

Appropriate uses of the AMPM diet survey method

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Topics to Address

- Automated Multiple Pass Method
- AMPM Validation Study
- Related databases



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Dietary Interview Component of NHANES

National Survey: What We Eat in America, NHANES

Method: USDA's Automated Multiple Pass Method

Dietary Collection: 2 days of dietary intake data
day 1 in-person
day 2 telephone
bilingual dietary interviewers

Sample: 9,000+ individuals for 2-year release

Use: AMPM used *continuously* since 2002

AMPM Uses

- **What We Eat in America, NHANES 2002+**
- **Statistics Canada** 2004 Canadian Community Health Survey
- **ARS** Doubly labeled water study of non-obese women
- **FNS** School Nutrition Dietary Assessment Study III
- **ERS** Behavioral Economics Influences on Food Consumption
- **NIA** HANDLS (Healthy Aging in Neighborhoods of Diversity Across Lifespan)
- **EPA** Upper Columbia River Human Health Risk Assessment and Remedial Investigation/Feasibility Study
- **DOD** Healthy Eating and Active Living in TRICARE Households Study
- **NCI** Five A Day Fruit and Vegetable Study
ASA 24 development
- **universities** UMD, JHU, UVT , Univ Puerto Rico



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USDA Automated Multiple Pass Method

