Name: Obesity

Short Description: Percentage of adults who have a body mass index ≥ 30.0 kg/m² (calculated from self-reported weight and height as a crude prevalence).

Data Source(s):

- Name: The Centers for Disease Control and Prevention (CDC) Behavioral Risk Factor Surveillance System (BRFSS), accessed via the PLACES Project Data Portal
- Link to Source: https://chronicdata.cdc.gov/browse?category=500+Cities+%26+Places&sortBy=newest&utf8

Year(s): 2018

Source Geographic Level: Zip Code Tabulation Area (ZCTA)

Stratification: Not available

Selection Rationale: Obesity is linked to mental wellness in various ways: obesity can be a marker of poor environment, experiencing trauma can increase likelihood of developing obesity, social stigma associated with being overweight can take a mental toll on individuals, and often medications used to treat mental health issues can lead to obesity.[1]

Strengths and Limitations

- **Strengths**:
  - [*Importance*] Obesity is associated with higher odds of mood and anxiety disorders, as well as significant psychosocial burden that may impact self-esteem, quality of life, and body image.[2,3]
  - [*Feasibility*] The data are easily downloadable from PLACES and maintained by the CDC Division of Population Health, Epidemiology and Surveillance Branch.
  - [*Scientific Soundness*] The methods used by the CDC to generate these small area estimates account for the associations between individual health outcomes, individual characteristics, and spatial contexts. CDC's internal and external

[1] Davies, N. (2016, February 26). *Mental Illness and Obesity*. Psychiatry Advisor. https://www.psychiatryadvisor.com/home/conference-highlights/aaic-2015-coverage/mental-illness-and-obesity/

[2] Sarwer, D. B., & Polonsky, H. M. (2016). The psychosocial burden of obesity. *Endocrinology and Metabolism Clinics of North America, 45*(3), 677–688. https://doi.org/10.1016/j.ecl.2016.04.016

[3] Simon, G. E., Von Korff, M., Saunders, K., Miglioretti, D. L., Crane, P. K., van Belle, G., & Kessler, R. C. (2006). Association between obesity and psychiatric disorders in the US adult population. *Archives of General Psychiatry*, *63*(7), 824-830. https://doi.org/10.1001/archpsyc.63.7.824

validation studies confirm strong consistency between small area estimates and direct BRFSS survey estimates at state and county levels.[4]
    - [*Relevance and Usability*] This measure is easily understandable, and information on obesity levels can be used to inform decisions about where to focus efforts to address the impacts of obesity at the community level (noting the importance of ensuring healthcare providers are equipped to prevent stigmatization of patients who are overweight).[5]
- **Limitations**:
    - [*Relevance and Usability*] While obesity has been found to be associated with higher odds of mood and anxiety disorders, the same relationship may not hold true for substance use disorders, possibly because food and drugs may compete for the same reward pathways in the brain.[6,7] However, recent research has suggested that during the COVID-19 pandemic, people with obesity may be at higher risk for higher substance use due to the impacts of stress.[8]
    - [*Relevance and Usability*] This measure is a model-based estimate,[9] so it may be difficult to interpret on its own.
    - [*Scientific Soundness*] This measure is self-reported and depends on the accuracy of the person surveyed.
    - [*Scientific Soundness*] Age-adjusted prevalence is not available at the census tract level, so these data are reported as a crude prevalence.

Calculation:

$$Obesity\ prevalence = \frac{Respondents\ aged \geq 18\ years\ who\ have\ a\ body\ mass\ index\ \geq 30.0\ \frac{kg^2}{m}\ on\ self\ reported\ weight\ and\ height\ ^*}{Respondents\ aged\ 18\ years\ for\ whom\ BMI\ can\ be\ calculated\ from\ their\ self\ reported\ weight\ and\ height\ ^{**}}\ x\ 100\%$$

*Excludes the following:

- Height: data from respondents measuring < 3 ft or ≥ 8 ft

[4] Centers for Disease Control and Prevention. (2020a, December 8). *PLACES Methodology*. https://www.cdc.gov/places/methodology/

[5] Watman, M.J. (2012). *Weight Bias and Discrimination: A Challenge for Healthcare Providers*. Obesity Action Coalition. https://www.obesityaction.org/community/article-library/weight-bias-and-discrimination-a-challenge-for-healthcare-providers

[6] Sansone, R. A., & Sansone, L. A. (2013). Obesity and substance misuse: is there a relationship? *Innovations in Clinical Neuroscience, 10*(9-10), 30–35. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3849872/

[7] Simon, G. E., Von Korff, M., Saunders, K., Miglioretti, D. L., Crane, P. K., van Belle, G., & Kessler, R. C. (2006). Association between obesity and psychiatric disorders in the US adult population. *Archives of General Psychiatry*, *63*(7), 824-830. https://doi.org/10.1001/archpsyc.63.7.824

[8] Almandoz, J. P., Xie, L., Schellinger, J. N., Mathew, M. S., Bismar, N., Ofori, A., Kukreja, S., Schneider, B., Vidot, D., & Messiah, S. E. (2021). Substance use, mental health and weight-related behaviours during the COVID - 19 pandemic in people with obesity. *Clinical Obesity*, *11*(2). https://doi.org/10.1111/cob.12440

[9] Centers for Disease Control and Prevention. (2020a, December 8). *PLACES Methodology*. https://www.cdc.gov/places/methodology/

- Weight: data from respondents weighing < 50 lbs or ≥ 650 lbs
- BMI: data from respondents with BMI < 12 kg/m2 ≥ 100 kg/m2
- Pregnant women

** Excludes unknowns, refusals to provide weight or height and exclusions listed below:

- Height: data from respondents measuring < 3 ft or ≥ 8 ft
- Weight: data from respondents weighing < 50 lbs or ≥ 650 lbs
- BMI: data from respondents with BMI < 12 kg/m2 ≥ 100 kg/m2
- Pregnant women[10]

Note - BRFSS estimates the crude prevalence based on self-reports using small area estimation and multilevel regression and poststratification, which links geocoded health surveys and high spatial resolution population demographic and socioeconomic data.[11]

[10] Centers for Disease Control and Prevention. (2020b, December 8). *PLACES Measure Definitions*. https://www.cdc.gov/places/measure-definitions

[11] Centers for Disease Control and Prevention. (2020a, December 8). *PLACES Methodology*. https://www.cdc.gov/places/methodology/