Measurement of Food Away from Home (FAFH) in Household Surveys

Designing Household Surveys to Measure Poverty
Perugia, Italy
November 2017
What is FAFH?

**WHAT TO MEASURE?**

- Food **prepared away** from home (meals and snacks)
- **consumed at home**
- **consumed away** from home
- **purchased**
  - grocery store
  - local market
  - take-out
- **received in-kind**
  - social program
  - another household
- **purchased**
  - commercial establishment
  - school
  - work
- **received in-kind**
  - employer
  - social program
  - another household

**MEASUREMENT ISSUES TO CONSIDER**

- Recall period
- Respondent
- What information to collect (frequency, quantity, cost)
- Locations (restaurant, school)
- Events (lunch, dinner, snack)
- Uniformity of content (not all meals are created equal)
- Seasonality

Source: Adapted from Smith and Frankenberger (2012).
Motivation

• The consumption of food outside the home is rapidly growing across the developing world

  • The percentage of households reporting meals outside increased from
    • 20 to 46% between 1981 and 1998 in Egypt
    • 23 to 39% between 1994 and 2010 in India

  • Household per-capita expenditure on FAFH rose at an average annual rate of 9.5% in China from 2002 to 2011
Motivation

• The consumption of food outside the home is *rapidly growing* across the developing world

• Most nationally representative household surveys *collect very limited information* on food away from home (FAFH)

• Increasing evidence that accounting for FAFH *matters for welfare measurement*
  
  • Food security: India (Smith, 2015); Brazil (Borlizzi et al, 2017)
Motivation

• The consumption of food outside the home is rapidly growing across the developing world

• Most nationally representative household surveys collect very limited information on food away from home (FAFH)

• Increasing evidence that accounting for FAFH matters for welfare measurement

• The measurement of FAFH brings conceptual and practical challenges, and evidence on best practices is very limited
  
  • Definition of FAFH, account for snacks, respondent, content & quantities
Accounting for FAFH in Poverty Measurement in Peru

• Uses detailed individual-level module on FAFH since 2004
  • Each adult reports about FAFH in the last 7 days
  • Meal events: breakfast, lunch, dinner, snack
  • Place: street vendor, restaurant, work
  • Frequency
  • Cost

• Household consumption module
  • Child FAFH
  • Take-out
What do Farfan, Genoni and Vakis (2017) do?

• Compare welfare measures in Peru over 2010-2013 depending on whether they account for FAFH or not
  • Poverty
  • Consumption Inequality
  • Poverty classification and poverty profile
Poverty rates over time

Extreme poverty

Moderate poverty

2010 2011 2012 2013

36.6 28.6

6.5 3.4
Poverty rates over time (2)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
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<tbody>
<tr>
<td>Absolute diff.</td>
<td>1.14</td>
<td>1.38</td>
<td>1.15</td>
<td>1.27</td>
</tr>
<tr>
<td>% difference</td>
<td>18%</td>
<td>27%</td>
<td>24%</td>
<td>37%</td>
</tr>
</tbody>
</table>
Poverty rates over time (3)

**Extreme poverty**

<table>
<thead>
<tr>
<th>Year</th>
<th>at-home only</th>
<th>with FAFH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>7.6</td>
<td>6.5</td>
</tr>
<tr>
<td>2011</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>2012</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2013</td>
<td>3.4</td>
<td>3.4</td>
</tr>
</tbody>
</table>

**Moderate poverty**

<table>
<thead>
<tr>
<th>Year</th>
<th>at-home only</th>
<th>with FAFH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>36.6</td>
<td>30.7</td>
</tr>
<tr>
<td>2011</td>
<td>30.7</td>
<td>28.6</td>
</tr>
<tr>
<td>2012</td>
<td>28.6</td>
<td>26.0</td>
</tr>
<tr>
<td>2013</td>
<td>23.8</td>
<td>24.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute diff.</td>
<td>1.14</td>
<td>1.38</td>
<td>1.15</td>
<td>1.27</td>
</tr>
<tr>
<td>% difference</td>
<td>18%</td>
<td>27%</td>
<td>24%</td>
<td>37%</td>
</tr>
<tr>
<td>Absolute diff.</td>
<td>-5.82</td>
<td>-5.51</td>
<td>-5.57</td>
<td>-4.73</td>
</tr>
<tr>
<td>% difference</td>
<td>16%</td>
<td>16%</td>
<td>18%</td>
<td>17%</td>
</tr>
</tbody>
</table>
Decomposing changes in 2010 poverty rate

