Quality of expenditure data collected with a receipt scanning app in a probability household panel

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Funding

- "Understanding household finance through better measurement"
- Kantar Worldpanel
- Team members:

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Study aims

- Collect high-quality data about expenditure

  In the context of a general-purpose household panel survey

- Challenges

  Limited questionnaire space

  Data quality: measurement error

  Respondent burden

Study aims

- Approaches to measure expenditure

  - Recall questions
  - Spending diaries (paper/online)
  - Data linkage (credit cards, loyalty cards, account aggregation)
  - **Receipt scanning app**

- Advantages of a receipt scanning app

  Collect objective data: reduce recall error?

  Collect more detailed data

  Lower respondent burden?

Study aims

- How good are expenditure data collected with a mobile receipt scanning app?

- How do they compare to benchmark data?

Study design

- *Understanding Society* Innovation Panel

    Stratified, clustered random sample of HHs in GB

- Adults aged 16+ invited to download spending app

    Invitation by letter and email + reminders

    Use app for 1 month

    Own smartphone or tablet

    iOS or Android

- Fieldwork: Oct-Dec 2016

# Study design

- Incentives
    - ✓ £2 vs. £6 for app download
    - ✓ £0.50 per day used app
    - ✓ £10 for using app for 4 weeks
    - ✓ Max total: £30.50 / £34.50

- Response rate
    - ✓ 12.8% used app at least once (n = 270)
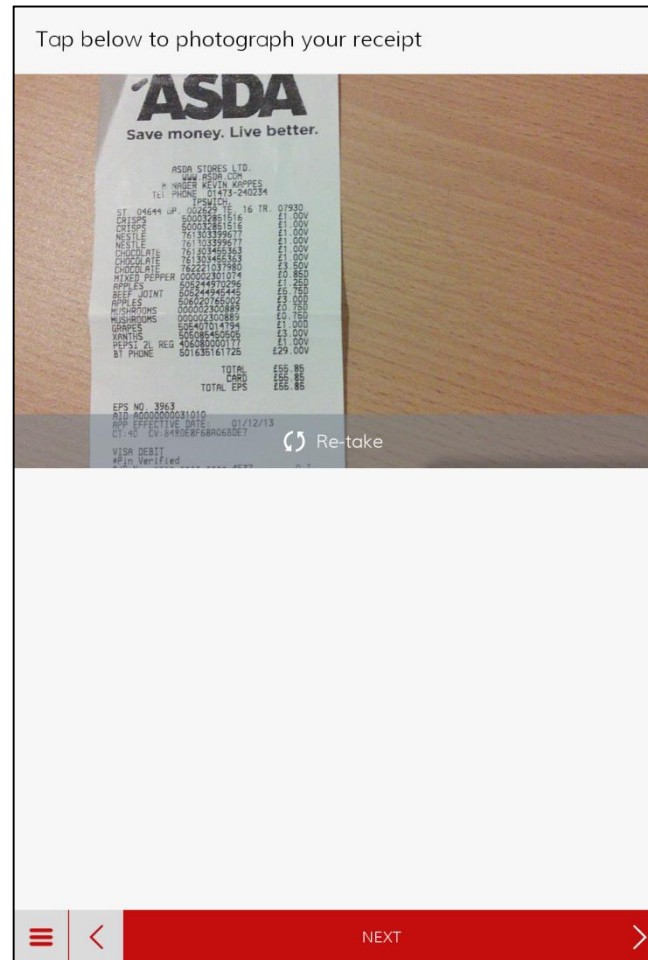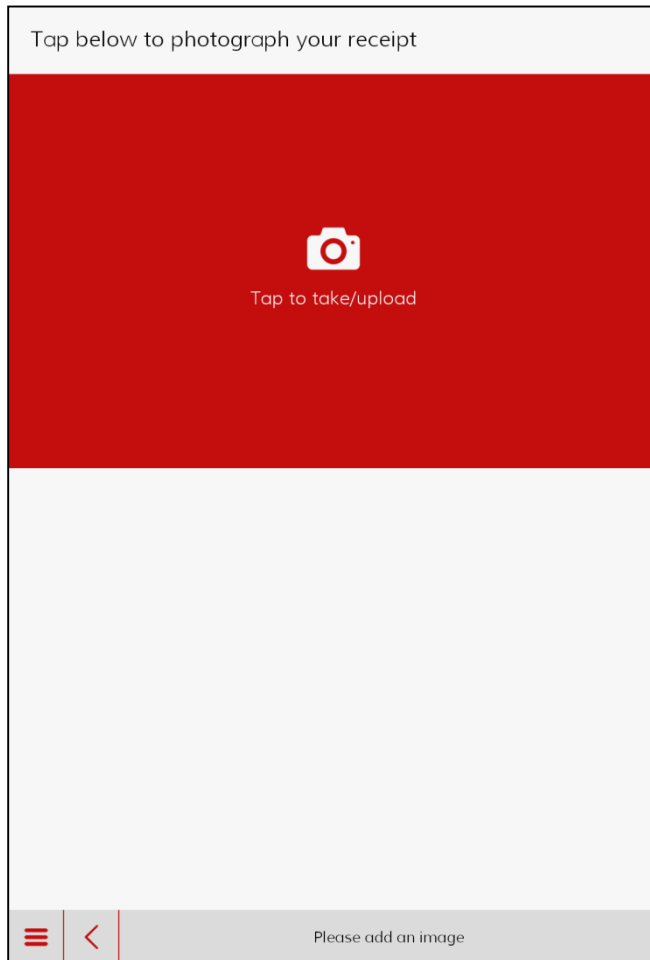   - ✓ 10.2% used app in each of 4 weeks (n = 216)

