## Assessing Prevalence and Trends in Obesity: Navigating the Evidence

Accurate and meaningful estimates of prevalence and trends are fundamental to describing and understanding the scope of obesity. Policy makers, program planners, and other stakeholders search for and use reports relevant to their population(s) of interest to inform decision making. Interpreting and appropriately applying information derived from such reports, however, is challenging because of inconsistencies in methodologies and presentation that exist in the literature.

For this reason, the Robert Wood Johnson Foundation asked the National Academies of Sciences, Engineering, and Medicine to convene an expert committee to examine the approaches to data collection, analysis, and interpretation that have been used in recent reports on obesity prevalence and trends at the national, state, and local level, particularly among U.S. children, adolescents, and young adults. In the resulting report, *Assessing Prevalence and Trends in Obesity: Navigating the Evidence,* the committee offers a description of the landscape of the literature, a framework for assessing and interpreting published reports, and recommendations for improving future data collection efforts, and filling data gaps.

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LANDSCAPE OF DATA COLLECTION, DATA SOURCES, AND ANALYSIS

The prevailing approach used to classify obesity status is body mass index (BMI). Data used to calculate BMI can be collected through directly measuring heights and weights, or by asking individuals (self-report) or parents and guardians (proxy-report) for such information. Reported data, however, generally lead to prevalence estimates different than those calculated from directly measured values. A variety of data sources record participants' heights and weights, including population surveys, school-based assessments, clinical and public health administrative data, and cohort studies. The number of individuals included, the demographic information collected, and population represented are some of the characteristics that differ across these data sources. The approach to analyzing the data is determined by a number of factors, including the intent of the specific analysis, the quality control measures taken during data collection, the study design from which the data were derived, and the amount of data available.
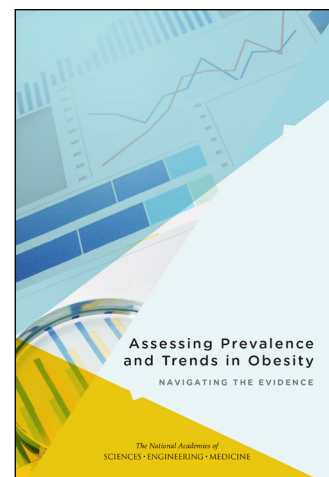
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CHALLENGES FACED IN EVALUATION

Interpreting obesity prevalence and trends estimates relies on considerations specific to obesity status assessment, principles that are founded in epidemiology, and concepts that are fundamental to statistics. The committee drew on its findings about inconsistencies that exist in the literature to make the following conclusions:

1) *Current sources of data*—Existing data sources vary by factors including study design, geographic representation, data collection methodologies, and overall intent. These differences can limit the comparability of reports.

2) *Data for specific population groups*—Inclusion of subgroups in data sources provides essential insight into how obesity prevalence and trends estimates vary within and between population groups. Yet insufficient sample size is a primary limitation to generating reliable estimates.

3) *Measured versus reported data*—Although all measures have limitations, directly measured height and weight data collected using a standardized protocol provide the best estimates of obesity prevalence. Self- and proxy-reported height and weight data can be used to fill data gaps and provide insight into overall obesity trends, although these data collection methods do not produce prevalence estimates comparable to those based on direct measure.

4) *Estimates of changes and trends over time*—Comparability of trend reports is enhanced when analyses use similar start and end dates and time intervals to define the trend.