Extreme poverty

1.1 pp represents:
- 17% increase in the poverty rate
- (337,500 individuals)

Moderate poverty

5.8 pp represents:
- 16% decrease in the poverty rate
- (1,725,500 individuals)
Inequality (consumption) over time

Gini coefficient: Peru 2010-2013

- at-home
- + FAFH
Inequality (consumption) over time (2)

Gini coefficient: Peru 2010-2013

- at-home
- + FAFH
Poverty profile, Peru (2010)

<table>
<thead>
<tr>
<th>Household composition</th>
<th>Extreme poverty</th>
<th>Moderate poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At-home poor</td>
<td>FAFH poor</td>
</tr>
<tr>
<td>children &lt; 15</td>
<td>0.74</td>
<td>0.75</td>
</tr>
<tr>
<td>women 15-60</td>
<td>0.79</td>
<td>0.79</td>
</tr>
<tr>
<td>women 60+</td>
<td>0.30</td>
<td>0.32</td>
</tr>
<tr>
<td>men 15-60</td>
<td>0.75</td>
<td>0.71</td>
</tr>
<tr>
<td>men 60+</td>
<td>0.25</td>
<td>0.26</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Labor market outcomes</th>
<th>log per capita income</th>
<th># individuals employed</th>
<th># females employed</th>
<th># males employed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.74</td>
<td>2.39</td>
<td>1.08</td>
<td>1.30</td>
</tr>
<tr>
<td></td>
<td>4.63**</td>
<td>2.23***</td>
<td>1.05</td>
<td>1.18**</td>
</tr>
<tr>
<td></td>
<td>5.29***</td>
<td>2.34***</td>
<td>1.06</td>
<td>1.28***</td>
</tr>
<tr>
<td></td>
<td>5.14**</td>
<td>2.27***</td>
<td>1.04</td>
<td>1.23***</td>
</tr>
</tbody>
</table>
Methodological Experiment on FAFH Measurement in Vietnam

Farfan, McGee, Perng, and Vakis, 2017
Experimental design

Field implementation:
- August-October 2016
- 2,400 households in 40 EAs within urban Hanoi
- Within each EA, households were randomly assigned to a treatment (12 household per treatment per EA)
- Households randomly assigned to enumerators, and all enumerators applied all treatment arms in all EAs

- Separate module for adult FAFH
- Separate line for child FAFH
- Separate line for take-away meals

One-line
- T0
  - Current VHLSS
  - 30 day recall
  - 1 visit

- T1
  - Current VHLSS
  - 7 day recall
  - 1 visit

Gold Standard
- T2
  - Individual diary
  - 7 day
  - 4 visits

- T3
  - Individual level 7-day recall
  - 1 visit

Individual recall
- T4
  - Household level 7-day recall (with bounding)
  - 2 visits
5A2. Consumption Expenditures on food and drinks in past 30 days (end)

<table>
<thead>
<tr>
<th>Code</th>
<th>Question 1 applies to all categories of items/items before moving to questions 2-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>153</td>
<td>Outdoors meals and drinks? (breakfast, lunch, dinner)?</td>
</tr>
<tr>
<td>1531</td>
<td>Breakfast, lunch, dinner of members living in the household</td>
</tr>
<tr>
<td>1532</td>
<td>Meals and drinks of household members working, studying, health treatmenting away from home</td>
</tr>
<tr>
<td>1533</td>
<td>Others</td>
</tr>
<tr>
<td>154</td>
<td>Other food and drinks? (other processed food and foodstuff, additives, seasonings, …)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Units of measurement</th>
<th>Quantity</th>
<th>Value</th>
<th>A. In case of no quantity, write 0 thousand VND</th>
<th>B. Value thousand VND</th>
<th>A. In case of no quantity, write 0 thousand VND</th>
<th>B. Value thousand VND</th>
<th>A. In case of no quantity, write 0 thousand VND</th>
<th>B. Value thousand VND</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>153</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>1532</td>
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<td>X</td>
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<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
**T2 - Individual diary**