Jäckle, Burton, Couper, & Lessof (2017). Participation in a mobile app survey to collect expenditure data as part of a large-scale probability household panel: response rates and response biases. Understanding Society Working Paper, 2017-09.

App design - tasks
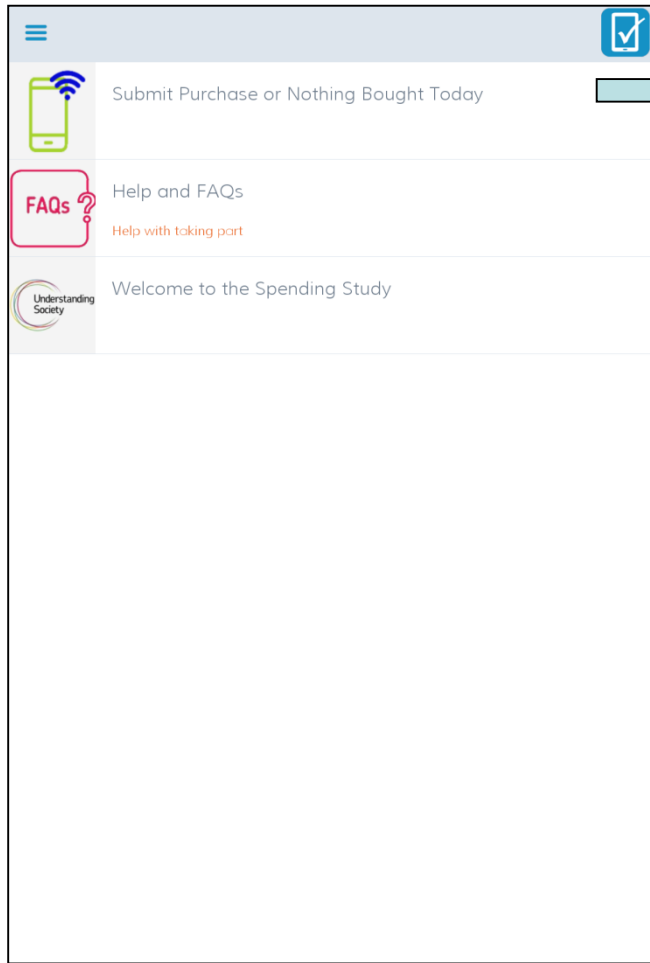
- Scan shopping receipt

- Report spending in app diary

- Report no purchases that day

App design – scan

App design – report spending

Research questions

1. What is the level of <u>total</u> spending reported in the app compared to benchmarks?

2. What is the level of <u>category</u> spending reported in the app compared to benchmarks?

3. For which spending categories does the ‚direct entry' option provide more comparable data than receipts only?

4. Which types of participants provide more comparable data in the app?

Benchmark data

- Living Costs and Food Survey (LCFS)

  Main survey on household spending in UK

  Stratified, clustered random sample of HHs in UK (GB + NI)

- Adults aged 16+ invited to complete paper spending diary

  Record purchases for 2 weeks

- Fieldwork: Apr 2015-Mar 2016 (Oct-Dec 2015)

- Response rate: 46% of HHs co-operated

Results

- Total spending: App vs. LCFS?

