

# Yearly Trend of Obesity Prevalence among Hospitalized Patients in the United States: 2017–2021

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## Background

- The prevalence of obesity (body mass index [BMI] ≥ 30 kg/m<sup>2</sup>) and class III obesity (BMI ≥ 40 kg/m<sup>2</sup>) in the United States (US) general population increased steadily during the past decades and is still on the rise.
- Understanding the patient characteristics and predicting the trajectory of inpatient population with obesity is important for healthcare providers to be prepared with appropriate logistics, equipment, and healthcare resources to treat these patients.

## Objectives

- We aimed to describe yearly trend of obesity prevalence among hospitalized patients between 2017 and 2021.

## Methods

### Study Design and Data Source

- Retrospective cross-sectional study using the PINC AI™ Healthcare Database (PHD), a large geographically diverse hospital-based inpatient and outpatient discharge database, which accounts for one in four US inpatient discharges.

### Study Population

#### Inclusion criteria:

- Age ≥ 20 years on index admission date
- Had an inpatient visit at one of the PHD hospitals between January 1, 2017, and December 31, 2021
- Had valid height and weight records in PHD

#### Exclusion criteria:

- Pregnancy-related visit

### Outcomes

- Prevalence of obesity and class III obesity

### Definitions and Statistical Analysis

- Class I obesity was defined as BMI ≥ 30.0 and < 35.0 kg/m<sup>2</sup>, class II obesity as BMI ≥ 35.0 and < 40.0 kg/m<sup>2</sup>, and class III obesity as BMI ≥ 40.0 kg/m<sup>2</sup>.
- Descriptive statistics are reported using mean (standard deviation) or median (1<sup>st</sup> quartile, 3<sup>rd</sup> quartile) for continuous variables and as counts and percentages for categorical variables.

