Food Waste Measurement

Multi stakeholder conference, Berlin

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Food waste measurement

- Measurement and monitoring is a main challenge

- FUSIONS and World Resources Institute (WRI): Harmonized definition

- Focus here:
  In-home Household Food Waste

How can we measure food waste?

Papers, reports, expert interviews:

- Food waste diary
- Self-reports (survey)
- In-home observation
- Waste composition analysis
- Self-collection (kitchen caddies)

Evaluation criteria

- Degree of bias in estimates
- Effort required of participants
- Effort and cost for researcher
- Ability to provide information at a detailed level (food type, stages)

Diary

- Commonly used
- Participants report amount, type, reason of food waste

- Increases awareness
  - Behaviour change
- Effortful (pps & researcher)
  - Tapering of enthusiasm
  - Risk of self-selection

Self-report

- Proportional (%) or non-proportional (amount / frequency)

- Easy for participants
- Low costs for researcher
- Draw upon memory
- Social desirable answering
- Experts think it is not accurate

In-home observation

- Video-recording, trashcan camera and/or automatic electronic weighing in trashcan

- Time, money, effort limitations
- Privacy concerns

Waste composition analysis

- Food waste is collected, separated, weighed, and categorized

- Specific knowledge required
- Costly and time-consuming for researcher
- Less bias vs. underestimation due to neglect of liquids and composting
- No possibility to differentiate phases

Kitchen caddy

- Self-collection of in-home food waste

- Less experience with this method
- Effortful for researcher and pps
- Experts generally positive

Coding photographs

- Consumers make photos and hand these to researcher

- Experts are sceptical
- Coders are uncertain

Let's see…

Photo study

- Before bothering participants, let's see if it makes sense
- "Ideal" conditions
  - 104 constructed photos
  - Varying in category, volume, density, container size
  - Clear photos (placemat), correct weights, online resources
  - Two coders

Results

- Coded and actual weight: strong correlation (.93)
- Lower accuracy for
  - Large volumes
  - Differences in density
- Photo coding has potential

Note: ideal circumstances

Comparing measurement methods

- Survey
  - General questions on overall food waste
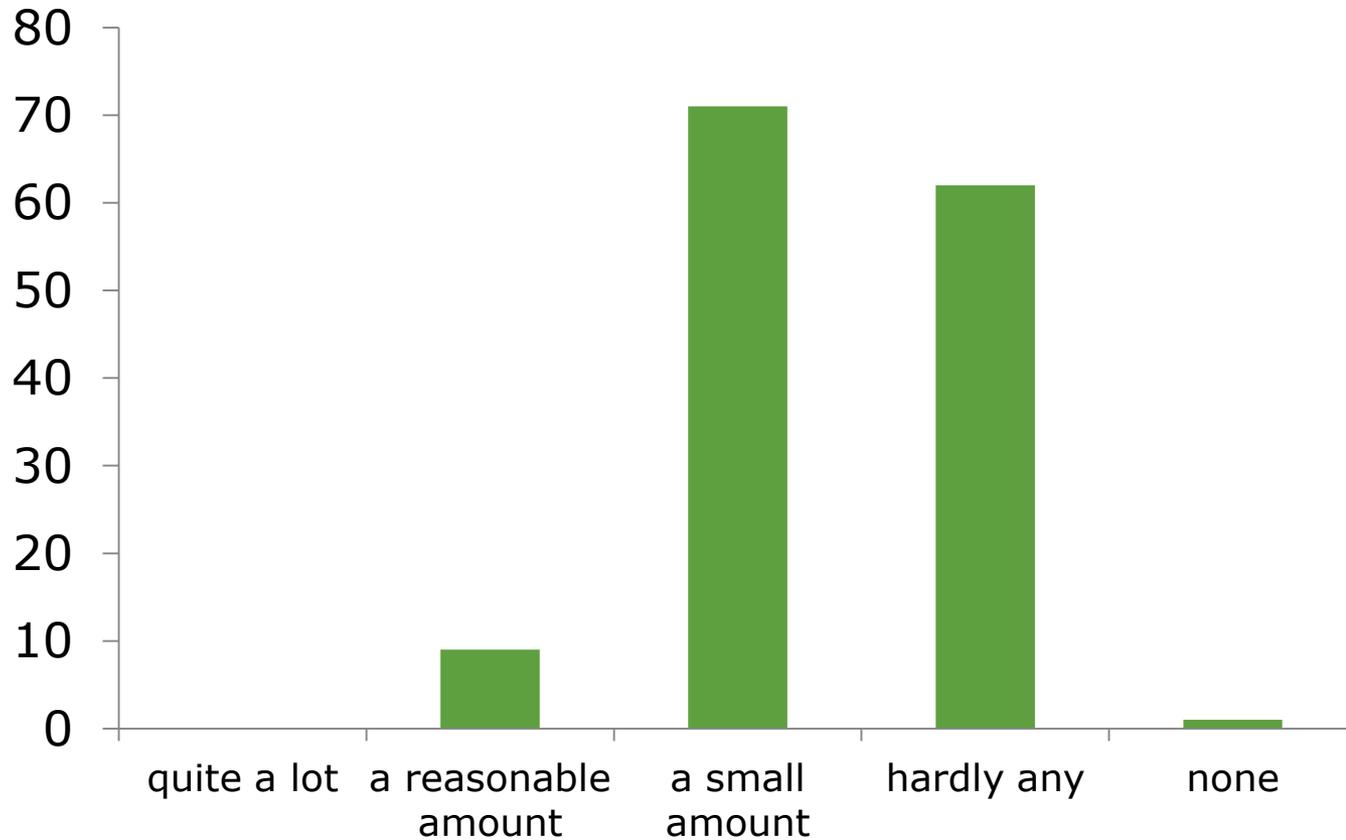 - Amount wasted in the past week
- Diary
- Kitchen caddy
- Photographs

