

Supplement to: Huang Y, Xiang Y, Li T, Lip G, Gao Y, Zhang J. Role of Life's Essential 8 in the association of night shift work with cardiovascular disease and mortality: a prospective cohort study of UK Biobank participants. J Glob Health. 2026;16:04198.

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Table S1. Adherence to JoGH’s Guidelines for Reporting Analyses of Big Data Repositories Open to the Public (GRABDROP) items.

JoGH guideline items
1. Please list all papers published by each co-author in previous 3 years that were based on secondary analysis of a big data repository
In this study, the following co-authors have published papers based on secondary analysis of large data repositories: 1. Huang Y, Wu R, He J, Xiang Y. Evaluating ChatGPT-4.0's data analytic proficiency in epidemiological studies: A comparative analysis with SAS, SPSS, and R. <i>J Glob Health</i>. 2024;14:04070. doi: 10.7189/jogh.14.04070 2. Huang Y, Xiang Y, Zhou W, Li G, Zhao C, Zhang D, Fang S. Long working hours and all-cause mortality in China: A 26-year follow-up study. <i>Scand J Work Environ Health</i>. 2023;49(8):539-548. doi: 10.5271/sjweh.4115 3. Huang Y, Xiang Y, Zhou W, Li G, Zhao C, Zhang D, Fang S. Short working hours and perceived stress: Findings from a population-based nationwide study. <i>Heliyon</i>. 2023;9(11):e21919. doi: 10.1016/j.heliyon.2023.e21919 4. Zhang J, Wei S, Chen G, Lip GYH, Lin H. Life-course exposure to PM2.5 components and genetic susceptibility on the risk of atrial fibrillation and subsequent heart failure. <i>Eur J Prev Cardiol</i>. 2025;zwaf751. doi: 10.1093/eurjpc/zwaf751 5. Zhang J, Chen G, Wei S, et al. Impact of air pollution and multimorbidity on the risk of incident atrial fibrillation. <i>Heart</i>. 2025;19 Jun; doi: 10.1136/heartjnl-2024-325451 6. Zhang J, Wei S, Chen G, Zhang B, Wang Y, Huang ZH, Lip GYH, Wang X. The role of Life’s Essential 8 and multimorbidity in the risk of new-onset atrial fibrillation: observations from a large prospective cohort study. <i>Int J Surg</i>. 2025;111(10):6885-6893. doi: 10.1097/JS9.0000000000002831 7. Zhang J, Luo L, Chen G, et al. Associations of ambient air pollution with incidence and dynamic progression of atrial fibrillation. <i>Sci Total Environ</i>. 2024;951:175710. doi: 10.1016/j.scitotenv.2024.175710 8. Zhang J, Chen G, Habudele Z, Wang X, Cai M, Li H, Gao Y, Lip GYH, Lin H. Relation of Life's Essential 8 to the genetic predisposition for cardiovascular outcomes and all-cause mortality: results from a national prospective cohort. <i>Eur J Prev Cardiol</i>. 2023;30(15):1676-1685. doi: 10.1093/eurjpc/zwad179 9. Zhang J, Chen G, Xia H, Wang X, Wang C, Cai M, Gao Y, Lip GYH, Lin H. Associations of Life’s Essential 8 and fine particulate matter pollution with the incidence of atrial fibrillation. <i>J Hazard Mater</i>. 2023;459:132114. doi: 10.1016/j.jhazmat.2023.132114 10. Zhang J, Chen G, Wang C, et al. Associations of risk factor burden and genetic predisposition with the 10-year risk of atrial fibrillation: observations from a large prospective study of 348,904 participants. <i>BMC Med</i>. 2023;21:88. doi: 10.1186/s12916-023-02798-7
2. Please explain the key elements of your study design and the use of the available datasets that make your study an original scientific contribution
This study used data from the UK Biobank, a large, well-established cohort, to investigate the association between night shift work and cardiovascular disease (CVD), while assessing the mediating role of Life’s Essential 8 (LE8), a composite measure of cardiovascular health. We focused on 131,844 employed participants without CVD at baseline, classifying them by their night shift work exposure (day workers, shift but never/rarely night shifts, some night shifts, and usual/permanent night shifts). The study design leverages the UK Biobank’s extensive dataset, including detailed health, lifestyle, and demographic information, which allowed us to apply advanced statistical methods, including Cox models and counterfactual mediation analysis, to examine the direct and indirect effects of LE8 on the relationship between night shift work and CVD outcomes. Our findings provide novel insights into how improving cardiovascular health could reduce the CVD burden among night shift workers. By utilizing a large, publicly accessible dataset and integrating comprehensive lifestyle measures, this study presents an original contribution to understanding the health risks of night shift work and highlights the potential of lifestyle interventions to mitigate these risks.