5) *Interpretation of estimates*—Appropriate interpretation of estimates of obesity prevalence and trends requires consideration of the population in the sample, the data collection methodologies, and the analytic procedures together in a guided way.
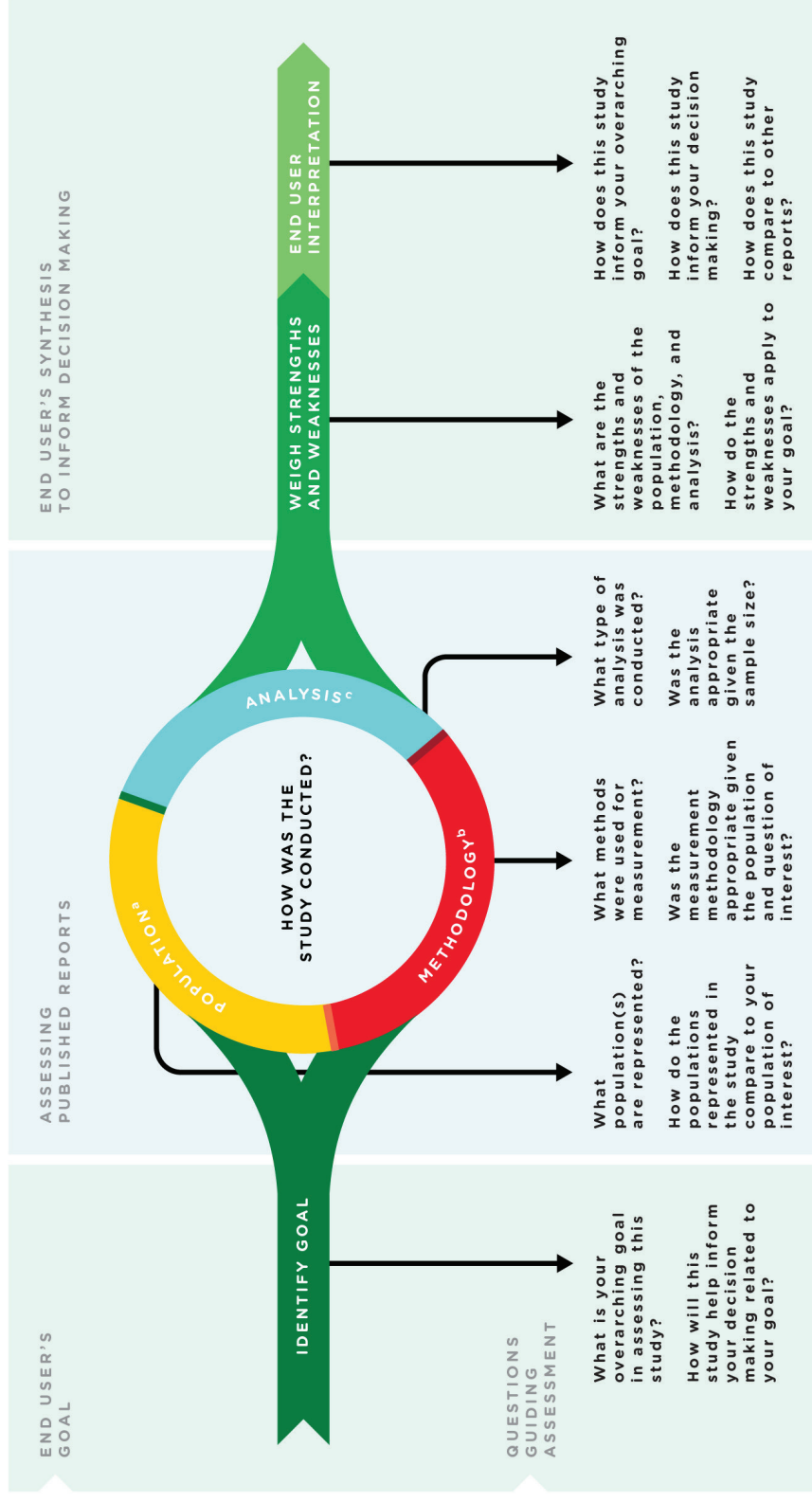
THE ASSESSING PREVALENCE AND TRENDS FRAMEWORK

Stakeholders who operate at the national, state, and local levels often have different and distinct information needs when it comes to obesity prevalence and trends literature. The extent to which available analyses meet those needs varies considerably. Individuals are therefore likely to have different priorities when it comes to the strengths and weaknesses of published reports.

To help guide the interpretation and application of estimates, the committee offers the Assessing Prevalence and Trends (APT) Framework (see Figure on next page) and recommends that it be used by those who use or seek to use estimates of obesity prevalence and trends to inform policy making, program planning, and decision making ("end users"). The framework draws on the committee's synthesis of key considerations related to inconsistencies in the literature while simultaneously drawing on fundamental principles of epidemiology and statistics. It is separated into three phases, with questions tracked to each to guide the process:

1) identification of goal or information need, including a consideration of the decision to be made as well as the need for additional information to fill gaps in the evidence;

2) assessment of published reports, including assessment of the three core components (population, methodology, analysis) to inform the interpretation of the estimate; and

3) synthesis to inform decision making, in which end users turn back to their goal in order to synthesize and interpret the report(s) findings in the context of their information needs for decision making.

