

**Supplementary Table SI. Cardiac Arrest with Diabetes Mellitus related mortalities in Adults,
Stratified by Sex and Race, in the United States, 1999 to 2024**

Deaths								
Year	Overall	Women	Men	NH White	NH Black	NH Others	Hispanic	Population
1999	37,661	20,029	17,632	26,094	6,243	1,596	3,598	180,408,769
2000	37,234	19,466	17,768	25,759	6,212	1,588	3,563	181,984,640
2001	37,834	19,638	18,196	25,838	6,394	1,631	3,846	184,305,128
2002	38,383	19,770	18,613	25,858	6,620	1,803	3,973	186,208,028
2003	38,376	19,489	18,887	25,478	6,703	1,872	4,219	188,090,429
2004	37,774	19,121	18,653	24,937	6,829	1,813	4,085	190,205,384
2005	39,228	19,516	19,712	25,585	7,123	1,929	4,526	192,551,384
2006	38,834	19,270	19,564	25,220	7,054	2,023	4,478	195,019,359
2007	38,849	19,116	19,733	25,177	6,942	2,047	4,625	197,403,777
2008	39,172	19,295	19,877	25,458	6,942	2,124	4,594	199,795,090
2009	38,945	18,780	20,165	25,407	6,932	2,075	4,470	202,107,016
2010	39,959	19,141	20,818	25,935	6,952	2,156	4,806	203,891,983
2011	40,437	19,208	21,229	26,195	7,049	2,204	4,873	206,592,936
2012	41,317	19,380	21,937	26,526	7,060	2,415	5,201	208,826,037
2013	42,256	19,676	22,580	27,082	7,187	2,442	5,429	211,085,314
2014	41,697	19,114	22,583	26,427	7,120	2,475	5,538	213,809,280
2015	44,242	20,120	24,122	27,772	7,709	2,723	5,843	216,553,817
2016	44,743	19,907	24,836	27,816	7,702	2,846	6,226	218,641,417
2017	47,320	20,882	26,438	29,296	8,111	3,095	6,646	221,447,331
2018	47,637	20,737	26,900	29,157	8,458	3,202	6,653	223,311,190
2019	47,749	20,628	27,121	29,434	8,282	3,150	6,753	224,981,167
2020	61,526	26,457	35,069	34,994	11,270	4,516	10,552	226,635,013
2021	63,411	27,187	36,224	36,635	11,399	4,352	10,485	228,238,412
2022	58,619	25,128	33,491	34,787	10,298	4,015	8,965	229,508,599
2023	52,065	21,837	30,228	30,830	8,841	3,697	8,128	231,529,762
2024	50,991	21,340	29,651	29,834	8,855	3,675	8,054	231,529,762
Total	1,146,259	534,232	612,027	723,531	200,287	67,464	150,129	5,394,661,024

NH = Non-Hispanic

Supplementary Table SII. Cardiac Arrest with Diabetes Mellitus related Mortality in Adults, Stratified by Place of Death, in the United States, 1999 to 2024

Deaths				
Year	Medical Facility	Nursing Home/Long-term Care Facility	Hospice Facility	Home
1999	23,001	7,088	-	6,902
2000	22,352	7,062	-	7,106
2001	22,276	7,395	-	7,375
2002	22,354	7,439	-	7,711
2003	22,033	7,293	41	8,070
2004	21,429	7,230	69	8,093
2005	22,043	7,493	116	8,627
2006	21,435	7,427	193	8,931
2007	21,187	7,288	218	9,214
2008	20,654	6,930	303	9,303
2009	19,739	6,836	351	9,458
2010	21,033	6,974	427	10,510
2011	21,014	7,198	433	10,711
2012	20,879	7,238	502	11,544
2013	20,871	7,308	628	12,178
2014	20,655	6,848	477	12,450
2015	21,902	7,160	511	13,395
2016	21,932	6,901	509	13,953
2017	22,808	7,313	558	15,128
2018	22,889	7,075	560	15,597
2019	22,502	6,852	636	16,101
2020	29,365	8,299	603	21,193
2021	31,752	7,123	564	21,595
2022	27,459	7,400	614	20,670
2023	24,118	7,201	576	18,348
2024	23,736	6,913	512	17,815
Total	591,418	187,284	9,401	321,978

Supplementary Table SIII. Annual percent change (APC) of Cardiac Arrest with Diabetes Mellitus related Age-Adjusted Mortality Rates per 100,000, in Adults in the United States, 1999 to 2024

Year Interval	APC (95% CI)	P-value
Overall		
1999-2018	-0.94* (-1.25 to -0.69)	< 0.001
2018-2021	11.02* (7.04 to 13.02)	< 0.001
2021-2024	-9.76* (-12.46 to -7.29)	< 0.001
Men		
1999-2018	-0.34 (-0.69 to 0.01)	0.056789
2018-2021	9.33* (4.48 to 11.53)	< 0.001
2021-2024	-7.73* (-12.77 to -4.84)	< 0.001
Women		
1999-2018	-1.63* (-1.91 to -1.41)	< 0.001
2018-2021	10.73* (6.71 to 12.58)	< 0.001
2021-2024	-10.47* (-13.25 to -8.09)	< 0.001
Younger adults (25-44)		
1999-2018	1.17* (0.54 to 1.67)	0.003
2018-2021	18.15* (10.95 to 21.74)	<0.001
2021-2024	-13.34* (-18.09 to -9.40)	<0.001
Middle-aged adults (45-64)		
1999-2011	-1.04* (-3.65 to -0.35)	0.022
2011-2018	1.85 (-0.26 to 4.58)	0.081
2018-2021	11.75* (7.19 to 14.34)	<0.001
2021-2024	-12.03* (-15.31 to -9.37)	<0.001
Older adults (65+)		
1999-2018	-1.23* (-1.52 to -0.98)	<0.001

2018-2021	9.14* (5.29 to 10.94)	<0.001
2021-2024	-8.21* (-10.90 to -5.95)	<0.001
Hispanic		
1999-2018	-2.29* (-2.96 to -1.76)	< 0.001
2018-2021	13.23* (5.86 to 17.07)	< 0.001
2021-2024	-12.41* (-19.41 to -8.07)	< 0.001
Rural areas		
1999-2020	0.57* (0.10 to 1.08)	0.020396
Urban areas		
1999-2018	-1.16* (-1.50 to -0.91)	< 0.001
2018-2020	13.10* (6.72 to 16.45)	< 0.001
Northeast region		
1999-2018	-1.89* (-2.30 to -1.57)	0.000400
2018-2021	8.65* (3.88 to 11.15)	0.0004
2021-2024	-10.33* (-16.98 to -6.77)	0.000400
South region		
1999-2018	-0.73* (-1.18 to -0.30)	0.000800
2018-2021	9.70* (5.36 to 11.65)	< 0.001
2021-2024	-9.84* (-12.95 to -7.31)	< 0.001
Midwest region		
1999-2015	-0.84* (-1.46 to -0.33)	0.000800
2015-2021	6.62* (4.71 to 10.68)	< 0.001
2021-2024	-7.69* (-13.09 to -3.77)	< 0.001
West region		
1999-2018	-0.80* (-1.16 to -0.46)	< 0.001
2018-2021	12.12* (7.05 to 14.33)	< 0.001
2021-2024	-9.57* (-12.64 to -7.01)	< 0.001

