

Development of databases to support analysis of dietary recalls in rural Kenya



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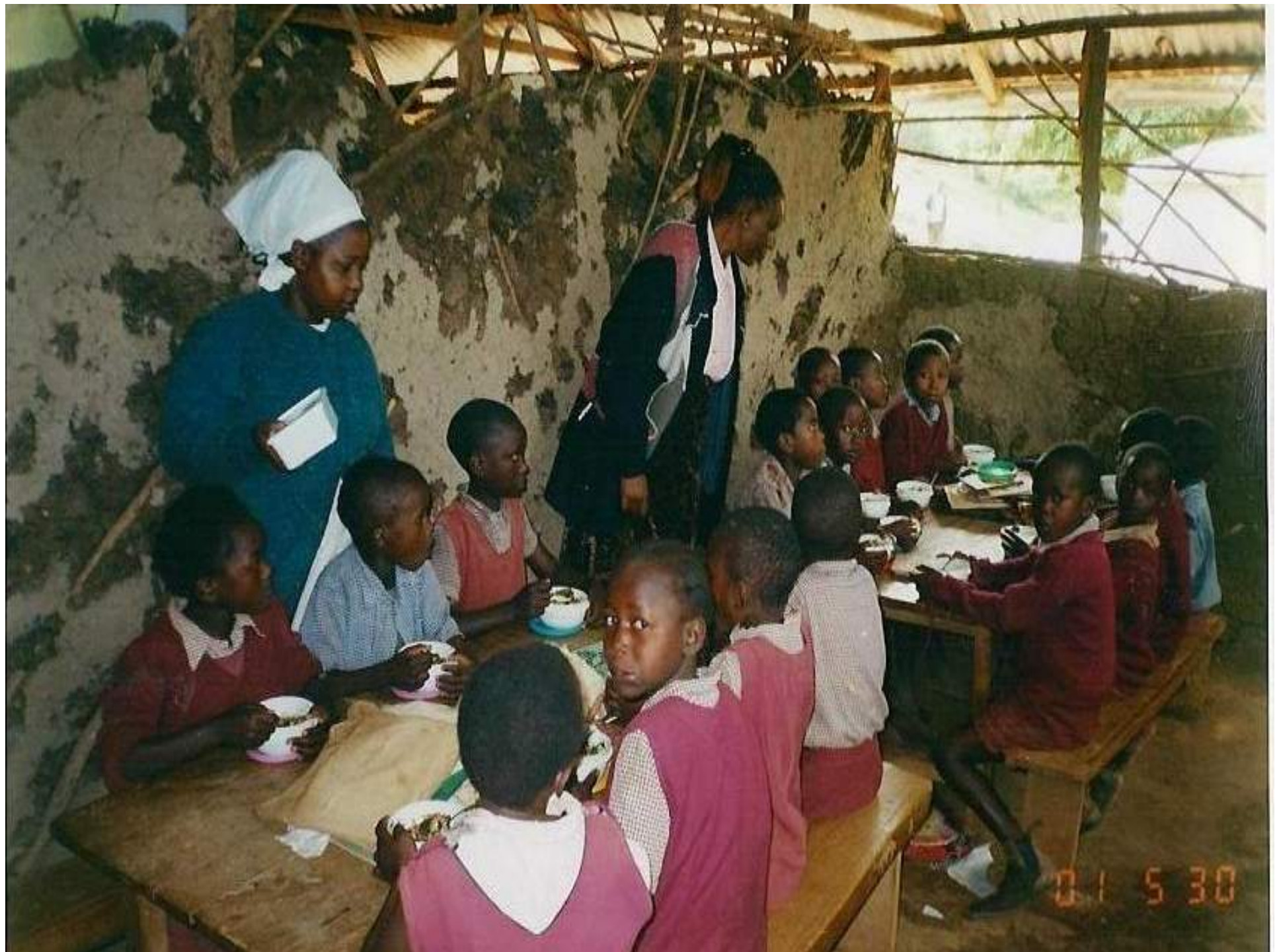
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The Child Nutrition Project (CNP)

- Conducted in 1998-2001 in Embu District, Kenya.
- Provided snacks at school for approximately 450 children.
- Collected multiple 24-hour recalls for each child.
- Funded by: The Global Livestock CRSP, USAID.





Dietary Assessment for CNP

- **Challenge:** To convert the foods reported on 24-hour recalls into daily nutrient and food group intakes
- **Solution:** Develop 5 databases and a SAS program
- Today's presentation is an update of the information presented at the 2003 NNDC/IFDC



Challenges and solutions

- Adapt an existing international food composition table.
- Update a cross-reference index linking local foods to the food composition table.
- Update local standard recipes.
- Create a food density database.
- Develop food group assignments.



Challenges and solutions

- Adapt an existing international food composition table.



