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## Food reporting patterns in the USDA Automated Multiple-Pass Method

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### Abstract

Complete and accurate 24-hour dietary recalls are essential for nutrition monitoring in the United States. The USDA Automated Multiple-Pass Method (AMPM) uses a five-step multiple-pass approach to collect dietary data. The first step is an unstructured, uninterrupted listing of all foods and beverages consumed. The next 3 steps use a structured approach to data collection including memory cues. The Final Probe step is an unstructured question for any other foods recalled and includes several additional memory cues. The objective of this analysis is to describe patterns of food reporting in the AMPM in a nationally representative sample. This analysis uses data from the 2007-2008 What We Eat in America, National Health and Nutrition Examination Survey for males and females ages 12 and older. The step in the AMPM interview where a food is first recalled and reported is determined and assigned a value. These values are summed to create an AMPM reporting score which reflects the use of the five steps in AMPM in the 24-hour dietary intake recall. There are significant differences in the AMPM reporting score by day of interview, gender, age and race/ethnicity. The patterns described in this analysis demonstrate the importance of the multiple-pass method in obtaining complete 24-hour dietary recalls.

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### 1. Introduction

USDA monitors the food and nutrient intake of the U.S. population by conducting nationally representative dietary surveys. The current survey, What We Eat in America, National Health and Nutrition Examination Survey (WWEIA, NHANES) has been in continuous operation since 2002. It uses the Automated Multiple-Pass Method (AMPM) computerized interview to collect 24-hour dietary intake data. The AMPM interview is a research based, multiple-pass approach with numerous memory cues integrated into the questions. [1] The five steps in the AMPM provide both structured and unstructured

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opportunities for the respondent to report the foods they consumed. The AMPM has been in continuous use in WWEIA, NHANES since 2002 and has been adapted for use in the Canadian and Australian national health surveys. AMPM has been used for numerous government and private surveys and studies, including studies done for the Food and Nutrition Service and Economic Research Service in USDA, the Environmental Protection Agency, the National Cancer Institute, and the National Institute on Aging. It has also been adapted as the Automated Self-administered 24-hour Recall (ASA24) by the National Cancer Institute, NIH.

From 2002-2004, the Food Surveys Research Group conducted the AMPM Validation Study which used doubly labeled water to evaluate the accuracy of the AMPM by comparing reported energy intake (EI) with total energy expenditure (TEE). The subjects consisted of 524 volunteers, men and women aged 30-69 years. Overall, the subjects, who ranged from normal weight to obese, underreported EI by 11% compared with TEE. Normal weight subjects underreported EI by less than 3%. Approximately 78% of men and 74% of women were classified as acceptable energy reporters (within 95% CI of EI:TEE). [2]

The five steps of the AMPM were designed to encourage individuals to report all their foods and beverages, including water, as they recall them throughout the interview. The percent of foods and energy contributed by each step in the AMPM for males and females ages 12 and over in the 2007-2008 WWEIA, NHANES survey is shown in Table 1. Two-thirds of the foods and over 75% of energy on day 1 are collected in the first step of AMPM which is the Quick List. This demonstrates that the Quick List is an effective method for collecting the majority of foods, but also that it alone does not collect 100% of foods and energy. By the fifth step of AMPM, the Final Probe, respondents recall and report only one percent of foods and less than 0.5 percent of energy.

Table 1. Comparison of Contribution of AMPM Steps

AMPM Step	Day 1 Interview N=6,575		Day 2 Interview N=5,663	
	Percent of Total Foods*	Percent of Total Energy	Percent of Total Foods*	Percent of Total Energy
Quick List	66	78	73	84
Forgotten Foods	8	8	5	4
Time and Occasion	3	2	2	1
Detail Cycle	22	12	19	10
Final Probe	1	<0.5	1	<0.5

WWEIA, NHANES 2007-2008, Ages 12 and over, Mobile Exam Center (MEC) weights

\*"Food" comprises all food and beverages, including water

### 1.1 Multiple-Pass Method

Beginning with USDA's early collection of food intakes in the 1930s, research has focused on the most effective method to collect a complete and accurate 24-hour recall. USDA's research in this area was used to develop the dietary recall method used in the 1994-96, 1998 Continuing Survey of Food Intakes by Individuals (CSFII). The method used in that survey was a three step multiple-pass method. A multiple pass interview includes distinct passes that collect different kinds of information about the foods eaten. Each pass provides respondents with a different approach for remembering foods. In this case, the three passes included the Quick List, Time and Occasion, and Detail passes. Continuing research focused on approaches that would stimulate more complete reporting of foods while keeping respondents engaged in the interview. Several different versions of the multiple-pass method were tested on adults using both

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