Americans' vitamin D levels increased from 2001-2002 to 2021-2023

Background

Vitamin D is found naturally in a few foods such as fish-liver oils, fatty fishes, mushrooms, egg yolks, and liver. In the United States, vitamin D commonly is added to milk and other foods.

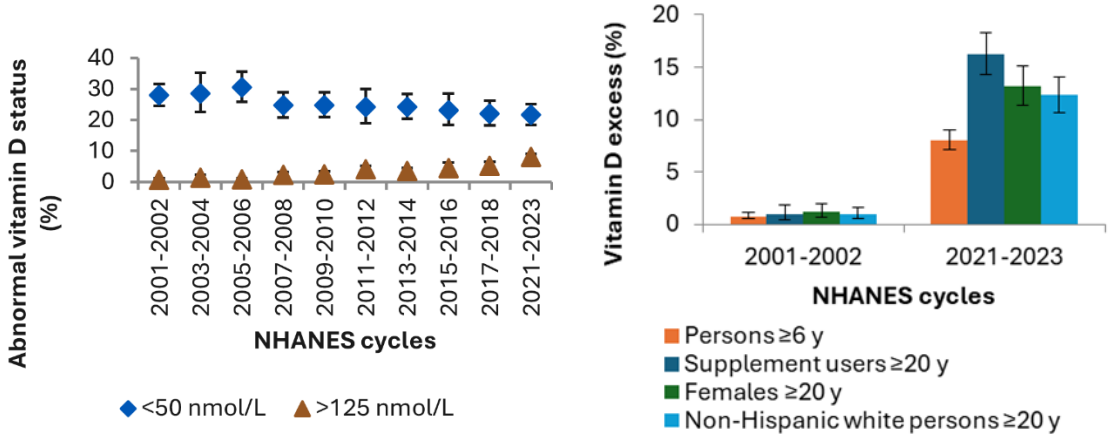
Vitamin D is essential for good bone health and is being studied for possible roles in muscle function and other health outcomes.

Ultraviolet light from the sun helps people form vitamin D in the skin. It is transported to the liver and converted to 25-hydroxyvitamin D. Doctors use this form of vitamin D to determine whether a person has enough vitamin D because it is a good reflection of the vitamin D that people receive from food and exposure to sunlight.

Intake recommendations

The Institute of Medicine recommends 400 international units of vitamin D per day as an adequate level for infants from birth through 12 months of age. The *Dietary Guidelines for Americans* recommend vitamin D supplementation for breastfed infants and infants who have less than 32 ounces of infant formula per day.

Vitamin D insufficiency decreased, whereas vitamin D excess increased



Source: National Health and Nutrition Examination Survey (NHANES) 2001-2002 to August 2021–August 2023.

Vitamin D insufficiency (25-hydroxyvitamin D <50 nmol/L) decreased from 28% to 22%, while excess (25-hydroxyvitamin D >125 nmol/L) increased from <1% to 8% between 2001-2002 and August 2021-August 2023 (left graph) in U.S. persons 6 years and older. Excess serum 25-hydroxyvitamin D concentrations increased most in adult supplement users, females, and non-Hispanic White persons (right graph).

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The report found that differences in vitamin D deficiency by race and Hispanic origin observed in 2001-2002 still existed in August 2021-August 2023 (not shown). The greatest vitamin D deficiency—or vitamin D levels that were too low—were in non-Hispanic Black persons.

However, clinical data show greater bone density and fewer fractures in this group compared with other race and Hispanic origin groups. These findings should be interpreted in the context of prior evidence that bone-health outcomes do not always align with serum 25-hydroxyvitamin D concentrations across population groups. The race and Hispanic origin differences were less in August 2021–August 2023 compared to 2001–2002.

Additional information about vitamin D is available at https://www.cdc.gov/infant-toddler-nutrition/vitamins-minerals/vitamin-d.html.

The 2026 Nutrition Report provides:

- Nutritional biomarker information for dietary supplement users and non-users
- Reference information for physicians and scientists to detect high or low nutrient levels in people
- A look at nutrient levels over time to see trends in nutrition status
- Numbers that can be used to compare the effectiveness of nutrition interventions