

Heart Failure-Related Mortality Rates According to Race/Ethnicity, Sex, and Age

- HF mortality rates have been increasing since 2012.
- Reported rates of mortality that rely on the underlying causes of death identified in death certificates grossly underestimate HF-related mortality.²
- HF was a contributing cause in 415,922 deaths in the US in 2020.³ (Table 1) This suggests that approximately 72%-79% of deaths that could be attributed to HF are not actually being reported or captured as HF-related deaths.
- Based on historical data from CDC WONDER, among older adults 75 years and older, age-adjusted mortality rates (AAMRs) attributable to HF declined from 1999 to 2012.¹ However, since 2012, AAMRs attributable to HF in older adults appear to have increased through 2019 (Fig. 1).¹

Table 1: Absolute Deaths and AAMRs of Heart Failure Mortality Stratified by Sex⁴

Males			Females		
Year	Absolute Deaths, n	AAMR per 100,000 population	Year	Absolute Deaths, n	AAMR per 100,000 population
All-cause deaths related to heart failure					
2018	178988	108.8	2018	187476	78.3
2019	186204	110.2	2019	191395	78.9
2020	208395	120.2	2020	207527	84.6
Cardiovascular deaths related to heart failure					
2018	113212	69.4	2018	178988	49.6
2019	118055	70.4	2019	186204	49.8
2020	121940	70.9	2020	208395	49.6

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Table 2: Global Prevalence and Mortality of Cardiomyopathy and Myocarditis by Sex, 2020⁵

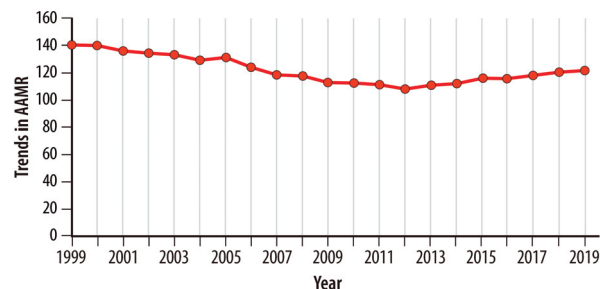
	Both sexes		Male		Female	
	Deaths (95% UI)	Prevalence (95% UI)	Deaths (95% UI)	Prevalence (95% UI)	Deaths (95% UI)	Prevalence (95% UI)
Total number (millions), 2020	0.37 (0.33 to 0.41)	6.11 (5.02 to 7.22)	0.23 (0.20 to 0.25)	3.41 (2.81 to 4.04)	0.14 (0.12 to 0.17)	2.70 (2.23 to 3.22)
Percent change in total number, 1990-2020	43.01 (29.79 to 55.73)	59.95 (53.96 to 66.69)	57.86 (42.26 to 74.64)	61.68 (55.04 to 68.81)	24.56 (10.88 to 37.41)	57.81 (51.84 to 64.72)
Percent change in total number, 2010-2020	-0.95 (-6.03 to 4.03)	18.24 (15.58 to 21.14)	-1.07 (-7.37 to 5.36)	17.23 (14.36 to 20.43)	-0.76 (-6.61 to 5.54)	19.54 (16.56 to 22.98)
Rate per 100,000, age standardized, 2020	4.69 (4.15 to 5.11)	76.92 (63.29 to 91.56)	6.20 (5.53 to 6.85)	88.75 (73.37 to 104.96)	3.32 (2.73 to 3.81)	65.88 (54.01 to 78.66)
Percent change in rate, age standardized 1990-2020	-37.21 (-42.14 to -32.33)	-7.07 (-11.11 to -3.50)	-31.01 (-36.65 to -24.75)	-6.25 (-10.08 to -2.95)	-45.57 (-51.30 to -40.75)	-7.90 (-12.50 to -3.75)
Percent change (%) in rate, age standardized 2010-2020	-23.86 (-27.57 to -20.17)	-1.40 (-3.11 to 0.19)	-22.81 (-27.35 to -18.16)	-2.48 (-4.45 to 0.71)	-25.15 (-29.40 to -20.44)	-0.08 (-2.33 to 1.96)

During each annual GBD Study cycle, population health estimates are produced for the full time series. Improvements in statistical and geospatial modeling methods and the addition of new data sources may lead to changes in past results across GBD Study cycles. GBD= Global Burden of Disease Study; UI = uncertainty interval.