APC = annual percent change; NH = non-Hispanic; * Indicates that the annual percentage change (APC) is significantly different from zero at $\alpha = 0.05$. AAMR = age-adjusted mortality rate. The data for urbanization is only available till 2020 in the CDC Wonder Database

Supplementary Table SIV. Overall and Sex-Stratified Cardiac Arrest with Diabetes Mellitus related Age-Adjusted Mortality Rates per 100,000, in Adults in the United States, 1999 to 2024

Age-Adjusted Rate (95% CI)			
Year	Men	Women	Overall
1999	24.4 (24.0 - 24.7)	19.1 (18.8 - 19.4)	21.3 (21.1 - 21.5)
2000	24.2 (23.8 - 24.6)	18.4 (18.1 - 18.6)	20.8 (20.6 - 21.0)
2001	24.3 (23.9 - 24.6)	18.3 (18.0 - 18.5)	20.8 (20.6 - 21.0)
2002	24.3 (24.0 - 24.7)	18.1 (17.9 - 18.4)	20.7 (20.5 - 20.9)
2003	24.1 (23.8 - 24.5)	17.7 (17.4 - 17.9)	20.4 (20.2 - 20.6)
2004	23.3 (23.0 - 23.7)	17.1 (16.9 - 17.4)	19.8 (19.6 - 20.0)
2005	24.1 (23.8 - 24.5)	17.2 (17.0 - 17.4)	20.1 (19.9 - 20.3)
2006	23.4 (23.0 - 23.7)	16.7 (16.4 - 16.9)	19.5 (19.3 - 19.7)
2007	23.0 (22.7 - 23.3)	16.2 (16.0 - 16.5)	19.2 (19.0 - 19.4)
2008	22.6 (22.3 - 22.9)	16.1 (15.9 - 16.3)	18.9 (18.7 - 19.1)
2009	22.3 (22.0 - 22.7)	15.4 (15.2 - 15.6)	18.4 (18.2 - 18.6)
2010	22.7 (22.4 - 23.0)	15.5 (15.3 - 15.7)	18.6 (18.5 - 18.8)
2011	22.4 (22.1 - 22.7)	15.1 (14.9 - 15.4)	18.3 (18.2 - 18.5)
2012	22.4 (22.1 - 22.7)	15.0 (14.8 - 15.2)	18.3 (18.1 - 18.4)
2013	22.4 (22.1 - 22.7)	14.9 (14.7 - 15.1)	18.2 (18.0 - 18.4)
2014	21.7 (21.5 - 22.0)	14.3 (14.1 - 14.5)	17.6 (17.4 - 17.8)
2015	22.6 (22.3 - 22.9)	14.7 (14.5 - 14.9)	18.2 (18.1 - 18.4)
2016	22.8 (22.5 - 23.1)	14.3 (14.1 - 14.5)	18.0 (17.9 - 18.2)
2017	23.6 (23.3 - 23.9)	14.7 (14.5 - 14.9)	18.6 (18.5 - 18.8)
2018	23.4 (23.1 - 23.7)	14.3 (14.1 - 14.5)	18.4 (18.2 - 18.6)
2019	23.1 (22.8 - 23.3)	13.9 (13.7 - 14.1)	18.0 (17.9 - 18.2)
2020	29.2 (28.9 - 29.6)	17.7 (17.5 - 17.9)	22.9 (22.7 - 23.1)
2021	30.2 (29.9 - 30.5)	18.7 (18.4 - 18.9)	23.9 (23.7 - 24.1)
2022	27.3 (27.0 - 27.6)	16.5 (16.3 - 16.7)	21.3 (21.1 - 21.5)
2023	24.1 (23.8 - 24.4)	14.3 (14.1 - 14.5)	18.7 (18.6 - 18.9)
2024	23.7 (23.4 - 23.9)	13.9 (13.7 - 14.1)	18.3 (18.2 - 18.5)
Total	23.9 (23.6 - 24.2)	16.1 (15.9 - 16.3)	19.5 (19.3 - 19.7)

Supplementary Table SV. Race-Stratified Cardiac Arrest with Diabetes Mellitus related Age-Adjusted Mortality Rates per 100,000, in Adults in the United States, 1999 to 2024

