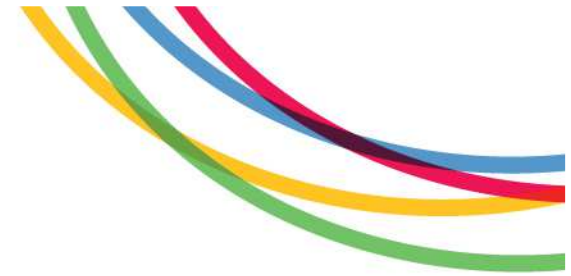
	Individual ESS		BU ESS	
	Single	Couple	Single	Couple
	288 (45.9%)	340 (54.1%)	281 (46.6%)	322 (53.4%)
Consent, %	97.2 (280)	97.7 (332)	97.2 (273)	50.3 (162)
<i>(of which partial, %)</i>	-	30.1 (100)	-	-
<i>(partial, %)</i>	-	-	-	29.5 (95)
Conditional on consent:				
Summary Incorrect, %	10.7 (30)	21.7 (68)	19.8 (54)	24.7 (40)
<i>(of which partial, %)</i>	-	86.2 (62)	-	-
Conditional on summary incorrect:				
Corrects Summary, %	93.3 (28)	94.1 (64)	81.5 (44)	87.5 (35)
<i>(of which partial)</i>	-	90.6 (58)	-	-
Unconditional Correction Rate:	9.7 (288)	19.9 (340)	15.7 (281)	10.9 (322)

Note: Number of observations in parentheses. We treat refusals and don't knows at the relevant summary screen as non-consenters.

Ind. ESS: corrected versus original (total BU net income)



BU ESS: corrected versus original (total BU net income)

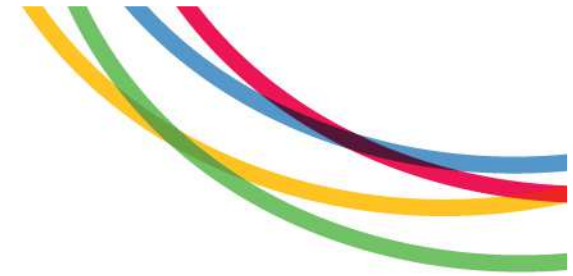


Source and size of corrections



	Individual ESS	BU ESS ¹
Absolute correction (all BUs), £	121.60(628)	521.84(603)
Conditional on correcting:		
Absolute correction (correctors), £	830.08(92)	2068.36(78)
Share positive	0.35(32)	0.41(32)
Share negative	0.63(58)	0.59(46)
Share offsetting	0.02(2)	0.00(0)
Mean positive, £	1424.02(32)	836.66(32)
Mean negative, £	531.01(58)	2925.20(46)
Share correcting:		
Earnings	0.28(25)	0.27(21)
Self Employment	0.07(6)	0.17(13)
Second Job	0.08(7)	0.05(4)
Benefits and unearned	0.71(65)	0.64(50)
Absolute correction, £:		
Earnings	1502.84(25)	764.48(21)
Self Employment	893.33(6)	2777.54(13)
Second Job	822.43(7)	360.00(4)
Benefits and unearned	484.68(65)	2214.72(50)