  Scanned receipts + direct entry

  App: Oct-Dec 2016; LCFS: Oct-Dec 2015

  Inverse probability weighting to match sample composition to LCFS

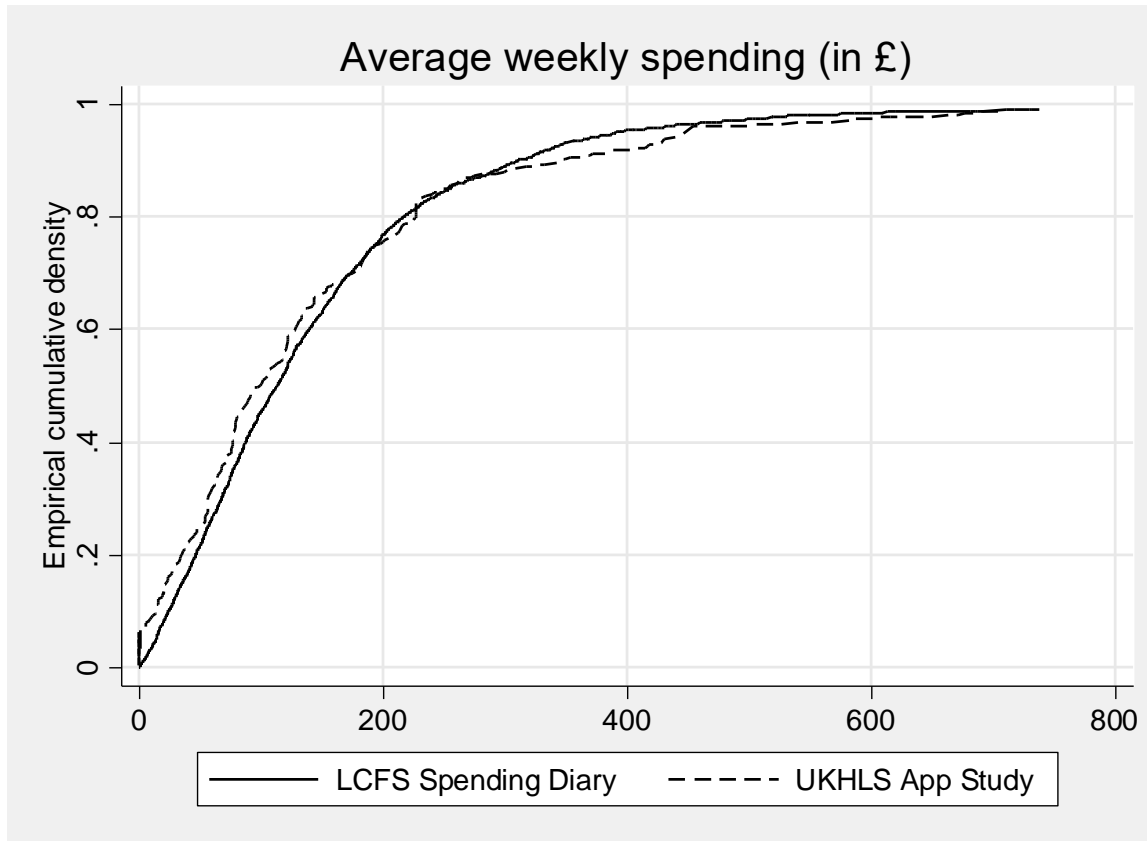 Age, Gender, Employment status

  + Income, Housing tenure, Education, HH composition, HH size, Computer ownership, Urban/rural

Results

- Sample composition

	Before IPW		After IPW
	LCFS	App	App
% Female	51.7	60.5	51.4
Mean Age	48.6	43.2	49.0
% Employed	58.2	67.9	56.6

Total spending

Average weekly spending (in £)

	LCFS	App
Mean	141.1	137.8
Median	112.2	96.8
SD	118.2	131.5
N	2,177	267

Results

- Category spending: App vs. LCFS?

Scanned receipts

1) Data entry

2) Category coding

- Parse item description
- Compare against consumption classification (COICOP)
- Match with direct entry categories
- Manual verification

Direct entry

Which of the following categories best describe what the purchase was?