Step 1

Quick List

Collects listing of all foods & beverages

Step 2

Forgotten Foods

Probes for forgotten food items in 9 categories

Step 3

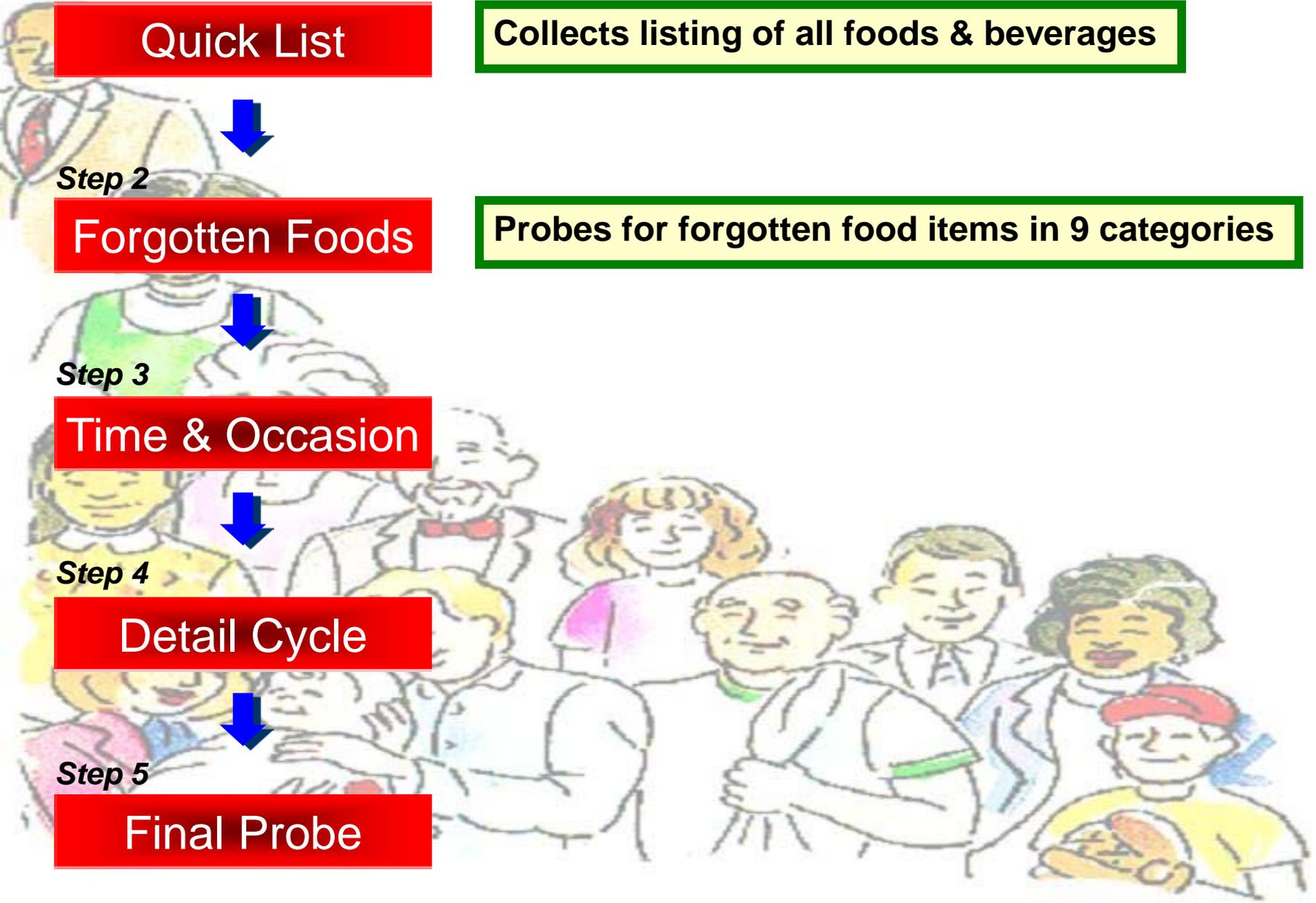
Time & Occasion

Step 4

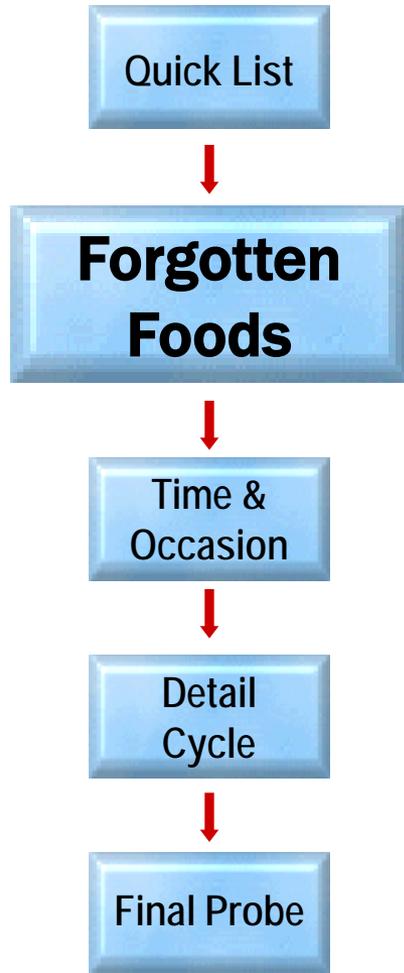
Detail Cycle

Step 5

Final Probe



Importance of *"Forgotten Foods"*



50% of respondents remembered foods

Type of foods	%
beverages	40
sweets	20
fruits, vegetables, cheese	15
savory snacks	13
bread and rolls	9
anything else	2

USDA Automated Multiple Pass Method

Step 1

Quick List

Collects listing of all foods & beverages

Step 2

Forgotten Foods

Probes for forgotten food items in 9 categories

Step 3

Time & Occasion

Collects for each food & beverage
Sorts foods into chronological order and
groups foods by eating occasion