Assessing Prevalence and Trends (APT) Framework: Interpreting Obesity Studies

END USER'S GOAL

ASSESSING PUBLISHED REPORTS

END USER'S SYNTHESIS TO INFORM DECISION MAKING

QUESTIONS GUIDING ASSESSMENT

IDENTIFY GOAL

POPULATION[a] · **METHODOLOGY[b]** · **ANALYSIS[c]**

HOW WAS THE STUDY CONDUCTED?

WEIGH STRENGTHS AND WEAKNESSES

END USER INTERPRETATION

What is your overarching goal in assessing this study?

How will this study help inform your decision making related to your goal?

What population(s) are represented?

How do the populations represented in the study compare to your population of interest?

What methods were used for measurement?

Was the measurement methodology appropriate given the population and question of interest?

What type of analysis was conducted?

Was the analysis appropriate given the sample size?

What are the strengths and weaknesses of the population, methodology, and analysis?

How do the strengths and weaknesses apply to your goal?

How does this study inform your overarching goal?

How does this study inform your decision making?

How does this study compare to other reports?

[a] Population refers to individuals assessed in the report
[b] Methodology refers to all the elements related to study design and data collection
[c] Analysis refers to all elements related to data processing, cleaning, and statistical analysis

Committee on Evaluating Approaches to Assessing Prevalence and Trends in Obesity

Shari Barkin (Chair)
Vanderbilt University Medical Center

Cheryl A.M. Anderson
University of California San Diego

Lynn A. Blewett
University of Minnesota

Elizabeth Goodman
Harvard Medical School

Ross Hammond
The Brookings Institution

Sandra Hassink
American Academy of Pediatrics

Amy H. Herring
University of North Carolina at Chapel Hill

Giridhar Mallya
(until September 2015)
Philadelphia Department of Public Health

Michael G. Perri
University of Florida

Eduardo Sanchez
American Heart Association

Jackson P. Sekhobo
New York State Department of Health

Shumei S. Sun
(from July 2015)
Virginia Commonwealth University

Study Staff

Meghan Quirk
Study Director

Janet Mulligan
Senior Program Associate for Research
(until January 2016)

Anna Bury
Research Assistant
(from December 2015)

Renee Gethers
Senior Program Assistant

Ann L. Yaktine
Director, Food and Nutrition Board

Sponsor

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RECOMMENDATIONS FOR MOVING TOWARD MORE CONSISTENT DATA

Decisions about how data are collected, analyzed, and interpreted are based on more than just the rationale presented in a published report. Factors such as cost, existing infrastructure, and available resources also play a role in the selection of a study design and the success of its implementation. With this in mind, the committee recommends that an organization with a track record of cross-sector leadership in the field of obesity, such as the National Collaborative on Childhood Obesity Research or the Robert Wood Johnson Foundation, convene a broad range of relevant stakeholders to examine and identify feasible and practical approaches to standardizing methodologies for data collection and reporting. These would be appropriate for application at the national, state, and local levels to enhance comparability of obesity prevalence and trend analyses.

The assessment of obesity prevalence and trends estimates continues to change with technological, methodological, and statistical advancements. Some of the inconsistencies and limitations that currently exist in the literature represent prime opportunities for improvement and progress. For this reason, the committee recommends that the research community design and conduct studies to strengthen the evidence base and improve methodological approaches to assessing obesity.

CONCLUSION

This report evaluates the strengths and weaknesses associated with existing approaches to collecting obesity data, creating estimates of obesity prevalence, and assessing trends. It also recommends ways to systematically assess obesity-related reports, given these strengths and weaknesses, to understand and interpret the information the reports provide. As such, it serves as an important starting point for moving toward comparable, more unified data collection, analysis, and reporting practices to inform crucial public health policy and program planning decisions. ♦♦♦

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