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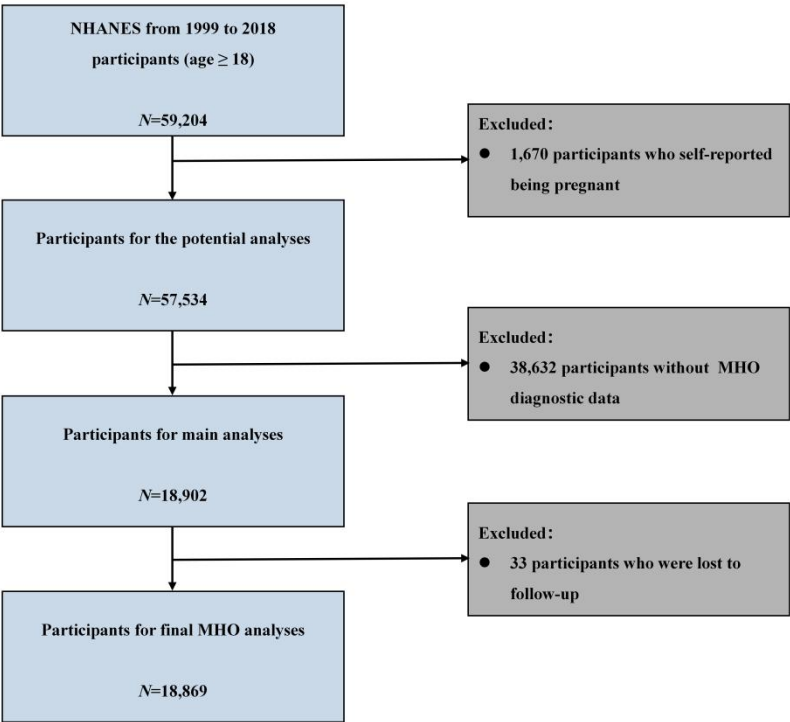
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Supplementary Table 1.Data availability in our analysis

NHANES	National Health and Nutrition Examination Survey
Time	1998-2018
Website	https://www.cdc.gov/nchs/

Supplementary Table 2. Participant Flowchart



Supplementary Table 3. Participant characteristics

Characteristic	Total	MHO	MUO	<i>P</i> _{value}
Total <i>N</i>	18869	10103 (53.5)	8766 (46.5)	
Age	47.6 (47.2,48.0)	42.8 (42.4,43.2)	53.3 (52.8,53.7)	< 0.0001
BMI	35.7 (35.5,35.9)	35.6 (35.4,35.8)	35.8 (35.6,36.1)	0.2
Sex				< 0.0001
Female	10484 (55.6)	6075 (57.6)	4409 (48.5)	
Male	8385 (44.4)	4028 (42.4)	4357 (51.5)	
Ethnicity				< 0.0001
Mexican American	3658 (19.4)	2094 (10.7)	1564 (8.0)	
Non-Hispanic Black	5031 (26.7)	2655 (14.9)	2376 (14.1)	
Non-Hispanic White	7610 (40.3)	3879 (63.0)	3731 (69.2)	

Other Hispanic	1589 (8.4)	901 (6.4)	688 (4.5)	
Other Race - Including Multi-Racial	981 (5.2)	574 (5.0)	407 (4.1)	
Education				0.04
Less than high school	5329 (28.3)	2833 (18.3)	2496 (17.9)	
College and above	8646 (45.9)	4531 (53.9)	4115 (56.3)	
High school	4878 (25.9)	2729 (27.8)	2149 (25.8)	
Family income to poverty ratio				< 0.0001
<1.0	3835 (22.3)	2278 (17.2)	1557 (12.6)	
>3.0	5854 (34.0)	2900 (43.4)	2954 (50.2)	
1.0-3.0	7538 (43.8)	4034 (39.5)	3504 (37.2)	
Drink				< 0.0001
Heavy	2305 (26.7)	1116 (26.2)	1189 (34.9)	

Moderate	1004 (11.6)	457 (11.1)	547 (14.3)	
None	5332 (61.7)	3212 (62.7)	2120 (50.8)	
Physical activity				0.2
Active	7326 (71.5)	4068 (73.6)	3258 (72.2)	
Inactive	2922 (28.5)	1589 (26.4)	1333 (27.8)	
Smoke				< 0.0001
Former	2483 (25)	1084 (21.0)	1399 (32.2)	
Never	5630 (56.7)	3226 (58.8)	2404 (52.8)	
Now	1813 (18.3)	1069 (20.2)	744 (15.1)	
TC, mmol/L				< 0.0001
Quartile 1 (<4.24)	2340 (24.1)	1347 (25.0)	993 (20.7)	
Quartile 2 (4.24-4.91)	2443 (25.2)	1339 (25.8)	1104 (23.6)	