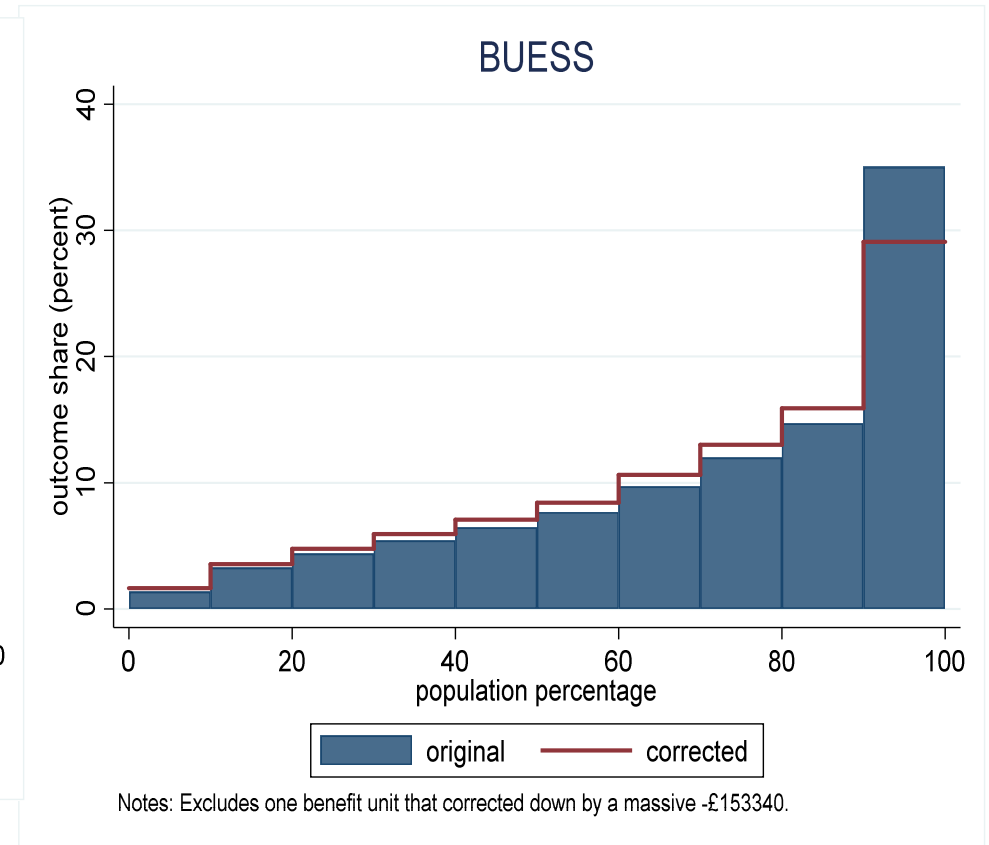
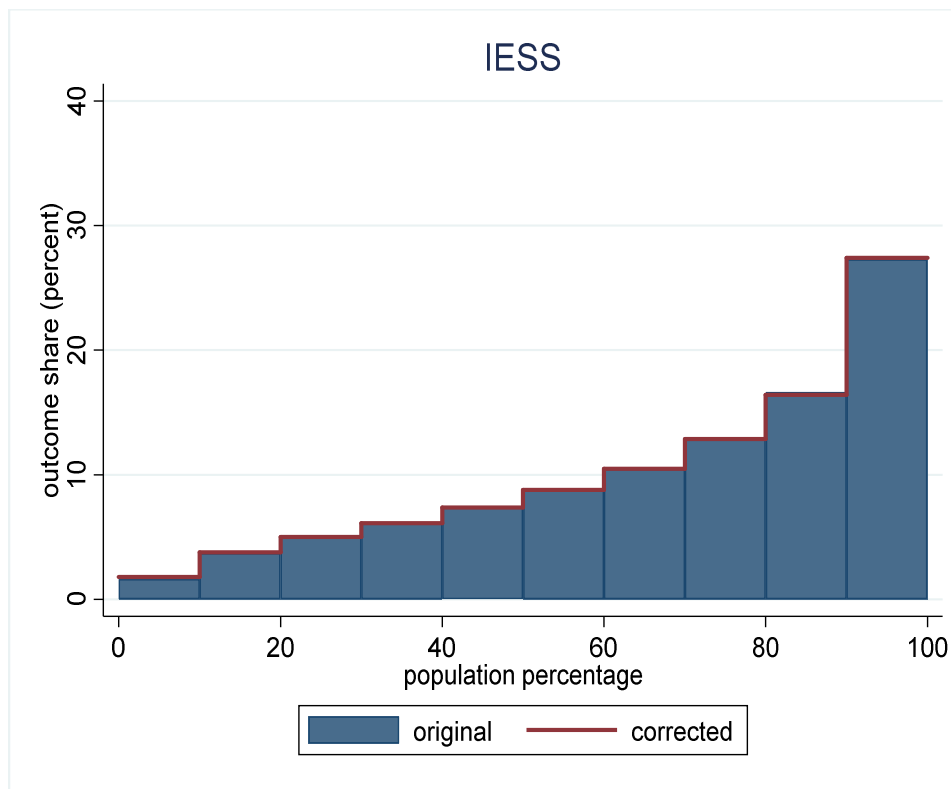
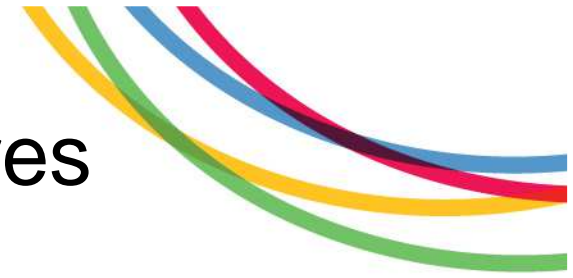
Classifying the corrections