**Date:**   ___ / ___ / ____

<table>
<thead>
<tr>
<th>Day</th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Dinner</th>
<th>Morning snack</th>
<th>Afternoon snack</th>
<th>Evening snack</th>
<th>Bottled water</th>
<th>Alcoholic drinks</th>
<th>Other drinks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Thursday</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Friday</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Saturday</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Sunday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**For Interviewer:**

**Result:**
- Complete
- Incomplete
- Refused
- Missing

**Filled by:**
- Respondent
- Enumerator

**How much would you have spent if you had to pay for meal/item received for free?**

**How much did you spend on your meal/item?**

**If you received the meal/item for FREE:**
- Yes
- No

**If you PAID for the meal/item:**
- Yes
- No
# T3 - Individual Level Recall

During the past 7 days, did you consume [ITEM] away from home? **DO NOT INCLUDE ITEMS TAKEN FROM YOUR HOME.**

How many days did you consume [ITEM] away from home in the past 7 days?

Did you pay for all or part of the [ITEM] you consumed away from home in the past 7 days? **[IF FOOD WAS PURCHASED BY OTHER HOUSEHOLD MEMBER, MARK 3]**

During the past 7 days, how much did you spend on the food you consumed (same as 6 if didn’t share consumption with other individuals)?

Amount spent on the consumption of other adult household members (15 years and older)

Amount spent on the consumption of other child household members (under 15 years old)

Interviewer check: 6a) If 5=1 ► 9
   b) If 5=2 ► 7

Who paid for the [ITEM] that you received as a gift or from other sources in the last 7 days?

How much would you have spent if you had to pay for [ITEM] that you received as a gift from non-household members in the past 7 days? **(Specify the name of dish or content of the real you consumed)**

What was the value of the meal/item you consumed? **[If received for free, provide estimated value]**

---

**Food Item/Occasion**

<table>
<thead>
<tr>
<th>Food item/Food occasion</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>6a</th>
<th>6b</th>
<th>6c</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>8a</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the past 7 days, did you consume [ITEM] away from home?</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
</tr>
<tr>
<td>During the past 7 days, how many days did you consume [ITEM] away from home?</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
</tr>
<tr>
<td>Did you pay for all or part of the [ITEM] you consumed away from home?</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
</tr>
<tr>
<td>During the past 7 days, how much did you spend on the food you consumed?</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
</tr>
<tr>
<td>Amount spent on the consumption of other adult household members (15 years and older)</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
</tr>
<tr>
<td>Amount spent on the consumption of other child household members (under 15 years old)</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
</tr>
<tr>
<td>Interviewer check: 6a) If 5=1 ► 9</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
</tr>
<tr>
<td>Who paid for the [ITEM] that you received as a gift or from other sources in the last 7 days?</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
</tr>
<tr>
<td>How much would you have spent if you had to pay for [ITEM] that you received as a gift from non-household members in the past 7 days?</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
</tr>
<tr>
<td>What was the value of the meal/item you consumed?</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
<td>NO</td>
<td>2 ▶</td>
<td>next item</td>
<td>YES</td>
<td>1 ▶</td>
</tr>
</tbody>
</table>

---

**Main Meals**

- Breakfast meal
- Lunch/midday meal
- Dinner/evening meal

**Snacks or Drinks Outside Main Meals**

- Morning snack
- Afternoon snack
- Evening snack
- Bottled water
- Alcoholic drinks
- Other drinks