Step 4

Detail Cycle

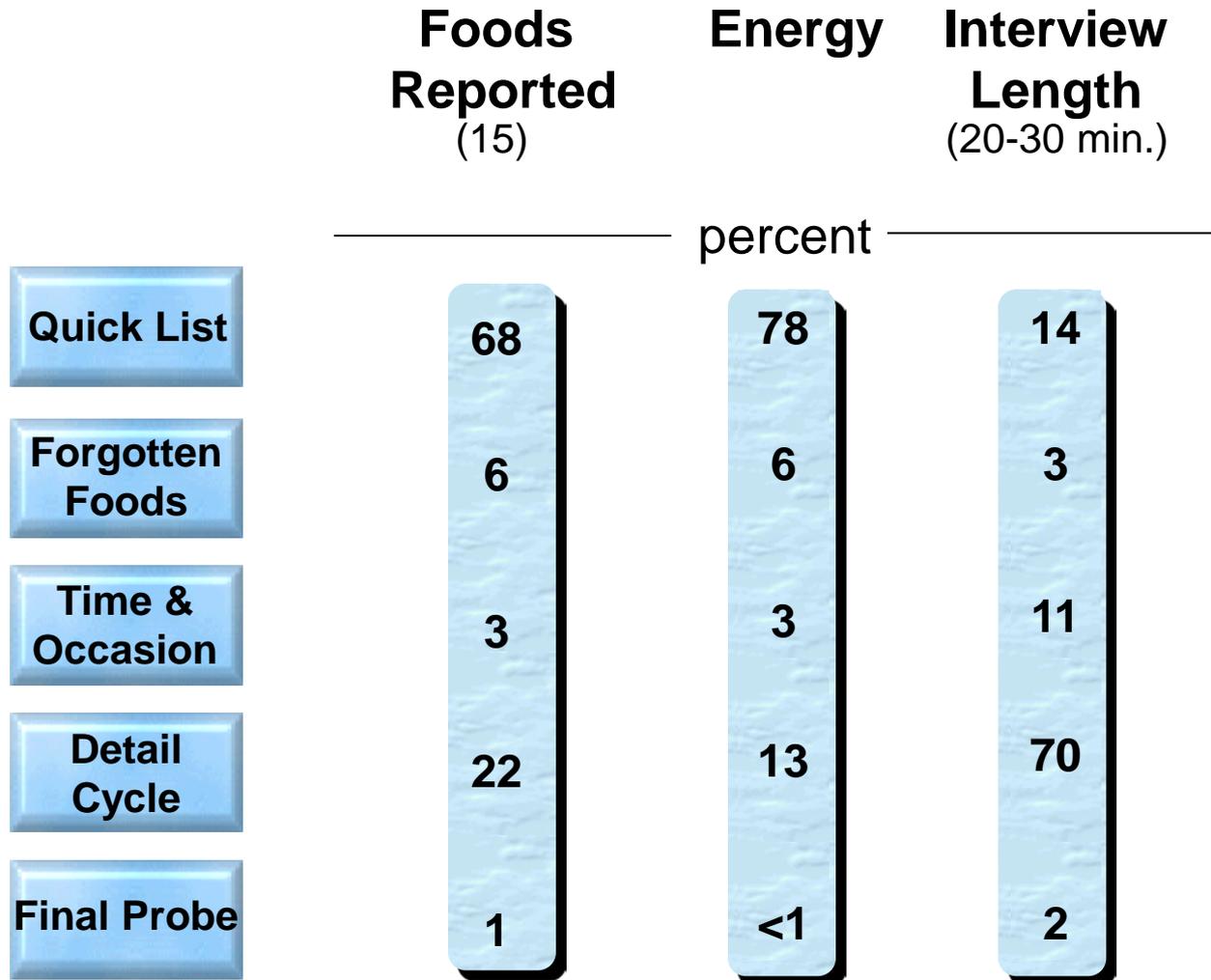
Collects description of each food, additions,
amount eaten, source, & whether eaten at home
Reviews each occasion and
intervals between occasions

Step 5

Final Probe

Provides final opportunity to recall foods

Contribution by Step



AMPM Validation Study

Objective: Validate AMPM

- Compare estimated energy intake to objective measure of expenditure [Doubly labeled water technique]

Study Design

- 524 adults, 30-69 yrs, from Washington, DC metro area
- 5 cohorts, July 2002 – June 2004
- 14-day study period for each subject
- Three 24-hr recalls collected using AMPM
 - first in person, others by telephone
 - two week day, one weekend day
- Numerous other health and physical activity measures
- Repeatability Study on sub sample of 49 subjects



Doubly labeled Water Technique

Doubly labeled water contains:

- 2 stable, non-radioactive, naturally occurring isotopes
- $^2\text{H}_2\text{O}$ (deuterium) and H_2^{18}O (oxygen-18)

