Poverty Estimation: Measuring food consumption

Designing Household Surveys to Measure Poverty
Perugia, Italy
November 2017
OUTLINE

» Acquisition and consumption

» Meal participation (accounting for partakers)

» Timing of visits
Acquisition and Consumption
Surveys may collect data on acquisition (purchases, own-prod., gifts…) or consumption, or both. All are legitimate, but need clarity.

Smith et al., 2014

Desk assessment of 100 surveys

- Acquisition: 41%
- Consumption: 26%
- Both: 33%

Smith et al., 2014
ACQUISITION AND CONSUMPTION: DEFINITIONS

» Acquire
  • to come into possession or control of

» Consume
  • to utilize as a customer, "consume goods and services"
  • to utilize economic goods

Source: Webster online dictionary
No consumption rules out acquisition!
### Acquisition and Consumption

**M. Dépenses en Produits de Consommation Courante au Cours des 15 Derniers Jours**

<table>
<thead>
<tr>
<th>Question</th>
<th>Value/Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>M11. Avez-vous consommé (Nom du produit)</td>
<td></td>
</tr>
<tr>
<td>M12. En avez-vous acheté?</td>
<td></td>
</tr>
<tr>
<td>M13. Quelle quantité avez-vous payé?</td>
<td></td>
</tr>
<tr>
<td>M14. Quelle quantité avez-vous acheté?</td>
<td></td>
</tr>
<tr>
<td>M15. En avez-vous récolté et/ou prélevé de vos stocks?</td>
<td></td>
</tr>
<tr>
<td>M16. Quelle quantité avez-vous récolté et/ou prélevé?</td>
<td></td>
</tr>
</tbody>
</table>

**Produits alimentaires**

1. Haricot
2. Patate douce
3. Banane
4. Poulet

Did you consume...?  
How much did you pay? (value)  
How much did you buy? (quantity)  
Did you harvest or take from stocks?  
How much? (quant)
**ACQUISITION AND CONSUMPTION**

» Average per month – does that seem clear?
  ● Any problems with it?

» Look at q9, any issues?

### MONTHLY CHARACTERISTICS

<table>
<thead>
<tr>
<th>MONTH</th>
<th>QUANTITY</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### GIFTS

9.- This expenditure concerns how many members of the household?

- YES 0 ► 8

8.- What is the total quantity per [ARTICLE].. that you have received as gifts over the past 12 months?

- Same unit as in Q4
<table>
<thead>
<tr>
<th>Issue</th>
<th>Interview</th>
<th>Diary</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rule-out leading questions</td>
<td>18</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Own production ambiguity (harvest)</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Ambiguity on acquisition or consumption</td>
<td>7</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Usual month ambiguity</td>
<td>13</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>% With problems of incomplete enumeration</td>
<td>38</td>
<td>5</td>
<td>25</td>
</tr>
</tbody>
</table>

Source: Smith et al. (2014)
If interested in both:

1. Do not use consumption to rule out acquisition (or vice-versa)
2. Account for all sources of acquisition
3. Not all acquisition is consumed within ref. period
4. Clarify what is being asked
2. MEAL PARTICIPATION
(a.k.a. accounting for partakers)
MEAL PARTICIPATION: WHY MEASURE IT?

» Even abstracting from intra-hh distribution, interest is generally in measuring consumption per person or per adult equivalent
» Poverty measures usually based on household size, age composition, economies of scale
» Meal participation particularly relevant for food security, nutrition measures (e.g. calorie consumption)
Objective: Compute total calories consumed by household members

- # meals eaten in-house by household members
- # meals eaten in-house by not household members
- # meals eaten away from home by household members
The household’s mean consumption should be calculated by dividing total household food consumption by household size plus additional partakers minus absent household members.

Use of Adult Male Equivalent (nutrition)
### MEAL PARTICIPATION: CURRENT PRACTICE

**SECTION 15: FOOD CONSUMPTION IN LAST 7 DAYS**

**15.1** How many household members were resident and ate at least dinner regularly in the household during the last 7 days?

- **Afghanistan** 2007: ___ people

**15.2** How many meals were eaten by guests from the household cooking pot in the last 7 days? (Put 0 if no guests are in the house in the last 7 days)

- **Bangladesh** 2010: ___ person-meals

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**Did any visitor stay here with your household for the last month?**

- **Mongolia** 2007/08

**How many days?**

- **Number of visitors** person/meal

<table>
<thead>
<tr>
<th>Less than 10 years old</th>
<th>10 years and older</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of boys</strong></td>
<td><strong>No. of men</strong></td>
</tr>
<tr>
<td><strong>No. of girls</strong></td>
<td><strong>No. of women</strong></td>
</tr>
</tbody>
</table>

---

On average, how many people were present in the last 7 days? In this section children are defined as less than 18 years.