---

**COMPONENTS**

- YES...1
- NO....2

**Table Code**

- 2 next item
- After going over all items ▶

**Notation**

- ►
- ●

---

**Notes**

- Collected in person or by phone (if not present at the time of interview)
- Interviewer check:
- (if not present at the time of interview)
- (if not present at the time of interview)
### T4 - 24hr recall (to be applied to household informant in first visit)

**SA3.3A**

**ADULT CONSUMPTION AWAY FROM HOME: Consumption expenditures on food and drinks away from home in the previous day** (Adults 15 years old and above)

I’m going to ask you a few questions about yesterday’s consumption of “food away from home” by all adults in your household. By FAFH we mean any meal, snack, or drink that was “produced and consumed” outside the home. Think of all adults (15 years or above) who are currently in your household, and consider all possible places of consumption (restaurant, pub, work, school, friend’s house, etc).

Do not include food that was prepared at home or snacks that were taken from home (for example, from the household’s pantry or fridge) to consume at work or somewhere else.

#### T4 - 24hr recall on FAFH at the household level [clear bound & knowledge]

#### Worksheet to help the informant keep track of household’s FAFH consumption throughout the week [salience – reminder]

#### Second visit:

- household level FAFH module (and full consumption module)

---

<table>
<thead>
<tr>
<th>Component</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main meals</td>
<td></td>
</tr>
<tr>
<td>Breakfast meal</td>
<td></td>
</tr>
<tr>
<td>Lunch/midday meal</td>
<td></td>
</tr>
<tr>
<td>Dinner/evening meal</td>
<td></td>
</tr>
<tr>
<td>Snacks or drinks outside main meals</td>
<td></td>
</tr>
<tr>
<td>Solid snacks</td>
<td></td>
</tr>
<tr>
<td>Bottled water</td>
<td></td>
</tr>
<tr>
<td>Alcohol drinks</td>
<td></td>
</tr>
<tr>
<td>Other drinks</td>
<td></td>
</tr>
</tbody>
</table>

### Day of the week:

- **Did any adult household member had breakfast, lunch, dinner, snacks or drinks outside the home?**
- **How much did your household spent on the food?**
- **If some food was received for free, how much would your household have to pay for that food?**

<table>
<thead>
<tr>
<th>Day of the week</th>
<th>Did any adult household member had breakfast, lunch, dinner, snacks or drinks outside the home?</th>
<th>How much did your household spent on the food?</th>
<th>If some food was received for free, how much would your household have to pay for that food?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Day 2</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Day 3</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Day 4</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Day 5</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Day 6</td>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>Day 7</td>
<td>19</td>
<td>20</td>
<td>21</td>
</tr>
</tbody>
</table>
One line is not enough

Percent deviation in FAFH from individual diary

One-line recall

-43%
You don’t need an expensive diary

Percent deviation from individual diary FAFH module

One-line recall

Individual recall

Household informant and bounding

-43%

-22%

-11%

Partly explained by underestimation of FAFH incidence

Reported 0 FAFH (Marginal Effects)

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-line recall</td>
<td>0.24***</td>
<td>(0.03)</td>
</tr>
<tr>
<td>7-day individual recall</td>
<td>0.07**</td>
<td>(0.03)</td>
</tr>
<tr>
<td>7-day HH informant</td>
<td>0.03</td>
<td>(0.03)</td>
</tr>
</tbody>
</table>

Observations 1,896
R-squared 0.059

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Differences are larger on top

Differences in FAFH at selected points in the distribution

<table>
<thead>
<tr>
<th></th>
<th>mean</th>
<th>Q25</th>
<th>Q50</th>
<th>Q75</th>
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<tr>
<td>T3</td>
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<tr>
<td>T4</td>
<td></td>
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</tbody>
</table>
Memory and salience matter

• What could explain the better performance of the ‘household informant’ variant?