Age-Adjusted Rate (95% CI)				
Year	NH White	NH Black	NH Others	Hispanic
1999	17.6 (17.4 - 17.8)	41.6 (40.6 - 42.7)	34.5 (32.7 - 36.3)	41.8 (40.4 - 43.2)
2000	17.3 (17.1 - 17.5)	40.7 (39.7 - 41.7)	31.8 (30.2 - 33.5)	39.3 (38.0 - 40.7)
2001	17.1 (16.9 - 17.3)	41.1 (40.1 - 42.1)	30.8 (29.2 - 32.3)	39.7 (38.4 - 41.0)
2002	16.9 (16.7 - 17.1)	41.7 (40.7 - 42.8)	32.2 (30.6 - 33.7)	39.0 (37.7 - 40.2)
2003	16.5 (16.3 - 16.7)	41.4 (40.4 - 42.4)	31.7 (30.2 - 33.2)	39.1 (37.9 - 40.3)
2004	16.0 (15.8 - 16.2)	41.3 (40.3 - 42.3)	29.1 (27.7 - 30.5)	35.9 (34.8 - 37.1)
2005	16.1 (15.9 - 16.3)	41.9 (40.9 - 42.9)	29.3 (27.9 - 30.6)	38.0 (36.9 - 39.2)
2006	15.6 (15.4 - 15.8)	40.4 (39.4 - 41.3)	28.7 (27.4 - 30.0)	35.9 (34.8 - 37.0)
2007	15.4 (15.2 - 15.6)	38.9 (38.0 - 39.9)	27.7 (26.4 - 28.9)	35.2 (34.1 - 36.2)
2008	15.3 (15.1 - 15.5)	37.8 (36.9 - 38.7)	27.3 (26.1 - 28.5)	33.2 (32.2 - 34.2)
2009	15.1 (14.9 - 15.3)	36.6 (35.7 - 37.5)	25.3 (24.1 - 26.4)	30.6 (29.6 - 31.5)
2010	15.2 (15.0 - 15.4)	36.0 (35.1 - 36.8)	25.4 (24.3 - 26.5)	31.5 (30.6 - 32.5)
2011	15.1 (14.9 - 15.2)	35.2 (34.4 - 36.1)	24.0 (23.0 - 25.1)	29.7 (28.9 - 30.6)
2012	15.0 (14.8 - 15.2)	34.1 (33.3 - 34.9)	24.6 (23.6 - 25.6)	30.0 (29.1 - 30.8)
2013	15.0 (14.8 - 15.2)	33.5 (32.7 - 34.3)	23.3 (22.3 - 24.2)	29.7 (28.9 - 30.5)
2014	14.4 (14.2 - 14.6)	32.0 (31.2 - 32.7)	21.9 (21.0 - 22.8)	28.4 (27.6 - 29.2)
2015	14.9 (14.8 - 15.1)	33.3 (32.6 - 34.1)	22.6 (21.7 - 23.4)	28.1 (27.4 - 28.9)
2016	14.8 (14.6 - 14.9)	32.2 (31.4 - 32.9)	22.5 (21.7 - 23.4)	28.6 (27.9 - 29.3)
2017	15.3 (15.1 - 15.5)	33.0 (32.3 - 33.7)	23.1 (22.3 - 23.9)	28.9 (28.2 - 29.6)
2018	14.9 (14.8 - 15.1)	33.4 (32.7 - 34.1)	22.6 (21.8 - 23.4)	27.7 (27.0 - 28.3)
2019	14.9 (14.7 - 15.0)	31.8 (31.1 - 32.5)	21.3 (20.5 - 22.1)	26.9 (26.3 - 27.6)
2020	17.5 (17.3 - 17.7)	42.1 (41.3 - 42.9)	29.0 (28.2 - 29.9)	39.7 (39.0 - 40.5)
2021	19.0 (18.8 - 19.2)	42.9 (42.1 - 43.7)	28.9 (28.0 - 29.8)	38.3 (37.5 - 39.1)
2022	17.4 (17.2 - 17.5)	38.0 (37.2 - 38.8)	25.0 (24.2 - 25.7)	31.9 (31.3 - 32.6)
2023	15.3 (15.1 - 15.5)	32.0 (31.3 - 32.7)	22.2 (21.5 - 22.9)	28.0 (27.3 - 28.6)
2024	14.8 (14.6 - 15.0)	32.1 (31.5 - 32.8)	22.0 (21.3 - 22.7)	27.7 (27.1 - 28.3)
Total	15.9 (15.7 - 16.0)	37.1 (36.3 - 38.0)	26.4 (25.3 - 27.5)	33.2 (32.3 - 34.1)

NH = Non-Hispanic

Supplementary Table SVI. Cardiac Arrest with Diabetes Mellitus related Age-Adjusted Mortality Rates per 100,000, Stratified by States, in Adults in the United States, 1999 to 2024

State	Age-Adjusted Rate (95% CI)
Alabama	21.2 (20.9 - 21.6)
Alaska	7.7 (7.0 - 8.4)
Arizona	15.0 (14.7 - 15.2)
Arkansas	15.3 (14.9 - 15.6)
California	43.7 (43.5 - 43.8)
Colorado	9.2 (8.9 - 9.4)
Connecticut	25.5 (25.1 - 25.9)
Delaware	7.6 (7.2 - 8.1)
District of Columbia	12.4 (11.6 - 13.1)
Florida	14.8 (14.6 - 14.9)
Georgia	28.0 (27.7 - 28.3)
Hawaii	32.1 (31.3 - 32.8)
Idaho	9.9 (9.5 - 10.3)
Illinois	7.6 (7.5 - 7.7)
Indiana	12.3 (12.0 - 12.5)
Iowa	11.3 (11.0 - 11.6)
Kansas	13.8 (13.4 - 14.1)
Kentucky	14.0 (13.7 - 14.3)
Louisiana	11.4 (11.2 - 11.7)
Maine	8.7 (8.3 - 9.0)
Maryland	5.7 (5.5 - 5.8)
Massachusetts	15.5 (15.3 - 15.8)
Michigan	9.1 (9.0 - 9.3)
Minnesota	6.5 (6.3 - 6.6)
Mississippi	47.9 (47.2 - 48.5)
Missouri	10.7 (10.5 - 10.9)
Montana	8.8 (8.3 - 9.2)
Nebraska	27.1 (26.5 - 27.7)
Nevada	17.9 (17.4 - 18.3)

New Hampshire	12.3 (11.9 - 12.8)
New Jersey	13.2 (13.0 - 13.4)
New Mexico	11.8 (11.5 - 12.2)
New York	36.6 (36.4 - 36.8)
North Carolina	17.3 (17.1 - 17.5)
North Dakota	13.8 (13.1 - 14.5)
Ohio	21.6 (21.4 - 21.8)
Oklahoma	17.8 (17.4 - 18.1)
Oregon	7.9 (7.7 - 8.2)
Pennsylvania	15.7 (15.5 - 15.8)
Rhode Island	19.3 (18.7 - 20.0)
South Carolina	18.1 (17.8 - 18.4)
South Dakota	10.4 (9.9 - 11.0)
Tennessee	16.2 (16.0 - 16.5)
Texas	14.0 (13.9 - 14.1)
Utah	10.2 (9.8 - 10.5)
Vermont	10.5 (9.9 - 11.1)
Virginia	12.0 (11.8 - 12.4)
Washington	12.2 (12.0 - 12.4)
West Virginia	25.4 (24.8 - 25.9)
Wisconsin	6.2 (6.0 - 6.3)
Wyoming	9.3 (8.7 - 10.0)

Supplementary Table SVII. Cardiac Arrest with Diabetes Mellitus related Age-Adjusted Mortality Rates per 100,000, Stratified by Census Region, in Adults in the United States, 1999 to 2024