<table>
<thead>
<tr>
<th>Household Members</th>
<th>Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male adults</td>
<td>Female adults</td>
</tr>
</tbody>
</table>

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[Image of a C4D2 Training logo]
## Table 8.2 Types of information collected on food given to non-household members

<table>
<thead>
<tr>
<th>Type of information collected</th>
<th>Number of surveys</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Presence and/or household meal consumption of non-household members during the recall period</td>
<td>15</td>
</tr>
<tr>
<td>2. Number of visitors in the household</td>
<td>11</td>
</tr>
<tr>
<td>3. Visitors' length of stay</td>
<td>5</td>
</tr>
<tr>
<td>4. Number of meals consumed by visitors/guests</td>
<td>10</td>
</tr>
<tr>
<td>5. Type of meal consumed by visitors/guests (breakfast, lunch, dinner)</td>
<td>7</td>
</tr>
<tr>
<td>6. Age of visitors/guests</td>
<td>7</td>
</tr>
<tr>
<td>7. Sex of visitors/guests</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: J. Fiedler and D. Mwangi (2016)
9. Over the past 7 days, did you share any meals with any person(s) that you did not list as household members? [READ LIST FROM HH ROSTER]

10. What was the total number of days in which any meal was shared with people [...]?

11. What was the total number of meals that were shared over past 7 days with [...]?

<table>
<thead>
<tr>
<th></th>
<th>NUMBER OF DAYS</th>
<th>NUMBER OF MEALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For 10-11: IF NOT SHARED, RECORD ZERO.

Yes...1
No.....2 (► NEXT SECTION)
Table 1: meals taken within the household housing unit

<table>
<thead>
<tr>
<th>INDIVIDUAL CODE</th>
<th>INSTRUCTIONS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Every day and for each individual tick &quot;x&quot; in the column corresponding to the meal taken by an individual outside the household housing unit: 1 - breakfast, 2 - lunch or 3 - dinner.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NAME</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>L</td>
<td>D</td>
<td>B</td>
<td>L</td>
<td>D</td>
<td>B</td>
<td>L</td>
<td>D</td>
<td>B</td>
<td>L</td>
<td>D</td>
<td>B</td>
<td>L</td>
<td>D</td>
<td>B</td>
<td>L</td>
<td>D</td>
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<td>1</td>
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<td>3</td>
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<td></td>
</tr>
</tbody>
</table>
Meals taken within the HH – Iraq Household Socio Economic Survey 2012: Non-household members

Table 2: Number of participants other than the household members in meals within the household

<table>
<thead>
<tr>
<th>DAY NUMBER</th>
<th>1212</th>
<th>1213</th>
<th>1214</th>
<th>1215</th>
<th>1216</th>
<th>1217</th>
<th>1218</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAY #1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>DAY #2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>DAY #3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>DAY #4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>DAY #5</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>DAY #6</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>DAY #7</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Type of meal:
- Breakfast
- Lunch
- Dinner

Number of individuals other than household members sharing meals within the household expenditure.
MEAL PARTICIPATION: RECAP SO FAR

» Heterogeneity: Countries/surveys use very different approaches
» Lack of research to tell us what works
» Different needs for different users (poverty, food security, nutrition will use the data differently)
Adjusting consumption for partakers

There are two main approaches to adjust for partakers:

» #1 Food consumer: count the number of people usually partaking to household’s meals and divide total household consumption by this number.

» Limitation: Counting heads of partakers is however not very precise. The method has difficulties to account for situations in which people do participate only at some meals per day, e.g. employees.
Adjusting consumption for partakers

There are two main approaches to adjust for partakers:

» **#2 Meal partakers**: requires an exact accounting of all the number of meals taken by each household member and non household members over the same reference period than that for which food data is collected.