3. Please list all publications that addressed similar research questions in the same dataset and indicate where you cited them in your paper

Our study utilized data from the UK Biobank, and we cited the one relevant publication that addressed similar research questions:

1. Ho FK, Celis-Morales C, Gray SR, Demou E, Mackay D, Welsh P, Katikireddi SV, Sattar N, Pell JP: Association and pathways between shift work and cardiovascular disease: a prospective cohort study of 238,661 participants from UK Biobank. *Int J Epidemiol.* 2022;51(2):579-590. [Cited as reference 2 in our paper]
- This study explored the association between shift work and CVD outcomes within the UK Biobank cohort but did not examine the mediating role of lifestyle factors such as LE8. Unlike their study, our research comprehensively investigates the relationship between night shift work and multiple outcomes, including CVD incidence, all-cause mortality, and CVD mortality. Additionally, we examine the mediating effect of LE8 in these associations, providing deeper insights into how cardiovascular health can influence the risks linked to night shift work.

4. Please explain how you addressed multiple testing through an appropriately rigorous statistical threshold and indicate this in the methods section

Given the multiple outcomes assessed in our study, including CVD incidence, all-cause mortality, CVD mortality, myocardial infarction (MI), stroke, and atrial fibrillation (AF), we treated these outcomes as independent hypotheses and maintained a significance threshold of $P < 0.05$ for all tests. While we did not apply a formal multiple testing correction, we addressed the potential risk of false-positive results by conducting rigorous subgroup and sensitivity analyses. These additional tests consistently supported our main findings, suggesting that the observed associations are robust.

5. Please declare to what extent have AI chatbots been used in developing your paper and to which parts of the paper did they contribute

AI chatbots were used to assist with language editing and refinement to ensure that the manuscript adhered to standard English expressions. This assistance was primarily focused on improving the clarity and flow of the text. Apart from this language support, no AI chatbots were used in other parts of the paper.

Table S2. Selected Variables from the UK Biobank and their Coding

Data-Field	Group	Data-Field code
Sample restriction: Employment status	Include only: “In paid employment or self-employed”	6142
Exposures		
1. Current work schedule (Primary exposure)	Combined variable (4 categories): • Day workers (reference group) • Shift but never or rarely night shifts • Some night shifts • Usual or permanent night shifts	See Table S3
2.Life’s Essential 8 (LE8) (Mediator) (Dietary recommendations, physical activity, tobacco/nicotine exposure, sleep health, BMI, blood lipids, blood glucose, blood pressure)	Tertiles: • High CVH (80-100 points) • Moderate CVH (60-79 points) • Low CVH (0-59 points)	See Table S5 and S6
Outcomes		
1.Cardiovascular Disease		
Time-to-event variable: Date outcome first reported	-	Category 2409
Cardiovascular events	No/Yes	131270-131423
Stroke	No/Yes	131360-131369
Atrial fibrillation	No/Yes	131350-131351
Myocardial infarction	No/Yes	131298-131303
2.Mortality		
Time-to-event variables: Date of death	-	40000
All-cause mortality	No/Yes	40001
Cardiovascular mortality	No/Yes	40001
Stroke mortality	No/Yes	40001
Atrial fibrillation mortality	No/Yes	40001
Myocardial infarction mortality	No/Yes	40001
Covariates		
Age	mean (SD)	21022
Sex	Female/Male	31
Race and ethnicity	White/Mixed/Asian or Asian British/Black or Black British/Chinese/Other ethnic group	21000
Townsend Deprivation index	mean (SD)	22189
Binge drinking	No/Yes	1558
No. of work hours a week	mean (SD)	767
Years working in current job	mean (SD)	757
Walking or standing at work	Never or rarely/Sometimes/Usually/Always	806
Heavy manual or physical labor at work	Never or rarely/Sometimes/Usually/Always	816
Sensitivity analyses/Subgroup analyses		
Age	≤50/>50	21022
Sex	Female/Male	31
Race and ethnicity	White/Non-white	21000
Length of working week for main job	<55/≥55	767
Time employed in main current job	≤12/>12	757