Correction Type	IESS		BUSS		Total
	single	couple	single	couple	
changing a positive amount and no clear reason (eg, 150 to 250)	36	87	75	71	68
period code confused	43	96	50	48	62
adding an income source not reported (eg inapplicable to 150)	25	27	46	36	33
removing an income source (eg 150 to 0)	18	18	28	30	23
filled in where missing amount	4	21	4	65	19
joint receipt problem	0	9*	0	54	8
switching income sources (eg 150 to 0 for one source and 0 to 150 for another)	7	6	4	0	5
problem where multiple payments of a source	0	6	7	0	4
filled in where missing period code	0	0	4	0	1
moving a decimal (15000 was really supposed to be 1500)	0	0	0	6	1
one-off payment corrected	0	0	4	0	1

Notes: Corrections per thousand benefit units

Revisions change percentile shares



Revisions change measured inequality

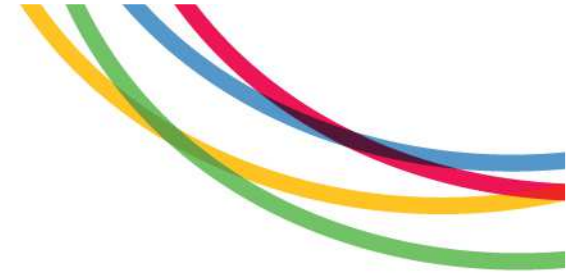


	IESS		BUESS	
	Original	Corrected	Original	Corrected
<i>Quintiles:</i>				
1	979	1000	884	889
2	1468	1498*	1350	1367
3	2084	2089	1960	1962
4	3116	3116	3087	3049
Mean	2180	2203	2296	2117
Gini	0.38	0.38	0.45	0.40
Atkinson (e=0.5)	0.12	0.12	0.20	0.14
Atkinson (e=2)	0.60	0.55	0.88	0.86
Coefficient of Variation	0.78	0.77	2.64	1.17
Standard deviation of logs	0.86	0.81*	0.97	0.92*
90-10 ratio	7.09	6.69	6.24	6.24
Poverty (share <60% median)	0.23	0.23	0.23	0.24*
<i>Five highest values:</i>				
1	16491	15106	155194	50700
2	12274	12274	144570	9231
3	12000	12000	20828	8268
4	8552	8552	9413	8250
5	7950	8452	9231	7957

Notes: One benefit unit corrected down by a massive -£153340, which we include in the "five highest values" only.

* indicates corrected statistically different from original ($p < 0.05$). Bootstrapped standard errors.

Conclusions (1/2)



1. *Are respondents willing to review and revise their income reports – do ESSs lead to revisions?* ANSWER: Yes

IESS Correction rates: 8.6 (singles) and 19.4 (couples)

BUESS correction rates: 14.6 (singles), 10.6 (couples)

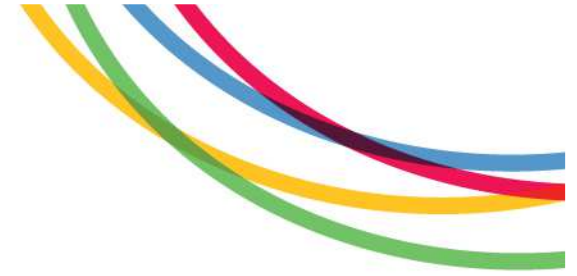
2. *Which sources of income are revised, how much and in which direction?*

All sources revised both up and down

Magnitude non-trivial: Mean abs correction IESS=£830 (38% of mean income) and BUESS=£2068 (90% of mean income)

Revisions large enough to change some measures of inequality

Conclusions (2/2)



3. *What do the changes suggest about the prevalence of different kinds of errors in income data?*

Some errors researchers worry about – eg. slipped decimal places
- are not very common.

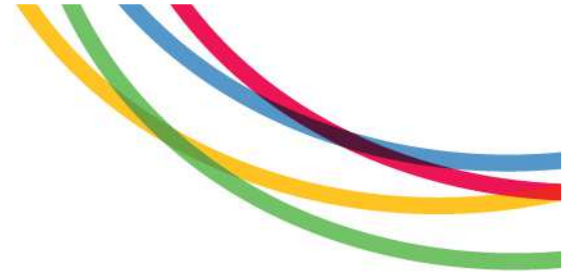
Simple mis-reporting of amounts and period codes is prevalent.