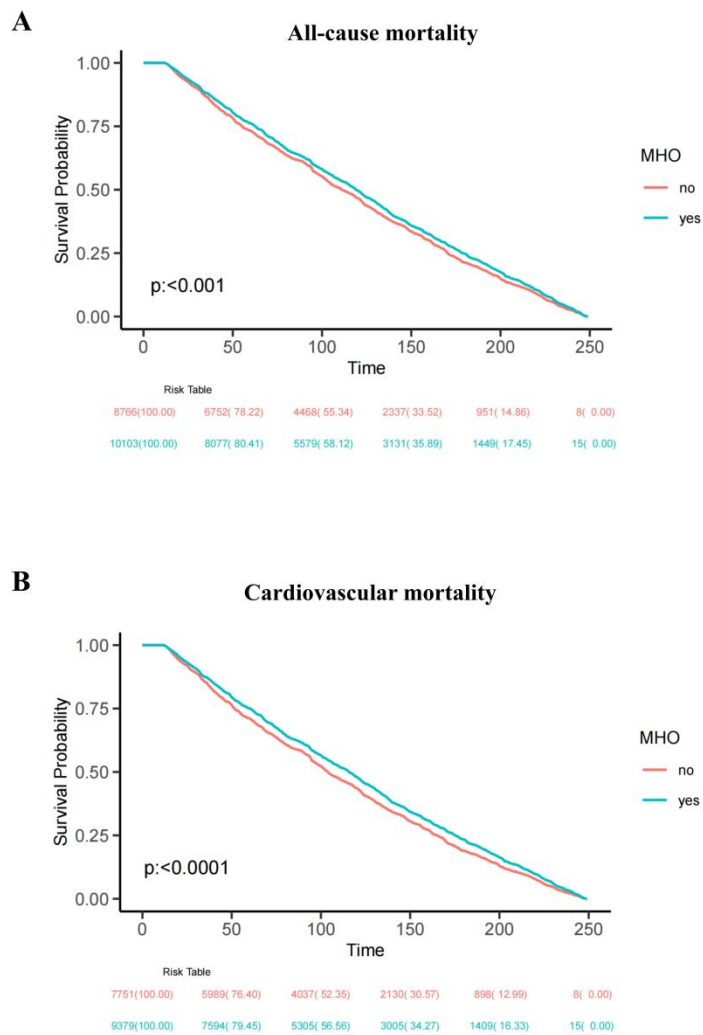
Quartile 3 (4.91 -5.64)	2433 (25.1)	1250 (24.3)	1183 (26.8)	
Quartile 4 (5.64-15.83)	2486 (25.6)	1199 (25.0)	1287 (28.8)	
TG, mmol/L				< 0.0001
Quartile 1 (<0.903)	1146 (24.9)	531 (31.8)	615 (18.6)	
Quartile 2 (0.903-1.310)	1143 (24.8)	423 (29.9)	720 (22.2)	
Quartile 3 (1.310 -1.897)	1161 (25.2)	372 (27.4)	789 (26.1)	
Quartile 4 (>1.897)	1159 (25.1)	150 (10.9)	1009 (33.2)	
HDL, mmol/L				< 0.0001
Quartile 1 (<1.01)	2425 (25)	1761 (34.9)	664 (15.7)	
Quartile 2 (1.01-1.19)	2390 (24.6)	1229 (23.3)	1161 (25.4)	
Quartile 3 (1.19-1.40)	2230 (23)	1171 (22.4)	1059 (24.1)	
Quartile 4 (>1.40)	2656 (27.4)	973 (19.4)	1683 (34.8)	

LDL, mmol/L				0.05
Quartile 1 (<2.353)	1079 (24.1)	353 (23.9)	726 (22.5)	
Quartile 2 (2.353 -2.948)	1144 (25.5)	406 (27.9)	738 (24.5)	
Quartile 3 (2.948-3.569)	1131 (25.2)	376 (26.4)	755 (26.5)	
Quartile 4 (>3.569)	1128 (25.2)	313 (21.8)	815 (26.5)	
HbA1c, %				< 0.0001
<7.0	8784 (89.6)	4854 (94.5)	3930 (88.9)	
>=7.0	1021 (10.4)	370 (5.5)	651 (11.1)	
HEI				0.003
Quartile 1 (<39.509571)	2416 (25)	1393 (27.6)	1023 (25.0)	
Quartile 2 (39.509571-48.583837)	2416 (25)	1327 (25.6)	1089 (24.5)	
Quartile 3 (48.583837 -58.252793)	2416 (25)	1311 (25.3)	1105 (24.4)	

Quartile 4 (>58.252793)	2416 (25)	1219 (21.5)	1197 (26.1)	
Total energy intakes, kcal				0.2
Quartile 1 (<1443.00)	2414 (25)	1301 (21.5)	1113 (21.2)	
Quartile 2 (1443.00-1964.00)	2412 (25)	1326 (25.4)	1086 (23.5)	
Quartile 3 (1964.00-2652.25)	2422 (25.1)	1328 (26.6)	1094 (26.3)	
Quartile 4 (>2652.25)	2416 (25)	1295 (26.5)	1121 (29.0)	
Self_reported hypertention				< 0.0001
No	5953 (58.2)	4167 (75.8)	1786 (41.8)	
Yes	4278 (41.8)	1479 (24.2)	2799 (58.2)	