Table S3. Classification Criteria for Current Work Schedule

Shift work status (Data-Field code: 826)	Night shift work schedule (Data-Field code: 3426)	Combined variable: Current work schedule
Never/rarely	-	Day workers
Sometimes	Never/rarely	Shift but never or rarely night shifts
	Sometime	Some night shifts
	Usually	Usual or permanent night shifts
	Always	Usual or permanent night shifts
Usually	Never/rarely	Shift but never or rarely night shifts
	Sometime	Some night shifts
	Usually	Usual or permanent night shifts
	Always	Usual or permanent night shifts
Always	Never/rarely	Shift but never or rarely night shifts
	Sometime	Some night shifts
	Usually	Usual or permanent night shifts
	Always	Usual or permanent night shifts

Table S4. Ascertainment for Cardiovascular Events in the UK Biobank Study

Events	ICD-10
Cardiovascular disease	I00-I99
Stroke	I60-I64
Atrial fibrillation	I48
Myocardial infarction	I21-I23

Table S5. Scoring Criteria and Classification Categories for Life's Essential 8 Metrics

LE8 metric	Method of measurement	Quantification of LE8 metric	Score and classification
Diet	Measurement: A more recent definition of ideal intake of dietary components for cardiovascular health	Scoring: Points diets score (points) 100 8–10 80 6–7 50 4–5 25 2–3 0 0–1	The LE8 score is scaled from 0 to 100 points, calculated as the unweighted average of all 8 component metric scores. In the present study, overall LE8 scores of 80 to 100 are considered High CVH; 60 to 79, Moderate CVH; and 0 to 59 points, low CVH.
Physical activity (PA)	Self-reported minutes of moderate or vigorous PA per week	Scoring: Points Minutes 100 ≥ 150 90 120–149 80 90–119 60 60–89 40 30–59 20 1–29 0 0	
Tobacco/nicotine exposure	Self-reported use of cigarettes; or secondhand smoke exposure	Scoring: Points Status 100 Never smoker 75 Former smoker, quit ≥ 5 y 50 Former smoker, quit 1– <5 y 25 Former smoker, quit <1 y 0 Current smoker Subtract 20 points (unless score is 0) for living with active indoor smoker in home	
Sleep health	Self-reported average hours of sleep per night	Scoring: Points Level 100 7– <9 90 9– <10 70 6– <7 40 5– <6 or ≥ 10 20 4– <5 0 <4	