4. *Which summary screen (individual or BU) is most effective overall?*

Both work. Evidence of bigger corrections in BUESS.

But (large) difference in unconditional correction rate for couples.

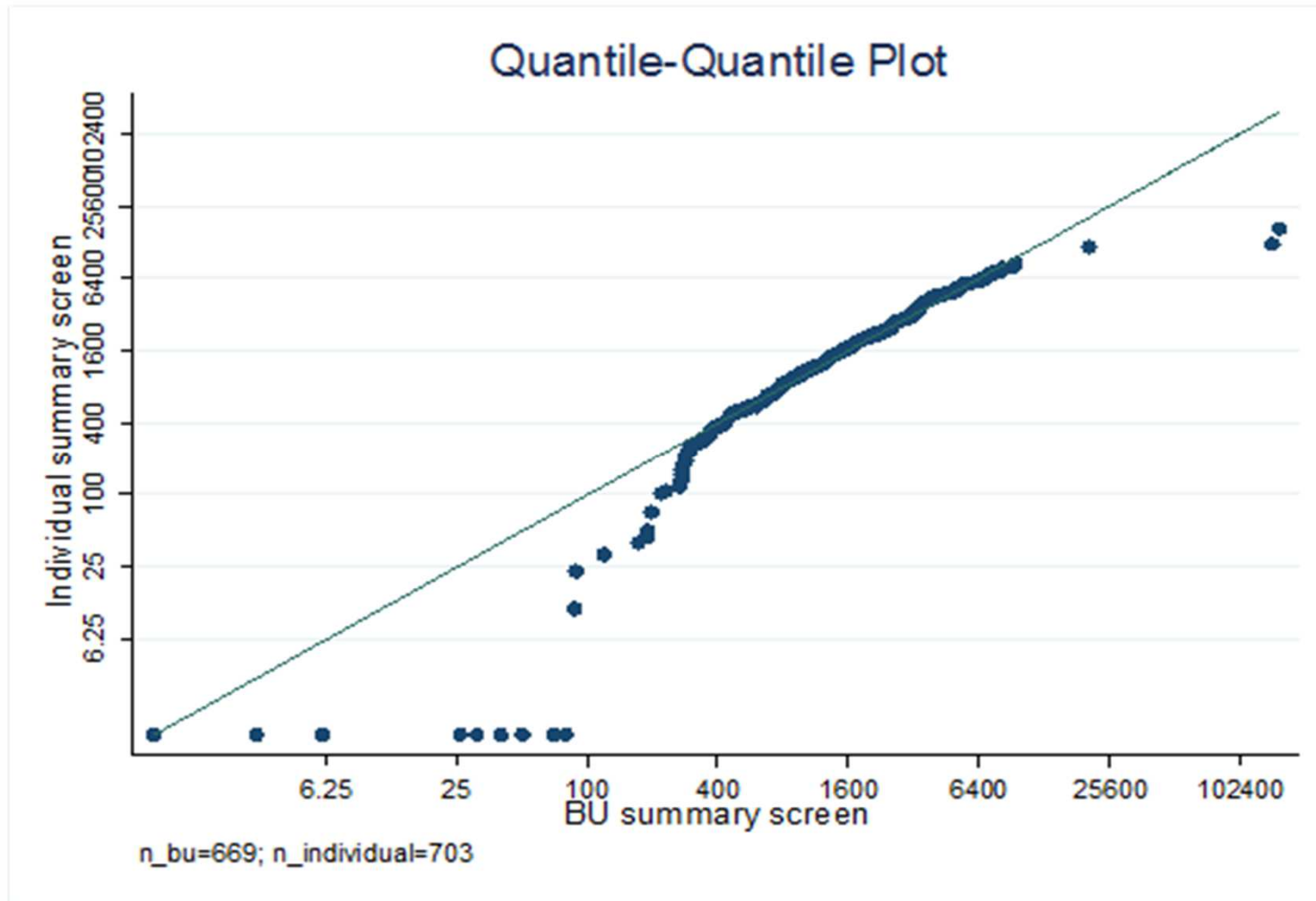
Lower rate in BUESS because it requires consent of both partners.



