

40 years of federal nutrition research fatally flawed: Study shows flaws in NHANES data

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Four decades of nutrition research funded by the Centers for Disease Control and Prevention (CDC) may be invalid because the method used to collect the data was seriously flawed, according to a new study by the Arnold School of Public Health at the University of South Carolina.

The study, led by Arnold School exercise scientist and epidemiologist Edward Archer, has demonstrated significant limitations in the measurement protocols used in the National Health and Nutrition Examination Survey (NHANES). The findings, published in *PLOS ONE* (The Public Library of Science), reveal that a majority of the [nutrition](#) data collected by the NHANES are not "physiologically credible," Archer said.

These results suggest that without valid population-level data, speculations regarding the role of energy intake in the rise in the prevalence of obesity are without empirical support, he said.

The NHANES is the most comprehensive compilation of data on the health of children and adults in the United States. The survey combines interviews of self-reported food and beverage consumption over 24 hours and physical examinations to assess the health and nutritional status of the US population. Conducted by the CDC and the U.S. Department of Agriculture, the NHANES is the primary source of data used by researchers studying the impact of nutrition and diet on health.

The study examined data from 28,993 men and 34,369 women, 20 to 74

years old, from NHANES I (1971 – 1974) through NHANES (2009 – 2010), and looked at the [caloric intake](#) of the participants and their energy expenditure, predicted by height, weight, age and sex. The results show that—based on the self-reported recall of food and beverages—the vast majority of the NHANES data "are physiologically implausible, and therefore invalid," Archer said.

In other words, the "calories in" reported by participants and the "calories out," don't add up and it would be impossible to survive on most of the reported energy intakes. This misreporting of energy intake varied among participants, and was greatest in obese men and women who underreported their intake by an average 25 percent and 41 percent (i.e., 716 and 856 Calories per-day respectively).

"Throughout its history, the NHANES survey has failed to provide accurate estimates of the habitual caloric consumption of the U.S. population," Archer said. "Although improvements were made to the NHANES measurement protocol after 1980, there was little improvement to the validity of U.S. nutritional surveillance."

These limitations "suggest that the ability to estimate population trends in caloric intake and generate public policy relevant to diet-health relationships is extremely limited," said Archer, who conducted the study with colleagues at the Arnold School.

"The nation's major surveillance tool for studying the relationships between nutrition and health is not valid. It is time to stop spending tens of millions of [health](#) research dollars collecting invalid data and find more accurate measures," he said.

More information: [dx.plos.org/10.1371/journal.pone.0076632](https://doi.org/10.1371/journal.pone.0076632)

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