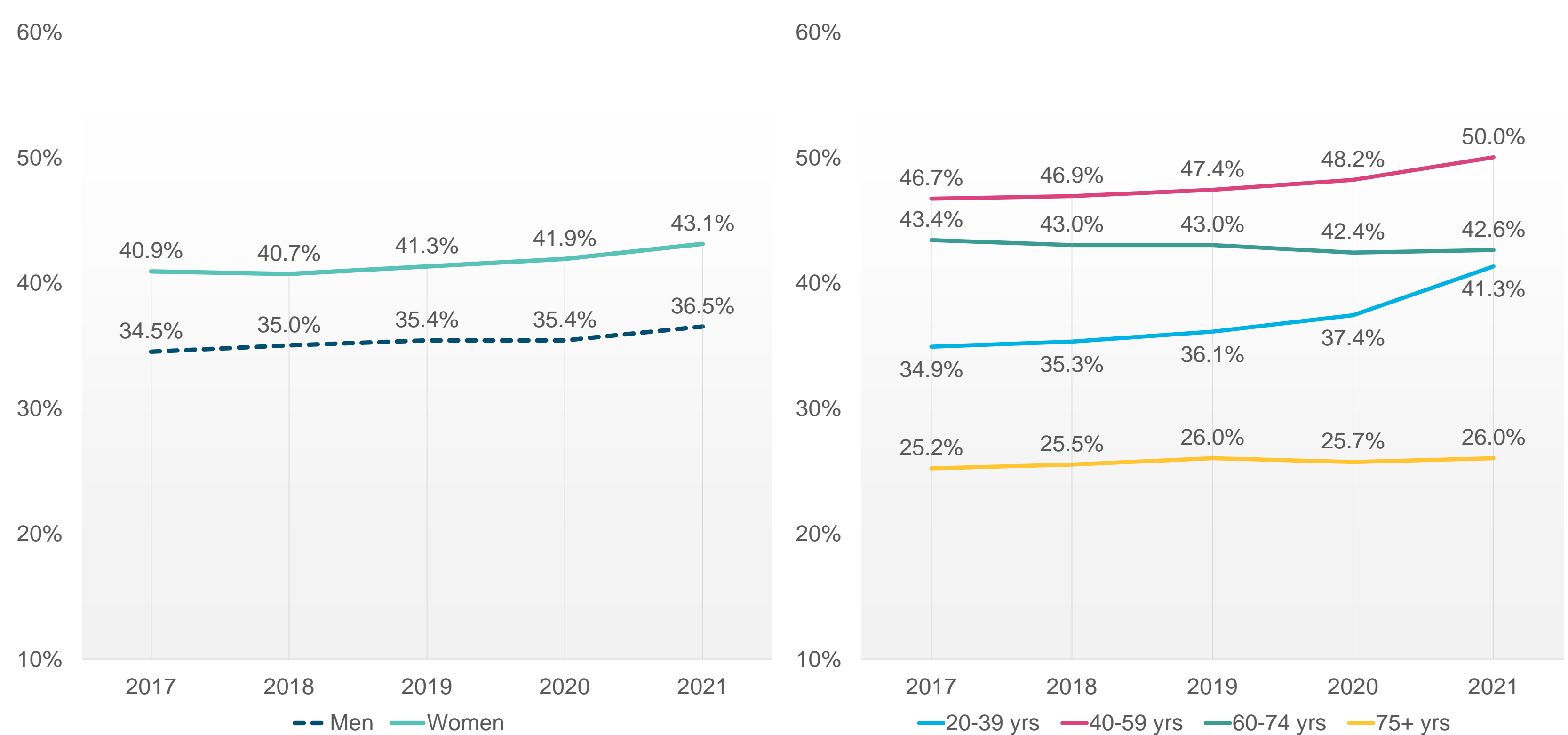
## Results

- Among 2,824,488 hospitalized patients, 38.5% were with obesity (n=1,087,630). The mean BMI was 29.3 (±8.0) kg/m<sup>2</sup> among all patients and 37.0 (±7.2) kg/m<sup>2</sup> among patients with obesity.
- Overall, most patients visited a large (500+ beds, 39.4%), non-teaching (52.4%), and urban (84.1%) hospitals in the South (58.5%). Distribution of hospital characteristics were similar for patients with obesity.
- Among patients with obesity, mean age was 60.4 (15.7) years, 54.9% were women, 76.7% were White, and 7.8% were Hispanic. Most common comorbid conditions were diabetes mellitus (42.3%), chronic pulmonary disease (28.9%), congestive heart failure (22.6%), and renal disease (20.0%).
- Between 2017 and 2021, the prevalence of obesity increased from 37.9% to 39.8% and the prevalence of class III obesity increased from 8.6% to 9.8% (Table).

**Table. Prevalence of obesity among hospitalized patients between 2017–2021**

|                          | 2017<br>(N = 474,010) | 2018<br>(N = 611,559) | 2019<br>(N = 649,573) | 2020<br>(N = 595,282) | 2021<br>(N = 494,064) |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Obesity, Overall</b>  | 179,710 (37.9%)       | 232,043 (37.9%)       | 249,473 (38.4%)       | 229,948 (38.6%)       | 196,456 (39.8%)       |
| <b>Class I Obesity</b>   | 93,037 (19.6%)        | 119,354 (19.5%)       | 128,164 (19.7%)       | 117,896 (19.8%)       | 97,818 (19.8%)        |
| <b>Class II Obesity</b>  | 45,830 (9.7%)         | 59,746 (9.8%)         | 64,033 (9.9%)         | 58,741 (9.9%)         | 50,350 (10.2%)        |
| <b>Class III Obesity</b> | 40,843 (8.6%)         | 52,943 (8.7%)         | 57,276 (8.8%)         | 53,311 (9.0%)         | 48,288 (9.8%)         |

**Figure. Prevalence of obesity by sex and age group among hospitalized patients between 2017–2021**



## Results

- Among men (n = 1,387,211), prevalence of obesity increased from 34.5% to 36.5% and class III obesity increased from 6.5% to 7.3%. Among women (n = 1,437,207), prevalence of obesity increased from 40.9% to 43.1% and class III obesity increased from 10.5% to 12.3% (Figure).
- The overall prevalence of obesity was highest among 40-59 years old patients at 47.8% and lowest among 75+ years old patients at 25.7%.
- The largest increase in prevalence of obesity was observed among patients in the 20-39 years old age group, from 34.9% to 41.3% (Figure).
- The largest increase in prevalence of class III obesity was also observed among patients in the 20-39 years old age group, from 10.4% to 14.3%.

## Conclusions

- The prevalence of obesity among hospitalized adult patients is approximately 40% and similar to that of national prevalence of obesity among adults.
- Women and middle-aged patients had the highest prevalence of obesity and class III obesity.
- Overall prevalence of obesity increased steadily between 2017 and 2021 and most notably among 20-39 years old patients.

## References

- Hales CM et al. JAMA. 2018 Apr 24;319 (16):1725.
- Nielsen JD et al. PLOS One. 2013;8 (6):e65764
- Hales CM et al. NCHS Data Brief, no 360. National Center for Health Statistics. 2020.
- PINC AI™ Applied Sciences, Premier Inc. PINC AI™ Healthcare Database: Data that informs and performs (White Paper). April 2023. <https://offers.premierinc.com/rs/381-NBB-525/images/Premier-Healthcare-Database-Whitepaper-Final.pdf>

## Disclosures

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