Method

- Dose each individual with enriched amount of isotopes
 - ~0.10 g $^2\text{H}_2\text{O}$ /kg body wt
 - ~0.08 g H_2^{18}O /kg body wt
- Equilibrates in body over extended period
- Isotopic enrichment in urine provide non-subjective way to accurately estimate energy expenditure

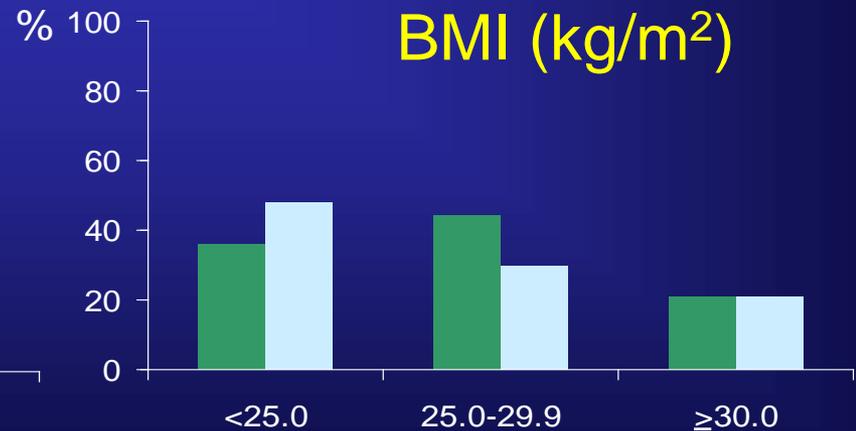
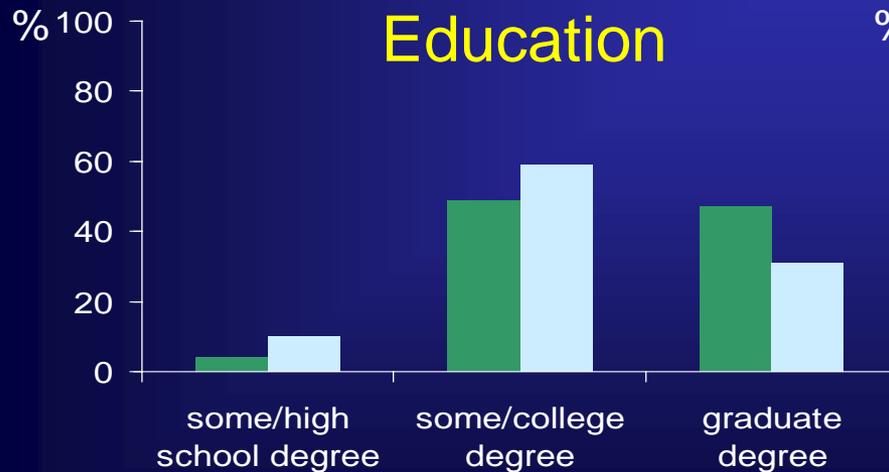
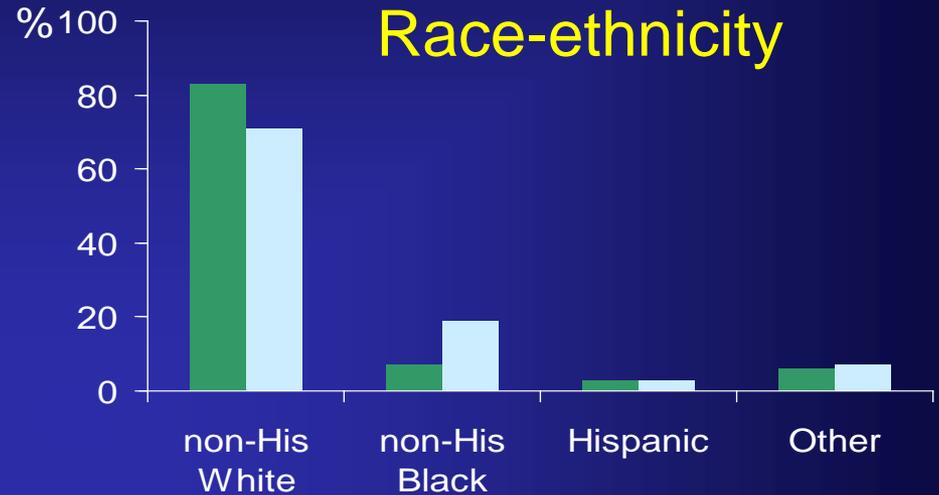
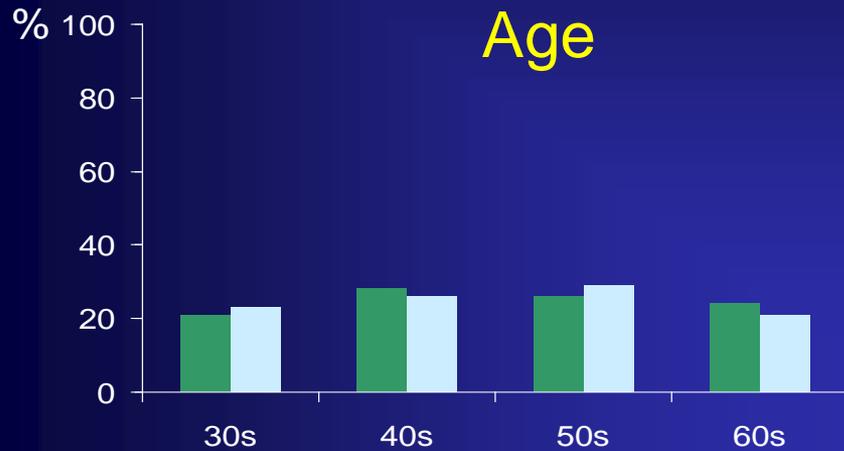
Exclusion Criteria