Body mass index	Measurement: Body weight (kilograms) divided by height squared (meters squared)	Scoring: Points Level 100 <25 70 25.0–29.9 30 30.0–34.9 15 35.0–39.9 0 ≥40.0	
Blood lipids (non-HDL cholesterol)	Measurement: Plasma total and HDL cholesterol with calculation of non-HDL cholesterol	Metric: Non-HDL cholesterol (mg/dL) Scoring: Points Level 100 <130 60 130–159 40 160–189 20 190–219 0 ≥220 If drug-treated level, subtract 20 points	
Blood glucose	Measurement: HbA1c and history of Diabetes	Metric: HbA1c (%) Scoring: Points Level 100 No history of diabetes HbA1c <5.7 60 No diabetes and HbA1c 5.7–6.4 (prediabetes) 40 Diabetes with HbA1c <7.0 30 Diabetes with HbA1c 7.0–7.9 20 Diabetes with HbA1c 8.0–8.9 10 Diabetes with Hb A1c 9.0–9.9 0 Diabetes with HbA1c ≥10.0	
Blood pressure (BP)	Measurement: Appropriately measured systolic and diastolic blood pressures	Metric: Systolic and diastolic BPs (mmHg) Scoring: Points Level 100 <120/<80 (optimal) 75 120–129/<80 (elevated) 50 130–139 or 80–89 (stage 1 hypertension) 25 140–159 or 90–99 0 ≥160 or ≥100 Subtract 20 points if treated level	

Table S6. Components of Contemporary Dietary Recommendations for Cardiovascular Health in the UK Biobank

Diet component	Intake goal	Field IDs	Amount per serving
Fruit	3 servings/day	1309 (pieces fresh fruit/day) 1319 (pieces dried fruit/day)	1309 – 1 piece 1319 – 5 pieces
Vegetable	3 servings/day	1289 (tablespoons cooked vegetables/day) 1299 (salad/raw vegetables/day)	3 heaped tablespoons
Whole grains	3 servings/day	1438, 1448 (whole meal/wholegrain bread slices/week) 1458, 1468 (bran/oat/muesli cereal bowls/week)	1438/1448 – 1 slice/day 1458/1468 – 1 bowl/day
(Shell)fish	≥2 servings/week	1329 (oily fish/week) 1339 (non-oily fish/week)	Once/week
Dairy	2 servings/day	1408 (cheese/week) 1418 (milk type)	1408 – 1 piece/day 1418 – 1 glass/day if consumption of any type of milk
Vegetable oils	2 servings/day	1428 (Flora Pro-Active/Benecol spread) 2654 (Flora Pro-Active/Benecol, soft margarine -, olive oil based -, polyunsaturated/sunflower oil based -, other low/reduced fat spread) 1438 (bread slices/week)	1 serving/day if in combination with eating at least 2 slices of bread (ID 1438)
Refined grains	≤2 servings/day	1438, 1448 (white, brown, other bread slices/week) 1458, 1468 (biscuit, other cereals/week)	1438/1448 – 1 slice/day 1458/1468 – 1 bowl/day
Processed meats	≤1 serving/week	1349 (processed meat/week or daily) 3680 (age when last ate meat)	1349 – 1 piece/day 3680 – 0 pieces/day if indicated having never eaten meat
Unprocessed meats	≤2 servings/day	1359 (poultry/week or day) 1369 (beef/week or day) 1379 (lamb or mutton/week or day) 1389 (pork/week or day) 3680 (age when last ate meat)	1359-1389 – once/week 3680 – 0 pieces/day if indicated having never eaten meat
Sugar-sweetened beverages	Don't drink	6144 (never consumes drinks containing sugar)	Only 0 servings were possible here.

Field IDs and serving sizes for each dietary component were derived from the general baseline questionnaire in the UK Biobank. Participants were considered to have adequate intake if they met the specified intake goals. Dietary components were scored as 1 if the goal was met and 0 if not, yielding a total diet score ranging from 0 to 10.

Table S7. Associations of Night Shift Work with Stroke, Atrial Fibrillation, Myocardial Infarction, and Cause-Specific Mortality