143 Dutch households

Results – Survey: overall waste

Is there really little variance?

- Survey (discarded in the past week)
  - 638.5 grams on average
  - Range between 0 and 4170 grams

- Diary
  - 1122 grams on average
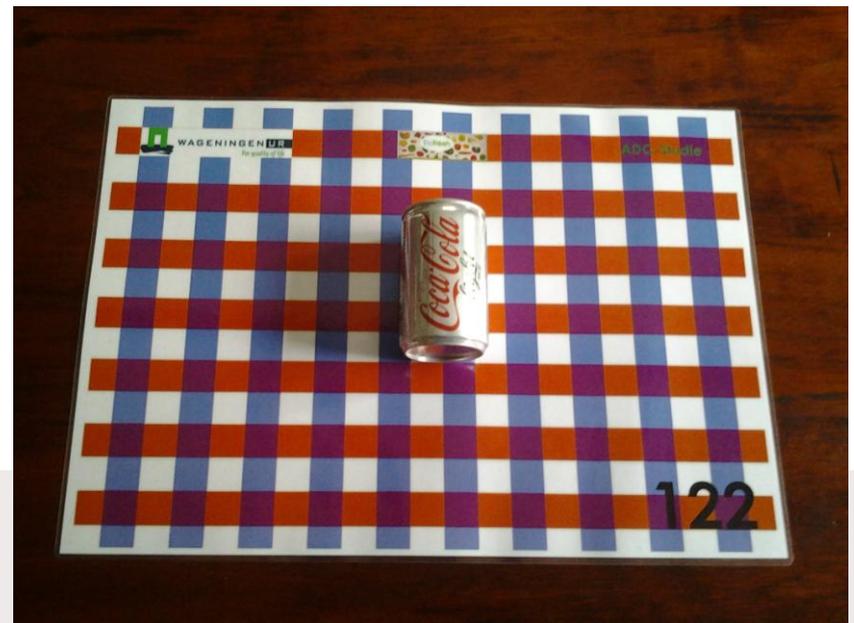 - Range between 14 and 7213 grams