Please select all that apply

Food and groceries

Clothes and footwear

Transport costs, e.g. petrol, car maintenance, public transport costs

Child costs, e.g. childcare, school equipment and fees

Home improvements and household goods, e.g. DIY, gardening, furniture, white goods or electrical goods

Health expenses, e.g. glasses, dental care, prescriptions, social care

Socialising and hobbies, e.g. going out (restaurants, pub, cinema, theatre, concert), gym or club membership, arts and crafts, children's activities

Other goods and services, e.g. books, magazines, DVDs, CDs, games, toys, beauty products, haircuts, manicures, massages

Holidays

Giving money or gifts to other people, e.g. money for children, gifts or money for relatives, donations to charity

≡   <   Please select 1 or more options

Results

- Which types of participants provide more comparable data in the app?

    Age

    Gender

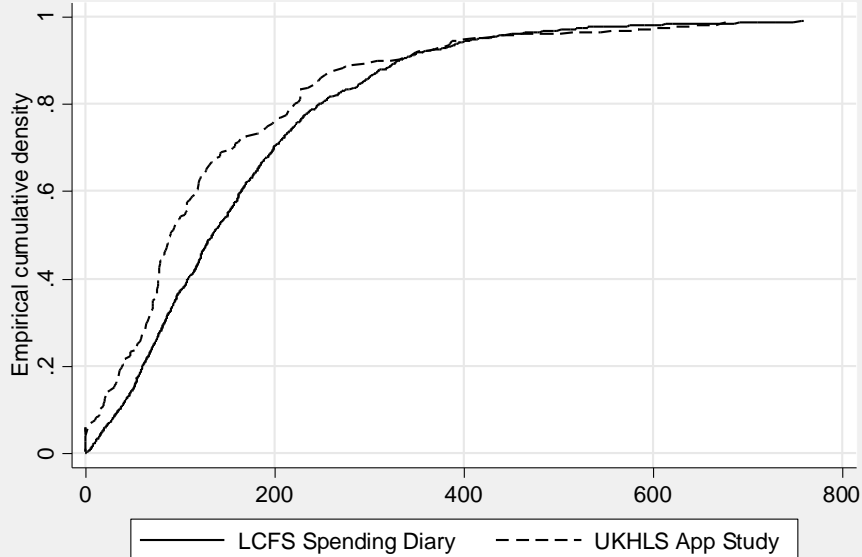   Education

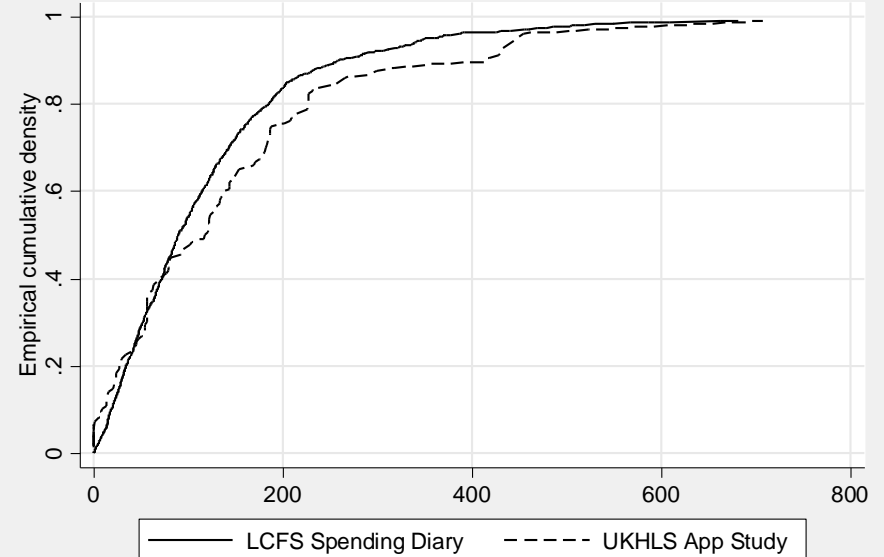   Employment status

    Income

    HH size

    Urban/rural

    Device ownership

Total spending – gender

	LCFS	App
Mean	161.5	134.4
Median	133.2	89.5
SD	123.6	130.6
N	1,124	161

	LCFS	App
Mean	117.7	145.4
Median	88.1	117.4
SD	106.4	144.7
N	1,052	106

Summary

- Panel members invited to use receipt scanning app for one month: scan receipts or direct entry

- Preliminary evidence

  Level of total spending reported in app similar to benchmark
  Difference between app and benchmark varies by subgroup

- Automating category coding of products

Next steps

- Follow-up study

  How to increase participation?

Thank you.

Alexander Wenz

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