- Project webpage:

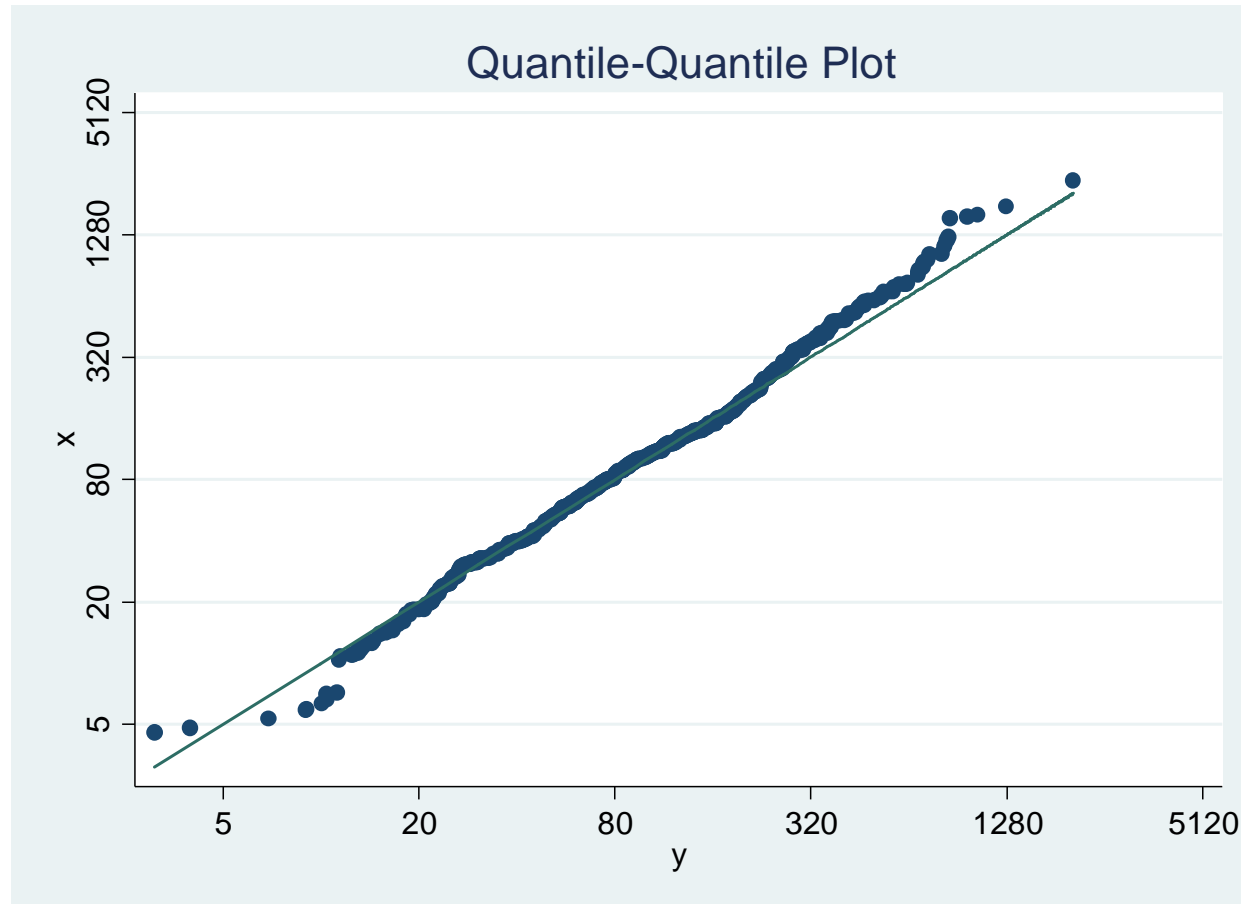
<https://www.iser.essex.ac.uk/research/projects/understanding-household-finance-through-better-measurement>

Pre-correction BU income quantiles



Simulated data, qq-plot

$n_1 = n_2 = 700$, *lognormal*





Thank you



References



Blake, M., Crossley, T., D'Ardenne, J., Oldfield, Z., & Winter, J. (2014) "Testing Quick Expenditure Questions" in Tarek Al Baghal "Understanding Society Innovation Panel Wave 6: Results from Methodological Experiments" Understanding Society Working Paper Series No. 2014-04.

Hurd, M. D., & S. Rohwedder. (2013). "Measuring total household spending in a monthly internet survey: Evidence from the American Life Panel." *Improving the Measurement of Consumer Expenditures*. University of Chicago Press, 2013. 365-387.

Lugtig, P., and Jäckle, A. (2014) Can I just check...? Effects of Edit Check Questions on Measurement Error in Survey Estimates. *Journal of Official Statistics*. 30(1):45-62.