• ‘Individual informant’: most knowledgeable person

• ‘Household informant’: **behavioral angle**
  ✓ Knowledge gap (24-hour recall)
  ✓ Memory and salience throughout the week (tracking sheet)
  ✓ Salience of starting point (bounding)

• **Qualitative feedback:**
  • The sheet was used very often
  • Enumerators expressed a preference towards implementing the sheet over the 24hr recall, but seem to think that the 24hr recall was more useful
Main take-aways

• Go beyond 1 line
• **How to choose** among the two alternatives? Trade-offs:
  • **Accuracy** (household informant seemed to perform better)
  • **Cost** (individual informant cheaper)
  • **Feasibility** (two visits one informant vs one visit multiple phone calls)
• **Unanswered questions**
  • How important was the sheet? Was it necessary to implement a 24-hour recall on the first visit? Could the first contact be done over the phone?
  • Alternative protocols: household informant collect incidence, follow-up with individuals over the phone
  • **External validity**
  • **Beyond values**: FAFH content
General guidelines

1. **Do not** collect FAFH information with just one question
   • Given status quo of surveys, low hanging fruit on extensive margin

2. **Have a clear protocol** that specifies where the survey will capture
   • “food prepared at home and consumed outside” – jointly with “at-home” module
   • “food prepared outside and consumed at home” (i.e. takeout) – additional line in “at-home” module

3. **Design a separate module** for FAFH
General guidelines (2)

4. What to collect
   - Organize data collection around meal events, including snacks and drinks.
     - Adapt the meal events list to the local context.
   - At a minimum, collect info on the value of all meals consumed during meal event
   - Identify most frequent place of consumption for each meal event (restaurant, street vendor, work, school etc).
     - Adapt place of consumption categories to local context.
General guidelines (3)

5. For who to collect and who is the respondent?
   a) Individual level FAFH module. Adults could respond for themselves.

   b) Proxy respondents (household level module):
      • Proxy respondent reports incidence of FAFH for all household members, while information on expenditures is collected from each adult
      • Proxy respondent reports on the incidence and total value of FAFH consumption at the household level, using daily reminder sheet (requires two visits)

How to chose? Trade-off between feasibility and cost
6. **FAFH meal content**
   - Estimation of nutrient content can come from other data sources
     - Survey of food establishments
     - Administrative data on publicly provided meals (i.e. schools, social programs)
   - Accounting for regional variation, seasonality, and SES gradients, should be considered
Nonstandard Units in Household Surveys
Overview

• Motivation

• Understanding Nonstandard Units (NSUs)
  • Justification, challenges
  • Components needed to implement NSUs

• Preparing & Using NSUs
  • Preparing NSU & tools (includes implementation of a Market Survey)
  • Using NSUs in household surveys
  • A word about Computer-Assisted Personal Interviewing (CAPI)

• Food consumption and agricultural production
  • Two critical inputs for welfare analysis in low-income countries

• Important to measure both as accurately and efficiently as possible
What are NSUs?

- Standard units (SUs): standardized across all locations, items
- **Nonstandard units (NSUs)**: weights can vary by item, condition, location

<table>
<thead>
<tr>
<th>Standard</th>
<th>Nonstandard X-Country Applicable</th>
<th>Country-Specific (Uganda)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilograms</td>
<td>Sack</td>
<td>Jerrican</td>
</tr>
<tr>
<td>Grams</td>
<td>Bunch</td>
<td>Kimbo/Blueband tin</td>
</tr>
<tr>
<td>Liters</td>
<td>Heap</td>
<td>Nido tin</td>
</tr>
<tr>
<td>Centiliters</td>
<td>Piece/number</td>
<td>Nice cup</td>
</tr>
<tr>
<td>Pounds</td>
<td>Bucket</td>
<td>Plastic basin</td>
</tr>
</tbody>
</table>

