# About the Dietary Research Resources of the Risk Factor Monitoring and Methods Branch
## Applied Research Program

## Introduction

The Risk Factor Monitoring and Methods Branch (RFMMB) is one of three branches in the National Cancer Institute's Applied Research Program. RFMMB contributes to reducing cancer in the US by serving as a critical link between etiologic research on cancer risk factors, such as tobacco, diet, physical activity, sun exposure, and genetics and family history, and the translation of such research into targeted and effective interventions for prevention.

Diet is considered one of the major risk factors for cancer and is therefore a primary area of research within RFMMB. The Branch monitors food and nutrient intakes among the general population and selected subpopulations, and it conducts methodological research to increase the precision of dietary intake estimates by improving data capture and analytic procedures.

## Healthy Eating Index (HEI)–2005

The US Department of Agriculture (USDA) and RFMMB staff collaborated to develop the HEI–2005. Published in November 2007, the HEI-2005 replaces the previous HEI. The goals of the HEI-2005 were to:
1) develop a tool that measures compliance with the key diet-related recommendation of the 2005 Dietary Guidelines; and 2) evaluate the psychometric properties of the new index.

http://riskfactor.cancer.gov/tools/hei

## Diet History Questionnaire (DHQ)

The DHQ is a food frequency questionnaire (FFQ) consisting of 124 food items. It also includes both portion size and dietary supplement questions. It takes about 1 hour to complete and was designed based on cognitive research findings, to be easy to use.

Data show that the DHQ provides reasonable nutrient estimates, and three studies have been conducted to assess its validity. The DHQ, like other FFQs, is useful in measuring dietary intakes in large-scale population-based studies in which more detailed methods are not economically or practically feasible. The DHQ is available in web-based or paper format.

http://riskfactor.cancer.gov/DHQ

## Short Dietary Assessment Instruments

RFMMB staff have developed several short dietary assessment instruments and analytical software to process the responses. Although intake estimates are not as accurate as those from more detailed methods, such as 24-hour dietary recalls, these short screeners are useful in situations that do not require assessment of the total diet. They can be used to:

- Characterize a population's mean intakes
- Discriminate among individuals or populations with regard to higher vs. lower intakes
- Examine interrelationships between diet and other variables
- Compare findings from a smaller study to a larger population study.

These instruments have been evaluated in a variety of studies, with reasonably good results. They include:

- Fruit and Vegetable Intake Screeners
- Percent Energy from Fat Screener
- Multifactor Screeners

http://riskfactor.cancer.gov/diet/screeners

## Calibration/Validation Register

The Dietary Assessment Calibration/ Validation (DACV) Register contains studies and publications which compare dietary intake estimates from two or more assessment methods, including:

- Food records or diaries
- 24-hour dietary recalls
- Food frequency questionnaires (FFQ)
- Dietary histories
- Observed intakes
- Chemical analyses of duplicate collections of foods consumed
- Biological assessments

http://appliedresearch.cancer.gov/dacv

## Glycemic Index Values Database

NCI has developed Glycemic Index (GI) values for individual foods. This file provides GI values for those foods consumed by adults and queried on the DHQ or other FFQs used at NCI. Two files are provided. The first is organized by USDA food codes. The second is organized by DHQ food groups consistent with line items on the questionnaire.

http://riskfactor.cancer.gov/tools/glycemic

## Web-based Automated Self-administered 24-hour Recall (ASA24)

The interviewer-administered 24-hour recall has long been regarded as the best methodology because it provides the highest-quality, least biased dietary data for a single day. Its disadvantage is that it is costly and therefore not practical in research settings with large sample sizes and/or a need to collect data for multiple days. The development of an automated 24-hour recall (ASA24) could potentially change data collection in large-scale population nutrition research. The NCI is leading the development of the ASA24 software for an easy-to-use instrument that will be publicly available using state-of-the-art automated computer technology.

http://riskfactor.cancer.gov/tools/instruments/asa24.html

## Usual Intake Estimation

NCI has developed a method to estimate usual dietary intakes of foods and nutrients. This method can be used for a variety of applications, including estimating:

- The distribution of usual food or nutrient intake for a population or subpopulation,
- Individual food or nutrient intake for use in a disease model, and
- The effects of individual covariates on food or nutrient consumption.

http://riskfactor.cancer.gov/diet/usualintakes

## Measures of the Food Environment

This website, developed by RFMMB staff, provides a compilation of articles that include community-level measures of the food environment. Many of the instruments used in the studies are also available on the website. The food environment is defined to include food stores, restaurants, schools, and worksites. The database includes all articles published in English-language, peer-reviewed journals from January 1990 to the present.

Measurement of the food environment and its effects on dietary behavior is a relatively new, but growing, field of inquiry. The goal of the website is to enable access to existing measures of the food environment and stimulate the development of the next generation of tools.

https://riskfactor.cancer.gov/mfe/

## Genes, Environment, and Health Initiative (GEI)

In collaboration with our NIH partners, we are supporting the research and development of innovative wearable sensors to accurately measure dietary intake. This project is part of the NIH-wide GEI, with $16 million in funding over 4 years for 7 grants. GEI investigators are using cell phone technology to capture and/or transmit data, pairing camera/video/audio components with automated processing technology (e.g., image detection, voice recognition), and tailoring web-based software for children.

http://www.gei.nih.gov