	Census Region: NorthEast	Census Region: Midwest	Census Region: South	Census Region: West
Year	Age-Adjusted Rate (95% CI)	Age-Adjusted Rate (95% CI)	Age-Adjusted Rate (95% CI)	Age-Adjusted Rate (95% CI)
1999	26.5 (26.0 - 27.1)	13.1 (12.8 - 13.4)	18.7 (18.3 - 19.0)	30.2 (29.7 - 30.8)
2000	26.1 (25.6 - 26.6)	12.7 (12.4 - 13.1)	18.0 (17.7 - 18.3)	29.7 (29.2 - 30.3)
2001	26.4 (25.9 - 27.0)	12.2 (11.9 - 12.6)	17.8 (17.5 - 18.1)	30.2 (29.7 - 30.8)
2002	26.2 (25.7 - 26.7)	12.3 (12.0 - 12.6)	17.4 (17.1 - 17.7)	30.7 (30.2 - 31.3)
2003	26.1 (25.6 - 26.6)	12.1 (11.8 - 12.4)	17.1 (16.8 - 17.4)	29.9 (29.3 - 30.4)
2004	25.2 (24.7 - 25.7)	11.6 (11.3 - 11.9)	16.4 (16.1 - 16.7)	29.4 (28.9 - 29.9)
2005	25.5 (25.0 - 26.0)	11.5 (11.2 - 11.9)	16.9 (16.6 - 17.3)	29.8 (29.3 - 30.4)
2006	24.3 (23.9 - 24.8)	11.0 (10.7 - 11.3)	16.7 (16.4 - 17.0)	29.2 (28.6 - 29.7)
2007	23.7 (23.2 - 24.2)	11.0 (10.7 - 11.3)	16.4 (16.1 - 16.7)	28.5 (28.0 - 29.0)
2008	22.8 (22.3 - 23.2)	11.3 (11.0 - 11.6)	16.4 (16.1 - 16.7)	27.8 (27.3 - 28.3)
2009	22.3 (21.9 - 22.8)	10.6 (10.3 - 10.9)	16.6 (16.3 - 16.9)	26.3 (25.8 - 26.7)
2010	22.1 (21.6 - 22.5)	10.8 (10.5 - 11.1)	16.3 (16.0 - 16.6)	27.7 (27.2 - 28.2)
2011	21.4 (21.0 - 21.9)	10.9 (10.6 - 11.2)	15.9 (15.6 - 16.2)	27.2 (26.8 - 27.7)
2012	21.1 (20.6 - 21.5)	11.1 (10.8 - 11.4)	15.7 (15.4 - 15.9)	27.5 (27.1 - 28.0)
2013	20.7 (20.2 - 21.1)	11.4 (11.1 - 11.7)	15.9 (15.6 - 16.2)	27.0 (26.5 - 27.4)
2014	19.7 (19.3 - 20.1)	11.1 (10.8 - 11.4)	15.4 (15.1 - 15.6)	25.9 (25.4 - 26.3)
2015	20.3 (19.9 - 20.7)	11.8 (11.5 - 12.1)	15.8 (15.5 - 16.0)	26.9 (26.4 - 27.3)
2016	19.5 (19.1 - 19.9)	11.6 (11.3 - 11.9)	15.8 (15.6 - 16.1)	26.8 (26.3 - 27.2)
2017	19.8 (19.3 - 20.2)	12.3 (12.0 - 12.6)	16.2 (16.0 - 16.5)	27.8 (27.3 - 28.2)
2018	19.5 (19.1 - 19.9)	12.7 (12.4 - 13.0)	16.3 (16.0 - 16.5)	26.4 (26.0 - 26.9)
2019	19.0 (18.6 - 19.4)	12.9 (12.6 - 13.2)	15.3 (15.1 - 15.5)	26.7 (26.3 - 27.1)
2020	25.0 (24.6 - 25.5)	15.8 (15.5 - 16.1)	18.9 (18.6 - 19.1)	34.6 (34.1 - 35.1)
2021	23.2 (22.8 - 23.7)	15.9 (15.6 - 16.3)	20.9 (20.6 - 21.2)	36.8 (36.3 - 37.3)
2022	21.7 (21.2 - 22.1)	14.9 (14.6 - 15.2)	18.1 (17.9 - 18.4)	32.4 (31.9 - 32.8)
2023	18.8 (18.5 - 19.2)	13.0 (12.7 - 13.3)	15.4 (15.2 - 15.7)	29.4 (29.0 - 29.8)
2024	18.2 (17.9 - 18.6)	12.8 (12.5 - 13.1)	15.7 (15.5 - 15.9)	27.9 (27.4 - 28.3)
Total	22.5 (22.1 - 23.0)	12.2 (11.9 - 12.6)	16.8 (16.5 - 17.0)	29.0 (28.5 - 29.4)

Supplementary Table SVIII. Cardiac Arrest with Diabetes Mellitus related Age-Adjusted Mortality Rates per 100,000, Stratified by Urban-Rural Classification, in Adults in the United States, 1999 to 2020

Age-Adjusted Rate (95% CI)		
Year	Urban	Rural
1999	21.8 (21.6 - 22.1)	19.0 (18.5 - 19.5)
2000	21.4 (21.1 - 21.6)	18.5 (18.1 - 19.0)
2001	21.3 (21.1 - 21.6)	18.5 (18.1 - 19.0)
2002	21.2 (21.0 - 21.5)	18.8 (18.3 - 19.2)
2003	20.9 (20.6 - 21.1)	18.5 (18.0 - 18.9)
2004	20.1 (19.9 - 20.4)	18.2 (17.8 - 18.7)
2005	20.5 (20.3 - 20.8)	18.4 (18.0 - 18.9)
2006	19.9 (19.7 - 20.1)	17.9 (17.4 - 18.3)
2007	19.5 (19.3 - 19.7)	17.8 (17.4 - 18.3)
2008	19.1 (18.9 - 19.3)	18.2 (17.8 - 18.6)
2009	18.5 (18.3 - 18.7)	18.5 (18.0 - 18.9)
2010	18.8 (18.6 - 19.0)	17.9 (17.4 - 18.3)
2011	18.4 (18.2 - 18.6)	18.0 (17.6 - 18.4)
2012	18.4 (18.2 - 18.6)	17.9 (17.5 - 18.4)
2013	18.3 (18.1 - 18.5)	18.2 (17.8 - 18.6)
2014	17.6 (17.4 - 17.8)	17.9 (17.4 - 18.3)
2015	18.2 (18.0 - 18.4)	18.6 (18.1 - 19.0)
2016	17.9 (17.7 - 18.1)	19.0 (18.5 - 19.4)
2017	18.5 (18.3 - 18.7)	19.4 (19.0 - 19.9)
2018	18.2 (18.0 - 18.4)	19.6 (19.1 - 20.0)
2019	17.8 (17.6 - 18.0)	19.5 (19.0 - 19.9)
2020	22.8 (22.6 - 23.0)	23.9 (23.4 - 24.4)
Total	19.4 (19.3 - 19.4)	18.7 (18.6 - 18.8)

The data for urbanization is only available till 2020 in the CDC Wonder Database.