- Not in generally good health
- Not weight stable
- Actively pursuing weight loss/gain
- Medication use affecting food intake, appetite, or water balance
- Pregnant and/or lactating
- Diabetic
- Nutrition professional
- Not in local area before and during their data collection period

Subject Characteristics

Males
n=262

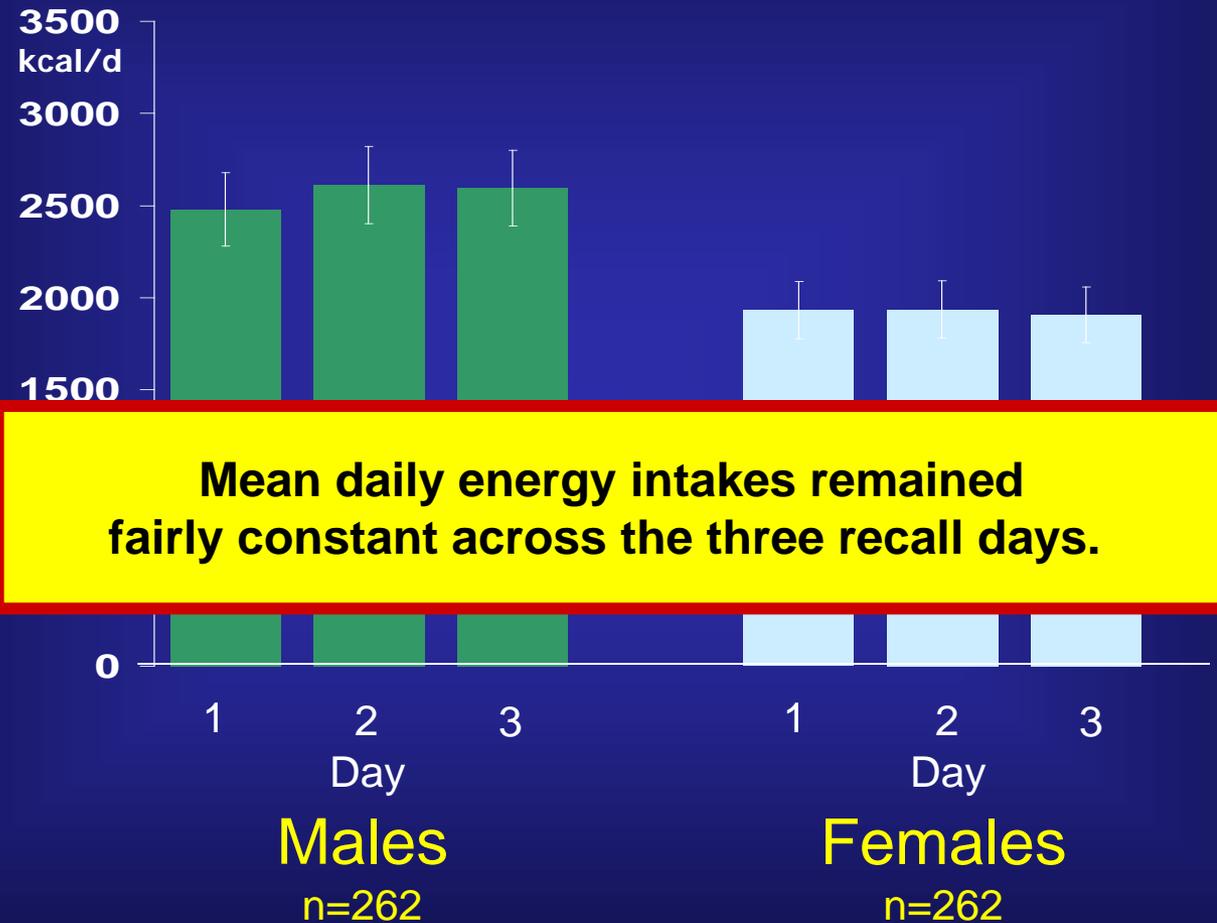
females
n=262



Distribution by Day Of Week For Dietary Recalls

	<u>Male</u>	<u>Female</u>
Monday	15 %	13 %
Tuesday	14	15
Wednesday	16	14
Thursday	14	16
Friday	14	13
Saturday	13	15
Sunday	15	15