Survey: the general questions

General questions on amount, frequency, proportion

- Low levels of reported waste
- Low variance in reported waste across households
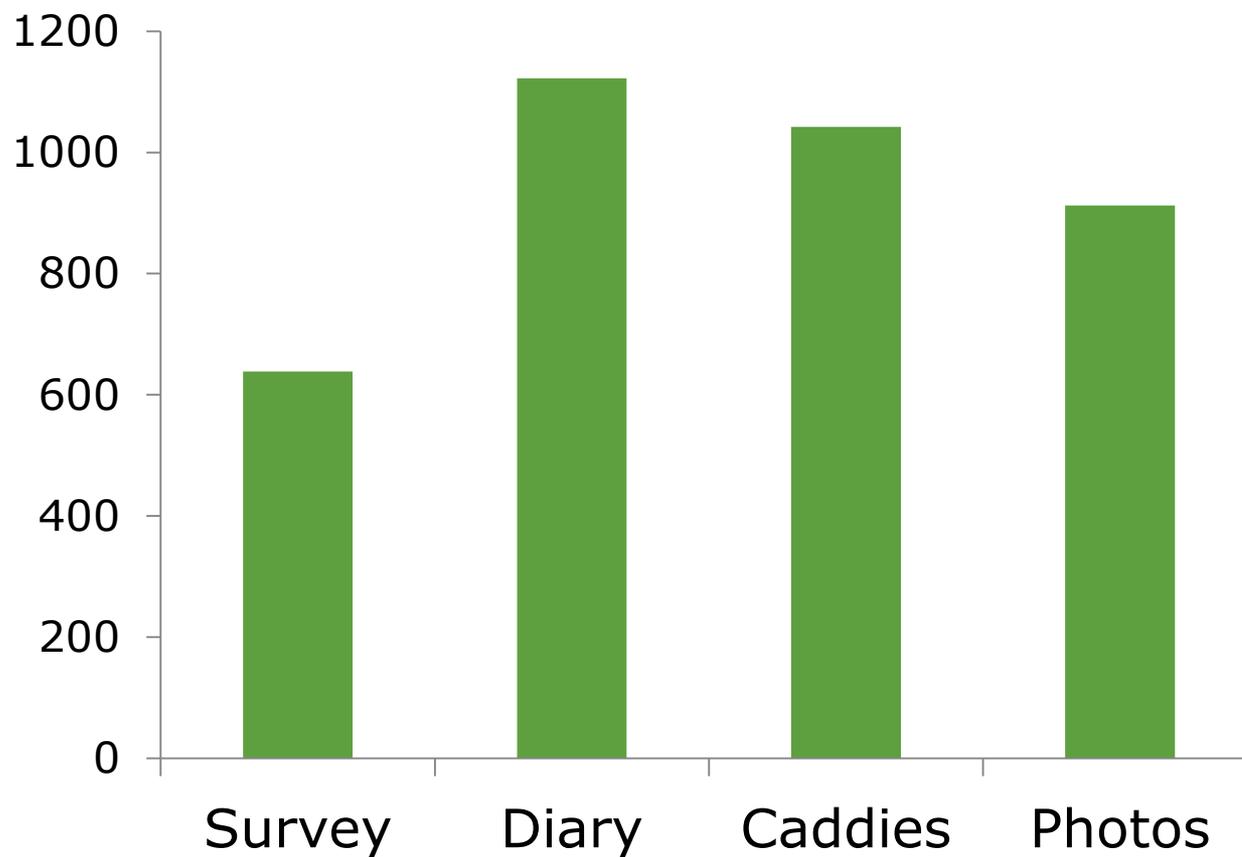- Weakly related to other measures

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Photos

- Good intercoder reliability (r = .73)
- Difficulties in coding some of the photos

How much is wasted
(grams per week per household)

Method comparison

Method	Conclusion
Survey: overall	Not very useful
Diary	Highest reported waste levels Good correlation with caddy, photo, week survey
Survey: week	Lowest reported waste levels (underreporting) Good correlation with diary (.71)
Photos	Takes time & effort Good correlation with diary (.79)
Kitchen caddies	Differences across households in amount / proportion not thrown in the bin High correlation with diary (.86)

Conclusion

- High correspondence across weeks for all measures
- Week-based survey measure seems appropriate, especially in large samples
  - Systematic underreporting
- Kitchen caddies and photo coding are good alternatives in smaller samples
- Self-reports on amount, frequency, or proportion of food waste in general are not advisable

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Best practice measurement

- Pre-announcement
- Tick product categories in which food waste occurred in the past week
- For each category that is ticked:
  - Amount (in appropriate units: serving spoons, pieces, portions, etc)
  - Phase (completely unused, partly used, meal leftover, leftover after storing)
  - With explanation related to the category
- Calculation into grams