Supplementary Table SIX. Age-Stratified Cardiac Arrest with Diabetes Mellitus related Age-Adjusted Mortality Rates per 100-000-in adults, in the United States, 1999 to 2024

Age-Adjusted Rate (95% CI)			
Year	Younger Adults (25-44 years)	Middle-aged Adults (44-65 years)	Older Adults (65+ years)
1999	1 (0.93-1.07)	12.37 (12.09–12.65)	84.89 (83.91–85.86)
2000	1.05 (0.98-1.11)	12.14 (11.86–12.41)	82.63 (81.67–83.58)
2001	1.05 (0.98-1.12)	11.98 (11.71–12.24)	82.83 (81.88–83.78)
2002	1.05 (0.99-1.12)	11.92 (11.66–12.18)	82.63 (81.69–83.58)
2003	1.15 (1.08-1.23)	11.86 (11.60–12.11)	80.76 (79.83–81.69)
2004	1.11 (1.04-1.18)	11.53 (11.28–11.77)	78.21 (77.30–79.12)
2005	1.22 (1.14-1.29)	11.73 (11.48–11.97)	79.55 (78.64–80.45)
2006	1.21 (1.13-1.29)	11.57 (11.33–11.81)	76.81 (75.93–77.70)
2007	1.15 (1.08-1.23)	10.99 (10.76–11.22)	76.11 (75.23–76.99)
2008	1.15 (1.08-1.23)	11.15 (10.92–11.38)	74.50 (73.65–75.36)
2009	1.16 (1.09-1.24)	11.04 (10.81–11.26)	72.13 (71.29–72.97)
2010	1.16 (1.09-1.24)	10.88 (10.66–11.10)	73.49 (72.65–74.33)
2011	1.15 (1.08-1.23)	11.06 (10.84–11.28)	71.64 (70.82–72.45)
2012	1.22 (1.14-1.3)	11.02 (10.80–11.24)	71.24 (70.44–72.04)
2013	1.21 (1.13-1.29)	11.21 (10.99–11.44)	70.68 (69.89–71.47)
2014	1.32 (1.24-1.4)	11.18 (10.96–11.40)	67.35 (66.59–68.11)
2015	1.26 (1.19-1.34)	11.91 (11.69–12.14)	69.33 (68.57–70.10)
2016	1.27 (1.19-1.35)	11.91 (11.69–12.14)	68.37 (67.62–69.11)
2017	1.26 (1.19-1.34)	12.41 (12.18–12.64)	70.54 (69.79–71.29)
2018	1.37 (1.29-1.45)	12.61 (12.38–12.85)	68.67 (67.95–69.40)
2019	1.32 (1.24-1.4)	12.39 (12.16–12.63)	67.34 (66.63–68.05)
2020	2 (1.9-2.1)	16.24 (15.97–16.50)	83.98 (83.19–84.76)
2021	2.15 (2.05-2.25)	17.41 (17.13–17.68)	86.65 (85.85–87.46)
2022	1.85 (1.75-1.94)	14.90 (14.64–15.15)	78.56 (77.81–79.30)
2023	1.52 (1.44-1.6)	12.73 (12.49–12.96)	69.84 (69.15–70.54)
2024	1.47 (1.39-1.55)	12.17 (11.94–12.40)	69.08 (68.39–69.77)
Total	1.3 (1.22-1.38)	12.24 (12-12.48)	75.3 (74.47-76.12)

Supplementary Table SX. CDC WONDER SEARCH STRINGS FOR Cardiac Arrest with Diabetes Mellitus related mortality rates in US from 1999 to 2024

SEARCH STRING FOR 1999 TO 2020

Dataset: Multiple Cause of Death, 1999-2020

Query Parameters:

MCD - ICD-10 Codes: I46.0 (Cardiac arrest with successful resuscitation); I46.1 (Sudden cardiac death, so described); I46.9

(Cardiac arrest, unspecified)

MCD - ICD-10 Codes: AND

MCD - ICD-10 Codes: E10-E14 (Diabetes mellitus)

Ten-Year Age Groups: 25-34 years; 35-44 years; 45-54 years; 55-64 years; 65-74 years; 75-84 years; 85+ years

Group By: Year

Show Totals: True

Show Zero Values: False

Show Suppressed: False

Standard Population: 2000 U.S. Std. Population

Calculate Rates Per: 100,000

Rate Options: Default intercensal populations for years 2001-2009 (except Infant Age Groups)

Help: See <http://wonder.cdc.gov/wonder/help/mcd.html> for more information.

Query Date: Apr 29, 2025 4:41:51 PM

Suggested Citation: Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics

System, Mortality 1999-2020 on CDC WONDER Online Database, released in 2021. Data are from the Multiple Cause of Death Files,

1999-2020, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative

Program. Accessed at <http://wonder.cdc.gov/mcd-icd10.html> on Apr 29, 2025 4:41:51 PM

Caveats:

1. As of April 3, 2017, the underlying cause of death has been revised for 125 deaths in 2014. More information:

<http://wonder.cdc.gov/wonder/help/mcd.html#2014-Revision>.

2. Circumstances in Georgia for the years 2008 and 2009 have resulted in unusually high death counts for the ICD-10 cause of

death code R99, "Other ill-defined and unspecified causes of mortality." Caution should be used in interpreting these data.

More information: <http://wonder.cdc.gov/wonder/help/mcd.html#Georgia-Reporting-Anomalies>.

3. Circumstances in New Jersey for the year 2009 have resulted in unusually high death counts for the

ICD-10 cause of death code

R99, "Other ill-defined and unspecified causes of mortality" and therefore unusually low death counts in other ICD-10 codes,

most notably R95, "Sudden Infant Death Syndrome" and X40-X49, "Unintentional poisoning." Caution should be used in

interpreting these data. More information: <http://wonder.cdc.gov/wonder/help/mcd.html#New-Jersey-Reporting-Anomalies>.

4. Circumstances in California resulted in unusually high death counts for the ICD-10 cause of death code R99, "Other

ill-defined and unspecified causes of mortality" for deaths occurring in years 2000 and 2001. Caution should be used in

interpreting these data. More information: <http://wonder.cdc.gov/wonder/help/mcd.html#California-Reporting-Anomalies>.

5. The populations used to calculate standard age-adjusted rates are documented here: More information:

<http://wonder.cdc.gov/wonder/help/mcd.html#2000 Standard Population>.

6. The method used to calculate age-adjusted rates is documented here: More information:

<http://wonder.cdc.gov/wonder/help/mcd.html#Age-Adjusted Rates>.

7. Deaths of persons with Age "Not Stated" are included in "All" counts and rates, but are not distributed among age groups,

so are not included in age-specific counts, age-specific rates or in any age-adjusted rates. More information:

<http://wonder.cdc.gov/wonder/help/mcd.html#Not Stated>.

8. The method used to calculate 95% confidence intervals is documented here: More information:

<http://wonder.cdc.gov/wonder/help/mcd.html#Confidence-Intervals>.

9. The method used to calculate standard errors is documented here: More information:

<http://wonder.cdc.gov/wonder/help/mcd.html#Standard-Errors>.