Mean Daily Measured Energy Intakes by AMPM



Results of AMPM Validation Study

■ TEE (\bar{x} , 95% CI)
doubly labeled water

■ EI (\bar{x} , 95% CI)
AMPM 3-day average



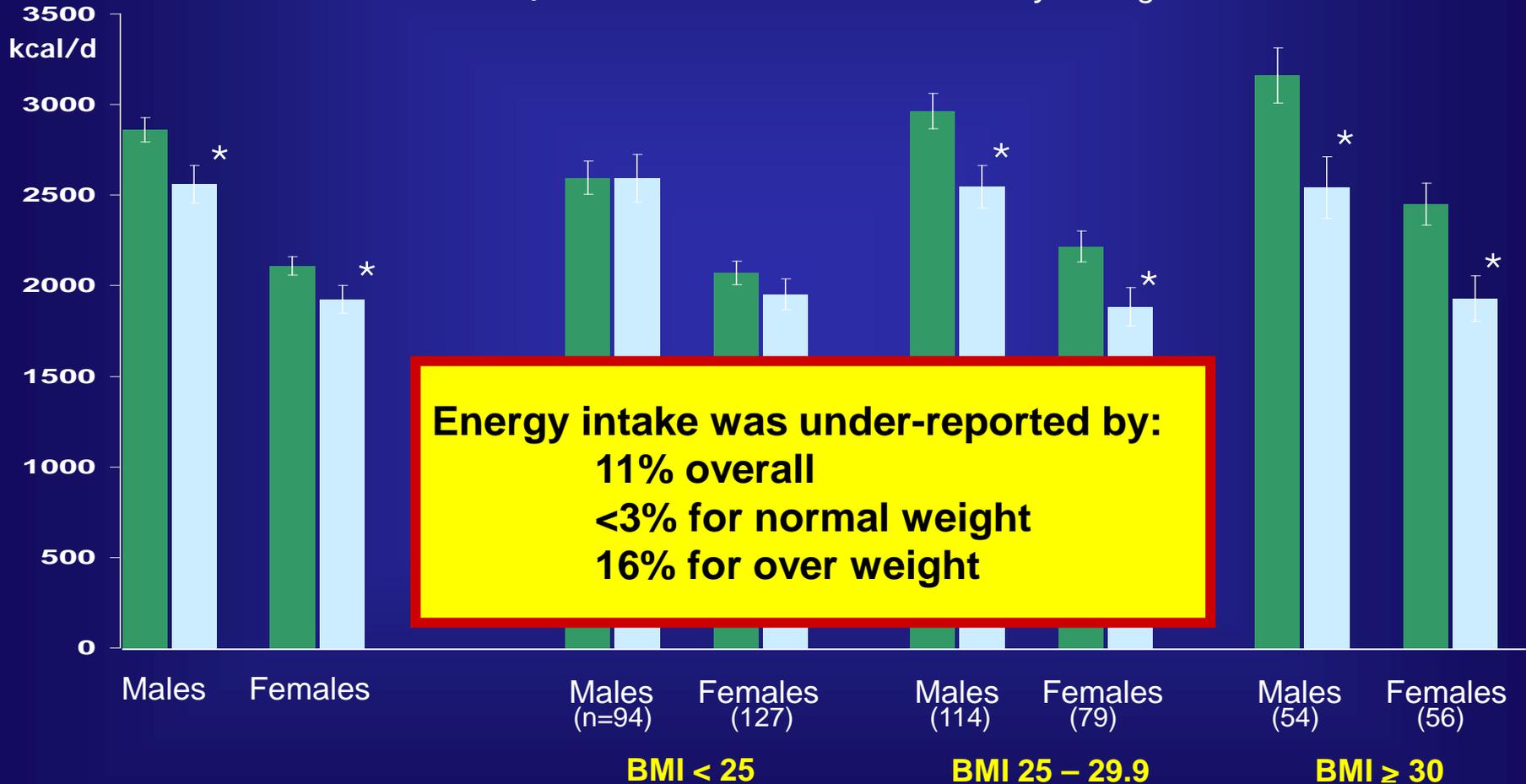
* Significant at <5%

Source: Moshfegh et al, *AJCN* 2008;88:324-32

Results of AMPM Validation Study

■ TEE (\bar{x} , 95% CI)
doubly labeled water

■ EI (\bar{x} , 95% CI)
AMPM 3-day average



Energy intake was under-reported by:
11% overall
<3% for normal weight
16% for over weight

* Significant at <5%

Source: Moshfegh et al, *AJCN* 2008;88:324-32

Percent of Low Energy Reporters*

	<u>Males</u>	<u>Females</u>
All	18	22
Normal weight	7	14
Overweight	19	25
Obese	34	35

*LERs defined as subjects with values below 95% CI of log EI/TEE: <0.72

Source: Moshfegh et al, *AJCN* 2008;88:324-32

AMPM Validation Study Conclusions

- AMPM assessed mean energy intakes within 11% of energy expenditure in a large sample of adults, and
- < 3% in normal-weight subjects.
- Further research is needed to determine what may be contributing to the underreporting observed in overweight and obese subjects.

USDA Dietary Intake Data System

**Automated Multiple
Pass Method**

method for collecting 24-hour dietary recalls



**Post Interview
Processing System**

automates food coding
formats data from AMPM for Survey Net



Survey Net

supports manual coding, quality review,
and nutrient analysis



FNDDS

Food & Nutrient Database for Dietary Studies
supports coding and analysis of food data



USDA Food and Nutrient Database for Dietary Studies

- 7,000+ foods and descriptions
- 30,000+ portions and weights
- Food Coding Scheme for >70 USDA Food Groups
- values for 64 nutrients/components
- USDA National Nutrient Database for Standard Reference
- Best used for group data analysis, not individual analysis

Special Purpose Databases

- FNDDS foods further defined to support specialized research and policy needs
- MyPyramid Equivalents Database – translates foods in FNDDS into 32 MyPyramid food groups defined by USDA Center for Nutrition Policy and Promotion
- Food Commodity Economic Database – translates foods in FNDDS into 65 food commodities at the retail level defined by USDA Economic Research Service

*Thank you for your
attention*

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