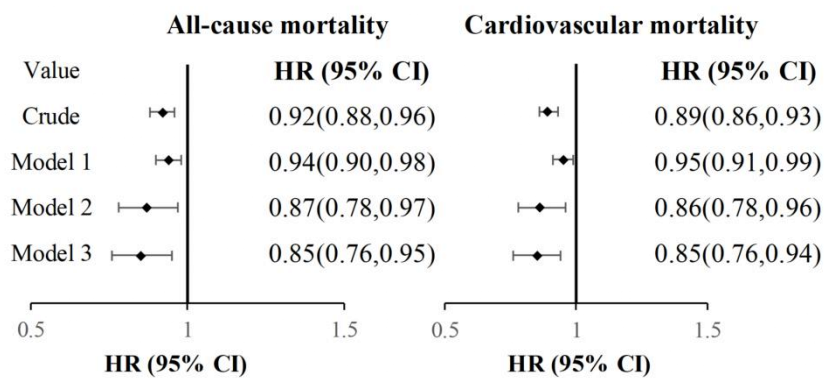
Numbers are N (%) unless otherwise specified. Some sub-categories, such as education level, may not add up due to missing data.

Supplementary figure 4. Survival probability from weighted Kaplan-Meier plots

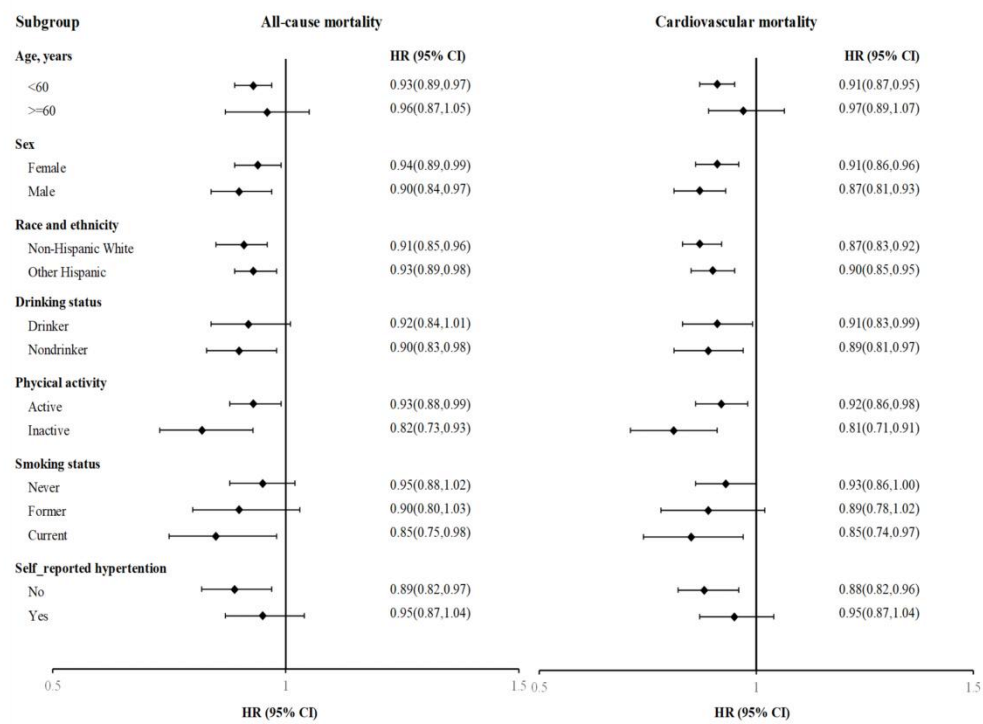


A. all-cause mortality. B. cardiovascular mortality. The x-axis represents the follow-up time, while the y-axis displays the estimated survival probability. The orange curve represents no-MHO, that is MUO, while the light blue curve represents MHO.

Supplementary Figure 5. The association between MHO and all-cause as well as cardiovascular mortality



Supplementary Figure 6. Associations of MHO With all-cause and CVD Mortality in Various Subgroups Among US Adults with Diabetes in NHANES 1999-2018



Supplementary Table 7. Hazard ratios of All-Cause and Cardiovascular Mortality by MHO Among US Adults in NHANES 1999-2018

Characteristic	Hazard ratio (95% CI)	
	MUO	MHO
All-cause mortality		
Model 3 (excluding<24 months follow-up)	1	0.84 (0.78, 0.91)
Model 3 (excluding CVD)	1	0.92 (0.85, 0.99)
Cardiovascular mortality		
Model 3 (excluding<24 months follow-up)	1	0.86 (0.79, 0.93)
Model 3 (excluding CVD)	1	0.92 (0.85, 0.99)