10. The population figures for year 2020 are bridged-race estimates of the July 1 resident population, from the Vintage 2020

postcensal series released by NCHS on September 22, 2021. The population figures for year 2019 are bridged-race estimates of the

July 1 resident population, from the Vintage 2019 postcensal series released by NCHS on July 9, 2020. The population figures for

year 2018 are bridged-race estimates of the July 1 resident population, from the Vintage 2018

postcensal series released by NCHS

on June 25, 2019. The population figures for year 2017 are bridged-race estimates of the July 1 resident population, from the

Vintage 2017 postcensal series released by NCHS on June 27, 2018. The population figures for year 2016 are bridged-race

estimates of the July 1 resident population, from the Vintage 2016 postcensal series released by NCHS on June 26, 2017. The

population figures for year 2015 are bridged-race estimates of the July 1 resident population, from the Vintage 2015 postcensal

series released by NCHS on June 28, 2016. The population figures for year 2014 are bridged-race estimates of the July 1 resident

population, from the Vintage 2014 postcensal series released by NCHS on June 30, 2015. The population figures for year 2013 are bridged-race estimates of the July 1 resident population, from the Vintage 2013 postcensal series released by NCHS on June 26, 2014. The population figures for year 2012 are bridged-race estimates of the July 1 resident population, from the Vintage 2012 postcensal series released by NCHS on June 13, 2013. Population figures for 2011 are bridged-race estimates of the July 1 resident population, from the county-level postcensal Vintage 2011 series released by NCHS on July 18, 2012. Population figures for 2010 are April 1 Census counts. The population figures for years 2001 - 2009, are bridged-race estimates of the July 1 resident population, from the revised intercensal county-level 2000 - 2009 series released by NCHS on October 26, 2012. Population figures for 2000 are April 1 Census counts. Population figures for 1999 are from the 1990-1999 intercensal series of July 1 estimates. Population figures for Infant Age Groups are the number of live births.

Note: Rates and population figures for years 2001 - 2009 differ slightly from previously published reports, due to use of the population estimates which were available at the time of release.

11. Changes to cause of death classification affect reporting trends. More information:

[http://wonder.cdc.gov/wonder/help/mcd.html#ICD-10 Changes](http://wonder.cdc.gov/wonder/help/mcd.html#ICD-10%20Changes).

SEARCH STRING FOR 2021 TO 2024

Dataset: Provisional Mortality Statistics, 2018 through Last Week

Query Parameters:

MCD - ICD-10 Codes: I46.0 (Cardiac arrest with successful resuscitation); I46.1 (Sudden cardiac death, so described); I46.9

(Cardiac arrest, unspecified)

MCD - ICD-10 Codes: AND

MCD - ICD-10 Codes: E10-E14 (Diabetes mellitus)

Ten-Year Age Groups: 25-34 years; 35-44 years; 45-54 years; 55-64 years; 65-74 years; 75-84 years; 85+ years

Year/Month: 2021; 2022; 2023; 2024 (provisional)

Group By: Year

Show Totals: True

Show Zero Values: False

Show Suppressed: False

Standard Population: 2000 U.S. Std. Population

Calculate Rates Per: 100,000

Rate Options: Default intercensal populations for years 2001-2009 (except Infant Age Groups)

Help: See <http://wonder.cdc.gov/wonder/help/mcd-provisional.html> for more information.

Query Date: Apr 29, 2025 4:42:26 PM

Suggested Citation: Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, Provisional Mortality on CDC WONDER Online Database. Data are from the final Multiple Cause of Death Files, 2018-2023, and from provisional data for years 2024 and later, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/mcd-icd10-provisional.html> on Apr 29, 2025

4:42:26 PM

Caveats:

1. The populations used to calculate standard age-adjusted rates are documented here: More information:

[http://wonder.cdc.gov/wonder/help/mcd-provisional.html#2000 Standard Population.](http://wonder.cdc.gov/wonder/help/mcd-provisional.html#2000%20Standard%20Population)

2. The method used to calculate age-adjusted rates is documented here: More information:

[http://wonder.cdc.gov/wonder/help/mcd-provisional.html#Age-Adjusted Rates.](http://wonder.cdc.gov/wonder/help/mcd-provisional.html#Age-Adjusted%20Rates)

3. Deaths of persons with Age "Not Stated" are included in "All" counts and rates, but are not distributed among age groups,

so are not included in age-specific counts, age-specific rates or in any age-adjusted rates. More information:

[http://wonder.cdc.gov/wonder/help/mcd-provisional.html#Not Stated.](http://wonder.cdc.gov/wonder/help/mcd-provisional.html#Not%20Stated)

4. The method used to calculate 95% confidence intervals is documented here: More information:

[http://wonder.cdc.gov/wonder/help/mcd-provisional.html#Confidence-Intervals.](http://wonder.cdc.gov/wonder/help/mcd-provisional.html#Confidence-Intervals)

5. The method used to calculate standard errors is documented here: More information:

[http://wonder.cdc.gov/wonder/help/mcd-provisional.html#Standard-Errors.](http://wonder.cdc.gov/wonder/help/mcd-provisional.html#Standard-Errors)

6. The population figures for years 2023 and later are single-race estimates of the July 1 resident population, from the Vintage

2023 postcensal series released by the Census Bureau on June 27, 2024. The population figures for years 2022 and later are

single-race estimates of the July 1 resident population, from the Vintage 2022 postcensal series released by the Census Bureau

on June 22, 2023. The 2022 and 2023 series is based on the Modified Blended Base produced by the US Census Bureau in lieu of the

April 1, 2020 decennial population count. The Modified Blended Base consists of the blend of Vintage 2020 postcensal population

estimates for April 1, 2020, 2020 Demographic Analysis Estimates, and 2020 Census data from the internal Census Edited File

(CEF). The population figures for years 2021 are single-race estimates of the July 1 resident population,

based on the Blended

Base produced by the US Census Bureau in lieu of the April 1, 2020 decennial population count, from the Vintage 2021 postcensal series released by the Census Bureau on June 30, 2022. The population figures for year 2020 are single-race estimates of the

July 1 resident population, from the Vintage 2020 postcensal series based on April 2010 Census, released by the Census Bureau on

July 27, 2021. The population figures for year 2019 are single-race estimates of the July 1 resident population, from the

Vintage 2019 postcensal series based on April 2010 Census, released by the Census Bureau on June 25, 2020. The population

figures for year 2018 are single-race estimates of the July 1 resident population, from the Vintage 2018 postcensal series based

on April 2010 Census, released by the Census Bureau on June 20, 2019. More information:

<http://wonder.cdc.gov/wonder/help/mcd-provisional.html#Population Data>.

7. Connecticut population estimates for 2022 and later years are reported for 9 planning regions as county equivalent areas,

instead of the former 8 legacy counties in the Vintage 2022 postcensal series released by the Census Bureau on June 22, 2023,

and in the Vintage 2023 postcensal series released by the Census Bureau on June 27, 2024. Populations estimates for the former

counties are not available for 2022 and later years. More information:

<http://wonder.cdc.gov/wonder/help/mcd-provisional.html#Connecticut-2022>.