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Figure 1: Trends in HF-Related Mortality Among Older Adults in the US, 1999-2019¹

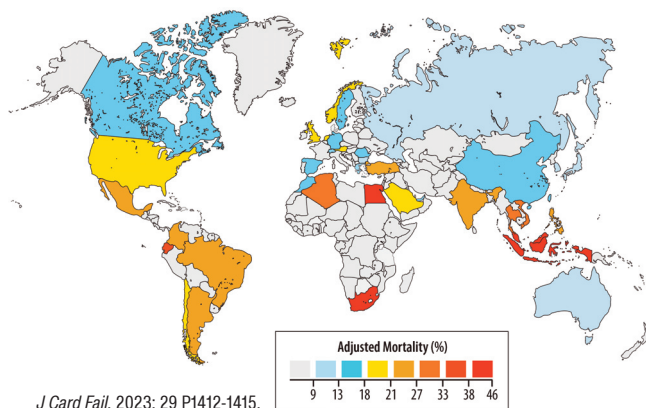
The overall AAMR declined from 1999-2012 followed by an increase from 2012-2019



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- Globally, based on estimates from GBD, there were 370,000 deaths attributable to cardiomyopathy and myocarditis in 2020 (Table 2). Again, these numbers likely represent a very small percentage of deaths attributable to cardiomyopathies and myocarditis as the diagnostic and coding criteria widely vary.
- Global mortality rates vary widely based on geographic region. (Fig. 2)
- Mortality patterns appear to vary by income, with lower income countries and countries with greatest income inequality displaying highest post-discharge mortality rates.

Figure 2: World Map Showing 1 Year Mortality Rates Adjusted for Age, HF Diagnosis, and NYHA Class⁶



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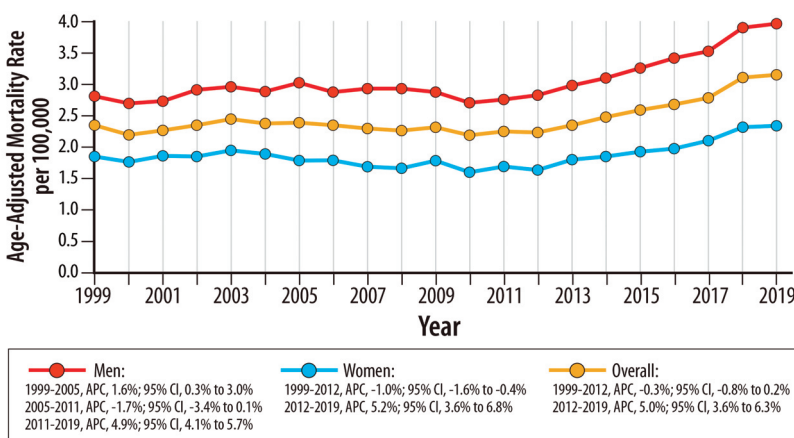
Table 3: United States Heart Failure Age-Adjusted Mortality Rate Per 100,000 Among Individuals Age 25+ Years⁷

	Non-Hispanic American Indian or Alaska Native	Non-Hispanic Asian or Pacific Islander	Non-Hispanic Black or African American	Non-Hispanic White	Hispanic
Heart Failure					
2020	21.1 (18.8-23.4)	12.9 (12.3-13.5)	41.4 (40.6-42.2)	33.1 (32.9-33.4)	18.8 (18.2-19.4)
2015	23.2 (20.4-26.0)	11.2 (10.6-11.9)	35.9 (35.1-36.8)	32.1 (31.8-32.3)	17.5 (16.9-18.1)
2010	24.6 (21.2-28.1)	10.3 (9.5-11.1)	30.5 (29.7-31.4)	27.5 (27.3-27.8)	15.4 (14.7-16.1)
All-Cause Mortality					
2010	1503.2 (1484.3-1522.1)	710.6 (706.1-715.1)	1640.2 (1635.2-1645.2)	1256.1 (1254.5-1257.8)	1088.9 (1084.8-1093.0)
2010	1194.9 (1176.1-1213.6)	593.4 (588.7-598.2)	1300.5 (1295.7-1305.3)	1134.8 (1133.3-1136.4)	786.3 (782.3-790.2)
2010	1213.2 (1191.4-1235.0)	639.8 (633.9-645.7)	1369.7 (1364.3-1375.0)	1137.0 (1135.4-1138.6)	837.1 (832.4-841.9)

Heart failure is indicated by codes ICD-10 I50.0, I50.1, I50.9. The parentheses represent 95% confidence intervals (CI). *J Card Fail.* 2023; 29 P1412-1415.

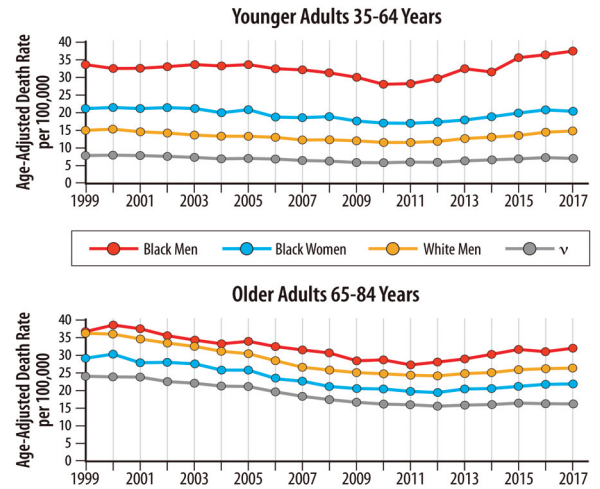
- Age-adjusted HF mortality rates are highest for non-Hispanic Black individuals. (Table 3)
- Black, American Indian, and Alaska Native individuals with HF have the highest all-cause age-adjusted mortality compared with other racial and ethnic groups. (Table 3)
- From 2010 to 2020, HF mortality rates have increased for Black women and men at a rate faster than any other racial or ethnic group, particularly for individuals below the age of 65. (Table 3)^{4,7}
- All-cause mortality rates among patients with HF are also higher for Black individuals compared with other racial and ethnic groups (Table 3).⁷
- AAMRs for HF have increased in the last decade with similar patterns of increase in women and men. (Table 1, Fig. 3)⁴
- Men have a higher AAMR for cardiovascular deaths related to HF and all-cause deaths related to HF (Figs. 3,4).^{6,8}
- HF-related mortality is much higher in older (age 65-84 years) compared with younger (age 35-64 years) patients.¹⁰