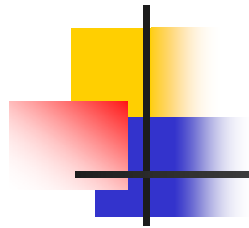
International Minilist (IML)

- Developed in 1988-92 as part of the WorldFood Dietary Assessment System.
- Composition for 195 basic food ingredients.
- 52 nutrients and food components.
- No missing values.



International Minilist (IML)

- By keeping the number of foods small, it is possible to include a variety of food components that are important in developing country diets.
- Builds on concepts developed by Jean Pennington and Doris Calloway.



International Minilist (IML)

Available at no cost at:

www.fao.org/infoods



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Country-specific foods can be linked to foods on the IML

- Using a cross-reference index.
- Indexes have been developed for:
 - Egypt
 - Kenya
 - Mexico
 - India
 - Senegal
 - Indonesia
- Also available at www.fao.org/infoods



Cross-Reference Indexes

- Foods are matched depending on nutrient profile.
- For example, fruits matched on carbohydrate, vitamins C and A, so jackfruit indexed to banana.
- Factors are used to adjust for moisture differences.
- Multiple IML foods may be linked to create a "recipe".



To create a “medium fat beef” in Kenya

- 6% beef tallow (IML 7066) is combined with beef, medium fat (IML 8067)
- Achieves the appropriate level of fat for the Kenyan medium fat beef.



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Standard recipes used whenever the exact recipe was unknown

- Food eaten away from home.
- Food brought into home from another household.
- About 6% of all food items.



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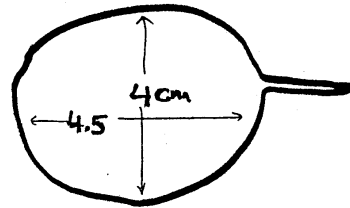


To quantify amounts, enumerators used household measures

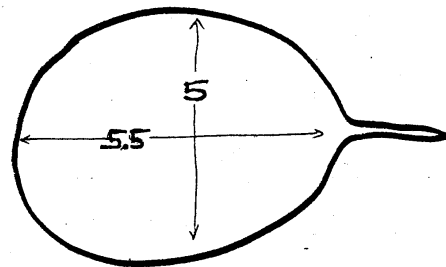
- File was needed to convert household measures to gram weights
- No gram weight or density files were currently available for local measures.
- Staff spent several months developing the appropriate protocols and databases.



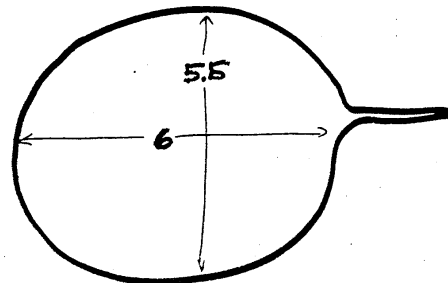
PASSIONFRUIT
(black)



Small (30g)



medium (55g)



Large (60g)





Sample density file entries

Carrot, raw	5 g/cm
Carrot, raw	small = 30 g
Carrot, raw	medium = 70 g
Carrot, chopped	0.48 g/ml

Current food density file contains:



- 2505 densities and weights
- 480 foods and recipes (average of 5 entries per food item).



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- Create a food density database.
- **Develop food group assignments**



Food group assignments

- Every food on the IML was assigned to a food group
- 9 major groups:
 - Starches
 - Vegetables
 - Fruits
 - Dairy
 - Meat
 - Legumes/nuts
 - Fats
 - Sweets
 - Beverages



27 subgroups

- Starches
 - Wheat
 - Maize/sorghum
 - White potatoes/taro/cassava
 - Plantain/banana/breadfruit
 - Rice
 - Oats/millet/other grains



Nutrient calculation program was developed in SAS to:

- Read Excel spreadsheets containing intake data.
- Access all the relevant databases.
- Calculate gram weights and nutrient levels, for each food consumed in a day.
- Sum across all foods to give nutrient and food group totals per child per day.

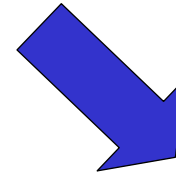


Flow of analysis

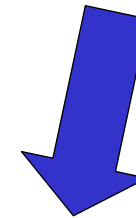
24-hour recall:
foods and
amounts



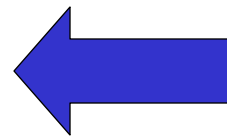
Density file to
obtain grams



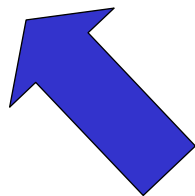
Recipe files to
obtain
ingredients



XREF to obtain
IML codes



IML to obtain
composition



Food group
and nutrient
intakes/d



Publication

- Murphy SP, Gewa C, Grillenberger M, Neumann CG. Adapting an international food composition table for use in rural Kenya. J Food Comp Analysis 2004;17:523-530.



Now also available for Tanzania

- Developed by Zohra Lukmanji
- To be on website of the Harvard School of Public Health



Conclusions

- Multiple databases are needed to analyze 24-hour recalls
- Publicly available in the US but may need to be developed for international studies
- Ample personnel and funding should be allocated for this task