8. After the creation of the final 2023 dataset, North Carolina updated the cause of death information for over 900 death

certificates to include a cause of death code indicating drug overdose (ICD-10 underlying cause-of-death codes: X40-X44,

X60-X64, X85, and Y10-Y14). Jurisdictions can continue to update death certificates after the closing of the mortality file. As

a result, users should consider that the actual death count for drug overdose deaths for North Carolina in 2023 is over 4,400

deaths, with a crude rate of approximately 41.0 per 100,000 population, and an age-adjusted rate of approximately 42.1 per

100,000 population. These deaths will not be updated on the final mortality datasets.

9. Changes to cause of death classification affect reporting trends. More information:

<http://wonder.cdc.gov/wonder/help/mcd-provisional.html#ICD-10 Changes>.

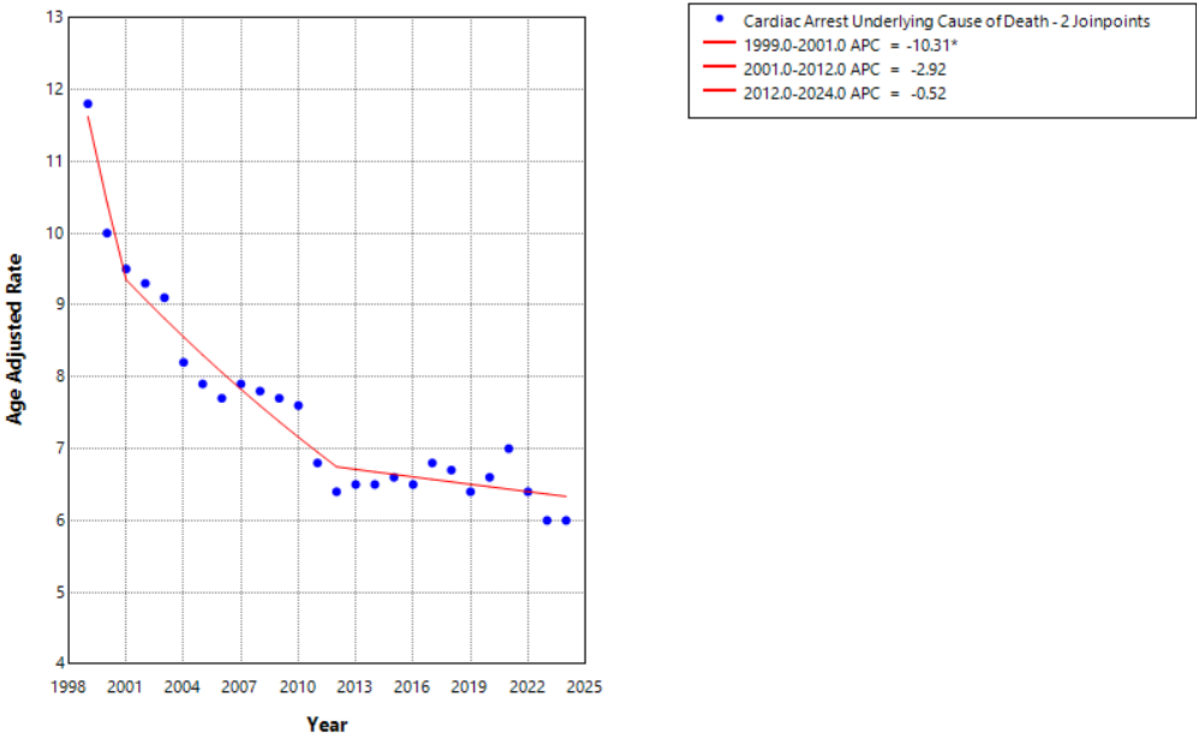
10. Deaths occurring through April 12, 2025 as of April 20, 2025.

Supplementary Table SXI. Age-Adjusted Mortality Rates of CA as underlying cause of death and CA and CVDs as multiple causes of death

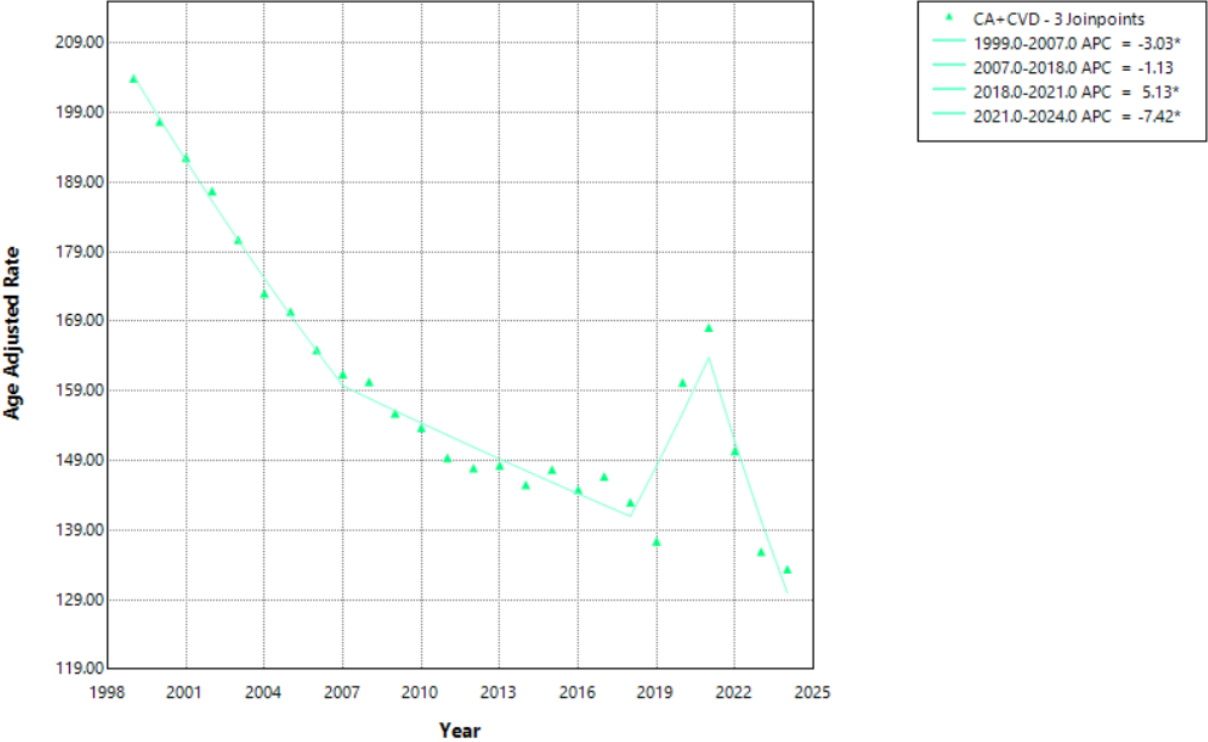
Age-Adjusted Rate (95% CI)		
Year	CA underlying cause of death	CA+CVD as contributing causes of death
1999	11.8 (11.7-12)	203.9 (203.3–204.6)
2000	10 (9.8-10.1)	197.7 (197–198.3)
2001	9.5 (9.4-9.6)	192.5 (191.9–193.2)
2002	9.3 (9.2-9.5)	187.7 (187.1–188.3)
2003	9.1 (8.9-9.2)	180.7 (180.1–181.4)
2004	8.2 (8.1-8.4)	173 (172.4–173.6)
2005	7.9 (7.8-8)	170.4 (169.8–171)
2006	7.7 (7.6-7.8)	164.9 (164.3–165.4)
2007	7.9 (7.7-8)	161.4 (160.9–162)
2008	7.8 (7.7-7.9)	160.3 (159.8–160.9)
2009	7.7 (7.6-7.9)	155.8 (155.3–156.4)
2010	7.6 (7.5-7.8)	153.7 (153.2–154.2)
2011	6.8 (6.7-6.9)	149.4 (148.9–149.9)
2012	6.4 (6.3-6.5)	147.9 (147.4–148.4)
2013	6.5 (6.4-6.6)	148.3 (147.8–148.8)
2014	6.5 (6.4-6.6)	145.5 (145–146)
2015	6.6 (6.5-6.7)	147.7 (147.2–148.2)
2016	6.5 (6.4-6.6)	144.8 (144.4–145.3)
2017	6.8 (6.7-6.9)	146.7 (146.2–147.2)
2018	6.7 (6.6-6.8)	143 (142.5–143.4)
2019	6.4 (6.3-6.5)	137.4 (137–137.9)
2020	6.6 (6.5-6.7)	160.2 (159.7–160.7)
2021	7 (6.9-7.1)	168.1 (167.6–168.6)
2022	6.4 (6.3-6.5)	150.4 (149.9–150.8)
2023	6 (5.9-6.1)	135.9 (135.5–136.4)
2024	6 (5.9-6.1)	133.4 (133–133.8)
Total	7.5 (7.4-7.6)	160 (159.5–160.5)