» Limitation: difficult to implement.
Recommendations

1. All HCES should consider adding an individual household member-based meal module

   **In some countries this will enable eliminating other questions:**
   a) How many meals are usually taken per day in your household?
   b) How many days in the past X days was Y present in the household?
   c) Did Y eat meals in this household in the last X days?
   d) Does Y get meals at school?
   e) Did Y consume any meals/snacks/drinks outside the household in the past X days?
Recommendations

2. If the entire individual household member-based meal module cannot be added, a prioritized ordering of the questions that should be added is:

a) How many meals does Y usually take in a day?
b) How many days in the past X days was Y present in the household?
c) How many meals during the past X days, did Y purchase or receive and eat away from home?
d) How many meals during the past X days, did Y eat at home?
e) Does Y get meals at school?
Recommendations

f) How many meals were served to non-household members during the last X days?

g) Did the household host a ceremony, party or festival in the past X days, during which a large number of meals (not just snacks) were served to non-household members? If “yes”: How many attended?

h) During the last X days, were there non-household members who stayed one or more nights in the household as a guest? If “yes”: How many nights did they stay? How many meals were they (summed together) served during their stay? How many of the guests were children < 15 years old? Adults 16 and older?

i) During the last X days, were any meals served to non-household members? (Other than those served guests who stayed overnight.)
3.

TIMING OF VISITS
TIMING OF VISITS: WHY DO WE CARE?

» Over-time (within year) there are variations in food consumption and expenditure:
  ● agricultural season(s)
  ● cyclical food production cycles
  ● festivals and holidays
TIMING OF VISITS: WHY DO WE CARE?

Cyclical variation not only between months but also within months and weeks, e.g.:

- Payday for wage workers
- Market day
- ‘Transfer-day’ for HHs receiving cash transfers
- Friday, Saturday, Sunday (depending on culture) consumption may differ from ‘usual’
TIMING OF VISITS: WHY DO WE CARE?

» Seasonality is a source of bias and measurement error of:
  ● quantities of food acquired and consumed
  ● dietary patterns
  ● food prices (affects especially poverty estimates)

: - can affect estimates of poverty and consumption

» Survey objective is usually to mirror typical consumption throughout the year
If seasonality is not taken into account:

- Recorded mean consumption might be higher or lower
- Estimates of the CV might be biased by the confounding effect of seasonal variation
- International comparability
- Over time comparability (same country)
Poverty in Afghanistan – variation over season

Temporally stratified samples revealed massive variation in poverty, due to seasonality and food price shocks.

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Poverty rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fall-harvest 2007 23</td>
</tr>
<tr>
<td>2</td>
<td>Winter 2007/08 32</td>
</tr>
<tr>
<td>3</td>
<td>Spring 2008 44</td>
</tr>
<tr>
<td>4</td>
<td>Summer 2008 46</td>
</tr>
<tr>
<td></td>
<td>Annual 36</td>
</tr>
</tbody>
</table>

Seasonality in a non-agricultural economy

**Figure 1: Poverty across quarters in Jordan**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Poverty Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter 1 (Apr - June 2010)</td>
<td>20.1%</td>
</tr>
<tr>
<td>Quarter 2 (July - Sept 2010)</td>
<td>14.8%</td>
</tr>
<tr>
<td>Quarter 3 (Oct - Dec 2010)</td>
<td>18.2%</td>
</tr>
<tr>
<td>Quarter 4 (Jan - Mar 2011)</td>
<td>19.4%</td>
</tr>
</tbody>
</table>

Source: Author calculations from HEIS (2010)

Day of the month effect: between the 20th and 25th of the month, lower caloric consumption

Source: Troubat et Grunberger (2017)
SPECIAL CASE: WHAT IF POVERTY IS NOT THE MAIN OBJECTIVE?

» LSMS-ISA surveys in Niger, Nigeria:
  ● Focus is agriculture as well as living conditions
  ● Post-planting, post harvest visits (contre-saison captured in first visit)
  ● Opportunity to capture consumption twice, but timing dictated by agriculture use
HOW TO DEAL WITH SEASONALITY? RECOMMENDATIONS

» Spread the sample over 12 months of fieldwork, with sample stratified e.g. quarterly nationally representative subsamples (mean OK, higher CV)

» Conduct two visits per household, where the timing of the visits is scheduled to capture seasonal variations

» Ensure enumeration is equally spread throughout the days of the week and the month and consider change in timing in holidays, festivals
…REMEMBER… NOT EVERYONE DOES THAT…

References

1. Lisa Smith, Olivier Duriez & Nathalie Troubat, (Feb 2014), Assessment of the Reliability and Relevance of the Food Data Collected in National Household Consumption and Expenditure Surveys, IHSN Working Paper No. 008