Table 1: Examples of SUs & NSUs

Table 2: Regional variation of NSUs in Nigeria

<table>
<thead>
<tr>
<th>Zone</th>
<th>North Central</th>
<th>North East</th>
<th>North West</th>
<th>South East</th>
<th>South South</th>
<th>South West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mudu</td>
<td>56.7</td>
<td>62.4</td>
<td>17.4</td>
<td>0.0</td>
<td>0.7</td>
<td>0.0</td>
</tr>
<tr>
<td>Olodo</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>14.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Congo</td>
<td>7.5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.7</td>
<td>47.9</td>
</tr>
<tr>
<td>Paint rubber</td>
<td>3.9</td>
<td>0.0</td>
<td>0.6</td>
<td>12.1</td>
<td>0.0</td>
<td>2.7</td>
</tr>
<tr>
<td>Derica</td>
<td>0.4</td>
<td>1.3</td>
<td>0.2</td>
<td>2.5</td>
<td>16.1</td>
<td>13.8</td>
</tr>
<tr>
<td>Milk cup</td>
<td>27.3</td>
<td>8.9</td>
<td>21.4</td>
<td>21.6</td>
<td>42.6</td>
<td>28.8</td>
</tr>
<tr>
<td>Cigarette cup</td>
<td>0.5</td>
<td>0.0</td>
<td>0.1</td>
<td>60.7</td>
<td>22.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Tiya</td>
<td>0.0</td>
<td>26.7</td>
<td>58.5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Kobiowu</td>
<td>2.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

*Shaded cells = units rarely/never observed in that zone*
Why allow NSUs?

- May be more familiar to respondents
  - SUs may not be used in markets
  - Respondents may not encounter SUs in their daily activities
  - Items may traditionally be consumed in NSUs
    - When given the choice, respondents prefer reporting in NSUs
    - In Malawi IHPS 2013, 73 percent of consumed item entries are in NSUs
  - Simplified recall: Reduces on-the-spot calculations, cognitive burden
Why allow NSUs? (2)

**FORCING STANDARD UNITS:** More burden on the respondent, less consistency in conversion factors

**ALLOWING NSUs:** Simplifies respondent's role, conversion factors are consistent
NSU challenges

• Simplifies burden on respondent, but...
  • Complex to collect: can differ by item, condition, location
  • Not always clearly defined
    • A “piece” of potato could range from 0.5 to 1.5 kgs
    • A container can be filled “level” or “heaped”
    • A common unit in Ethiopia: “chinet” (donkey load)

• Need to be converted into SUs in analysis

*Image: Dengu (basket) in Malawi*
Components of NSU library

1. List of “allowable” item-NSU-(-condition) combinations
2. Conversion factors (CFs) for the combinations (national, regional)
3. Reference photos for the combinations
4. Clear protocols for using CFs and reference photos
5. Documentation, documentation, documentation
Establishing a NSU list

• Plan in advance of main survey, construct allowable item-NSU combinations
  • National sources, previous surveys, conduct a pilot

• Identify variation
  • Units: heaps, pails, pieces
  • Sizes: small, medium, large
  • Conditions: shelled, unshelled, threshed, etc.
Conversion factors: where we need to get to

- Need kilogram conversion for each item-NSU combination, possibly disaggregated by region: Required to calculate consumption and agricultural production-related outcomes

<table>
<thead>
<tr>
<th>IHS3 Item Code</th>
<th>Item Name and Type</th>
<th>Unit Code</th>
<th>Unit Description</th>
<th>Regional Mean in KGs</th>
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<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>North Region</td>
</tr>
<tr>
<td>201</td>
<td>Cassava tubers</td>
<td>9</td>
<td>Piece</td>
<td>0.30</td>
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<tr>
<td></td>
<td></td>
<td>9A</td>
<td>Piece (small)</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9B</td>
<td>Piece (medium)</td>
<td>0.30</td>
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<td></td>
<td></td>
<td>9C</td>
<td>Piece (large)</td>
<td>0.46</td>
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<tr>
<td></td>
<td></td>
<td>10</td>
<td>Heap</td>
<td>0.98</td>
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<tr>
<td>205</td>
<td>Irish potato</td>
<td>4A</td>
<td>Pail (small)</td>
<td>3.01</td>
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<tr>
<td></td>
<td></td>
<td>4B</td>
<td>Pail (medium)</td>
<td>9.31</td>
</tr>
</tbody>
</table>
Market survey: how we are going to get there