Figure 3: All-Cause Deaths Related to Heart Failure, by Sex^{6,8}



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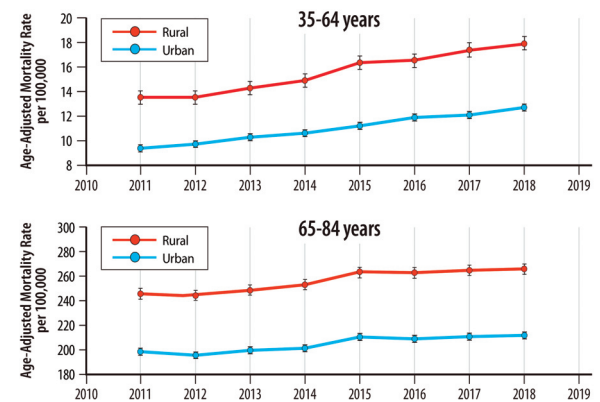
Figure 4: Cardiovascular Deaths Related to Heart Failure by Race and Sex^{6,8}



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- HF is associated with a loss of 15 years of median survival for adults aged 65-90 years compared with the general US population.
- A greater relative annual increase in HF-related mortality rates has been noted for younger (35-64 years) compared with older (65-84 years) adults. (Fig. 5)⁹

Figure 5: Annual Nationwide HF-Related Mortality Rates Stratified by Age and Rural-Urban Status⁹



Centers for Disease Control and Prevention Wide-ranging Online Data for Epidemiologic Research 2011-2018.⁹

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- Rural areas demonstrate higher HF mortality rates for both younger and older age groups compared with urban areas. (Fig. 5)⁹



For more information visit <https://hfsa.org/hf-stats>



References:

1. Siddiqi TJ, Khan Minhas AM, Greene SJ, Van Spall HGC, Khan SS, Pandey A, et al. Trends in heart failure-related mortality among older adults in the United States from 1999-2019. *JACC Heart Fail* 2022;10:851–9.
2. Lee DS, Gona P, Albano I, Larson MG, Benjamin EJ, Levy D, et al. A systematic assessment of causes of death after heart failure onset in the community: impact of age at death, time period, and left ventricular systolic dysfunction. *Circ Heart Fail* 2011;4:36–43.
3. Tsao CW, Aday AW, Almarzooq ZI, Anderson CAM, Arora P, Avery CL, et al. Heart disease and stroke statistics-2023 update: A report from the American Heart Association. *Circulation* 2023;147:e93–e621.
4. Centers for Disease Control and Prevention and National Center for Health Statistics. National Vital Statistics System: public use data file documentation: mortality multiple cause-of-death micro-data files, 2017. 2022 [cited 2023 Feb 2]. Available from: https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm
5. Institute for Health Metrics and Evaluation. Global Burden of Disease study. 2020 [cited 2023 Jul 9]. Car-diomyopathy and myocarditis — Level 3 cause. Available from: https://www.healthdata.org/results/gbd_summaries/2019/cardiomyopathy-and-myocarditis-level-3-cause
6. Tromp J, Beusekamp JC, Ouwerkerk W, van der Meer P, Cleland JGF, Angermann CE, et al. Regional differences in precipitating factors of hospitalization for acute heart failure: insights from the REPORT-HF registry. *Eur J Heart Fail* 2022;24:645–52.
7. Centers for Disease Control and Prevention. CDC WONDER. [cited 2023 Jul 9]. Underlying cause of deaths, 1999-2020. Available from: <https://wonder.cdc.gov/Deaths-by-Underlying-Cause.html>
8. Glynn P, Lloyd-Jones DM, Feinstein MJ, Carnethon M, Khan SS. Disparities in cardiovascular mortality related to heart failure in the United States. *J Am Coll Cardiol* 2019;73:2354–5.
9. Pierce JB, Shah NS, Petito LC, Pool L, Lloyd-Jones DM, Feinglass J, et al. Trends in heart failure-related cardiovascular mortality in rural versus urban United States counties, 2011-2018: a cross-sectional study. *PLoS One* 2021;16:e0246813.
10. Centers for Disease Control and Prevention National Center for Health Statistics. CDC WONDER. [cited 2023 Jul 9]. Multiple Cause of Death 1999-2020. Available from: <https://wonder.cdc.gov/wonder/help/mcd.html>

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