Supplementary Table SXII. Mortalities of CA as underlying cause of death and CA and CVDs as underlying causes of death		
Age-Adjusted Rate (95% CI)		
Year	CA underlying cause of death	CA+CVD as contributing causes of death
1999	20813	359362
2000	17808	352942
2001	17236	349530
2002	17218	345948
2003	17057	338956
2004	15751	329386
2005	15440	331243
2006	15301	327319
2007	16021	327088
2008	16165	331907
2009	16422	329166
2010	16471	330392
2011	15028	330252
2012	14604	334876
2013	15024	343722
2014	15379	344984
2015	16096	358204
2016	16220	358104
2017	17273	370980
2018	17389	369487
2019	16925	362229
2020	17844	428170
2021	18374	437666
2022	17389	408981
2023	16355	371885
2024	16575	365014
Total	432178	9237793

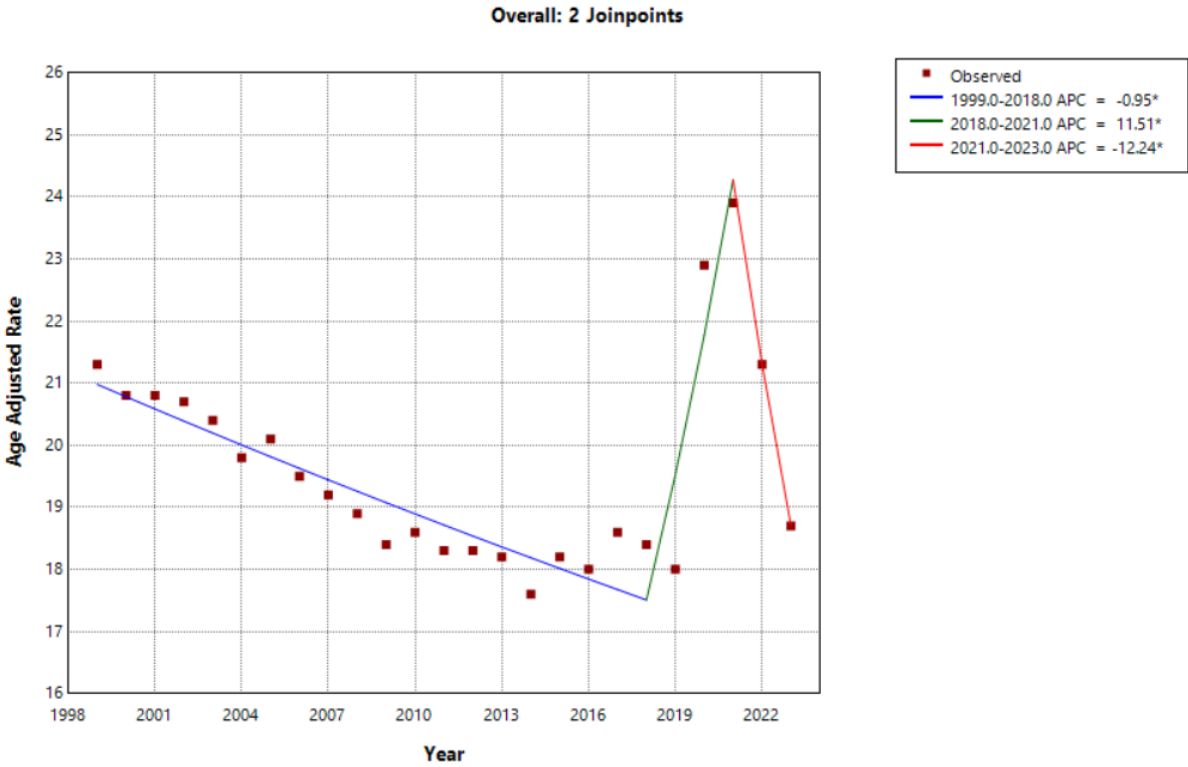
Supplementary Figure S1. Mortality trends due to Cardiac arrest as underlying cause of death among US adults from 1999 to 2024



Supplementary Figure S2. Mortality trends due to Cardiac arrest with other cardiovascular diseases as multiple cause of death among US adults from 1999 to 2024



Supplementary Figure S3. Sensitivity Analysis of CA with DM related mortality trends among adults in the U.S from 1999 to 2023



* Indicates that the Annual Percent Change (APC) is significantly different from zero at the alpha = 0.05 level.
Final Selected Model: 2 Joinpoints.