Market Selection & Visits

• Ensure adequate sub-national coverage of item-NSU combinations
• Cover the full range of types of markets likely frequented by households
• Market day vs. non-market day

Timing

• Seasonality in item availability (multiple rounds?), harvest time
• Ideal scenario:
  • Prior to main survey
    • Implement market survey: obtain CFs, collect reference photos to use in main survey
  • During/after main survey
    • Consider implementing a smaller scale market survey to address gaps in reported item-NSU-(condition) combinations in main survey
Market survey (2)

- Attempt to weigh each item-NSU-(condition) combination in each market
- Take weights from multiple vendors (up to 3)

### Module B: Item-Unit Measurement - NonContainers

<table>
<thead>
<tr>
<th>Item Name</th>
<th>Item Code</th>
<th>Unit Name</th>
<th>Size</th>
<th>Was Item Measured?</th>
<th>Why Was Item Not Measured?</th>
<th>Item Sample #1</th>
<th>Item Sample #2</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YES...1</td>
<td>NOT FOUND IN MARKET AT THIS TIME...1</td>
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<td></td>
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<td></td>
<td>NO...2</td>
<td>CROP NOT COMMONLY FOUND IN THIS MARKET...2</td>
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<td></td>
<td></td>
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<td></td>
<td>UNIT NOT COMMONLY FOUND IN THIS MARKET...3</td>
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<td>OTHER, SPECIFY...4</td>
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<td>ALL RESPONSES ► NEXT ITEM</td>
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<table>
<thead>
<tr>
<th>Item Name</th>
<th>Item Code</th>
<th>Unit Name</th>
<th>Size</th>
<th>Weight (KGs)</th>
<th>Price (Birr)</th>
<th>Weight (KGs)</th>
<th>Price (Birr)</th>
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<td></td>
<td>Large</td>
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</tbody>
</table>
Market survey (2)

- Attempt to weigh each item-NSU-(condition) combination in each market
  - Take weights from multiple vendors (up to 3)
- Challenge for CFs for agricultural production: Farmer versus trader units
  - Farmers sell their produce to ‘middle men’, Traders alter units before resale
  - Visit households to capture for farmer-reported item-NSU-condition combos
- Refine initial list of item-NSU-(condition) combination, if necessary
- Pool weight measures for item-NSU-(condition) combinations across markets
- Derive a median CF for each combination, at the national-level, and if necessary, regional-level
- Incomplete set of CFs → lost data points
# Nigeria conversion factor database

| ITEM CODE | ITEM NAME                      | UNIT CODE | UNIT DESCRIPTION | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE | UNIT SIZE 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Reference photos

• Developed in market survey, fed into main survey

• Increase consistency across interviews
  • Helps respondents better specify quantities
  • Provide a standard size for NSUs that are not clearly defined (e.g. piece, heap)

• Not as easy as taking a selfie!
  • General guidelines for taking photos
  • Select quality photos for reference guide
  • Properly train enumerators to use NSU materials
(Incorrect) reference photos
(Correct) reference photos

Sahins of rapeseed

Heaps of papaya
Integrating NSUs into main survey

- Revising questionnaire modules to record information on NSUs
- Clear protocols and training for field staff on the use of NSUs, reference photos
- Clear protocols for users on the use of CFs
A note on implementation on CAPI

• Market survey
  • Taking a (uniquely-named) photo for each weight measurement within CAPI app
  • Georeferencing market locations; automatic date and time capture
  • Rigorous data quality checks: range checks, flagging missing observations

• Main survey
  • Reference photos can be integrated into CAPI app
  • Additional photos at the household-level can be taken
  • Rigorous data quality checks based on
    • Allowable item-NSU combinations
    • Conversion factor library for flagging potential “outlier” quantities based on checks on
      the basis of unit values, food consumption and/or caloric intake per capita
Main References


2. 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