Characteristics	Cases (%)	Model 0 ^a		Model 1 ^b		Model 2 ^c	
		HR (95% CI)	P value	HR (95% CI)	P value	HR (95% CI)	P value
Stroke							
Day workers	1772/111186 (1.59)	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
Shift but never/rarely night shifts	163/10158 (1.60)	1.06 (0.90-1.24)	0.50	1.02 (0.87-1.20)	0.77	0.97 (0.82-1.14)	0.67
Some night shifts	99/6002 (1.65)	1.14 (0.93-1.39)	0.21	1.09 (0.89-1.34)	0.40	1.03 (0.83-1.26)	0.80
Usual/permanent night shifts	86/4498 (1.91)	1.33 (1.07-1.65)	<0.05	1.28 (1.03-1.59)	<0.05	1.18 (0.95-1.48)	0.14
AF							
Day workers	4212/111186 (3.79)	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
Shift but never/rarely night shifts	400/10158 (3.94)	1.11 (1.00-1.23)	0.05	1.10 (0.99-1.22)	0.07	1.08 (0.97-1.20)	0.17
Some night shifts	225/6002 (3.75)	1.10 (0.96-1.26)	0.17	1.10 (0.96-1.25)	0.18	1.08 (0.94-1.24)	0.29
Usual/permanent night shifts	199/4498 (4.42)	1.32 (1.14-1.52)	<0.001	1.33 (1.15-1.54)	<0.001	1.31 (1.13-1.51)	<0.001
MI							
Day workers	2700/111186 (2.43)	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
Shift but never/rarely night shifts	289/10158 (2.85)	1.23 (1.09-1.38)	<0.01	1.18 (1.05-1.33)	<0.01	1.10 (0.97-1.25)	0.13
Some night shifts	180/6002 (3.00)	1.21 (1.04-1.41)	<0.05	1.17 (1.00-1.36)	0.05	1.08 (0.93-1.26)	0.31
Usual/permanent night shifts	160/4498 (3.56)	1.45 (1.24-1.70)	<0.001	1.41 (1.20-1.65)	<0.001	1.29 (1.09-1.51)	<0.01
Stroke mortality							
Day workers	137/111186 (0.12)	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
Shift but never/rarely night shifts	12/10158 (0.12)	1.01 (0.56-1.83)	0.97	0.97 (0.53-1.74)	0.91	0.86 (0.47-1.58)	0.63
Some night shifts	5/6002 (0.08)	0.90 (0.37-2.20)	0.82	0.86 (0.35-2.10)	0.73	0.80 (0.32-1.99)	0.63
Usual/permanent night shifts	4/4498 (0.09)	0.95 (0.35-2.58)	0.92	0.90 (0.33-2.46)	0.84	0.86 (0.31-2.36)	0.76
AF mortality							
Day workers	85/111186 (0.08)	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
Shift but never/rarely night shifts	8/10158 (0.08)	1.15 (0.56-2.37)	0.71	1.11 (0.54-2.30)	0.78	1.03 (0.49-2.16)	0.94
Some night shifts	3/6002 (0.05)	0.83 (0.26-2.62)	0.75	0.78 (0.25-2.49)	0.68	0.77 (0.24-2.47)	0.66
Usual/permanent night shifts	4/4498 (0.09)	1.59 (0.58-4.35)	0.37	1.59 (0.58-4.37)	0.37	1.51 (0.54-4.22)	0.43
MI mortality							
Day workers	170/111186 (0.15)	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
Shift but never/rarely night shifts	17/10158 (0.17)	1.16 (0.70-1.90)	0.57	1.09 (0.66-1.80)	0.73	1.03 (0.62-1.72)	0.91
Some night shifts	16/6002 (0.27)	1.75 (1.04-2.92)	<0.05	1.63 (0.97-2.74)	0.06	1.59 (0.93-2.70)	0.09
Usual/permanent night shifts	7/4498 (0.16)	1.03 (0.48-2.19)	0.95	0.97 (0.45-2.07)	0.93	0.93 (0.43-2.01)	0.85

Abbreviations: HR, hazard ratio; CI, confidence interval; AF, atrial fibrillation; MI, myocardial infarction; NA, not available.

^aModel 0 adjusted for age and sex.

^bModel 1 additionally adjusted for race and ethnicity, Townsend deprivation index, and binge drinking.

^cModel 2 adjusted for terms in model 1 and hours of work per week, years working in current job, walking or standing at work, and heavy manual or physical work.

Table S8. Mediation Proportion of the Association Between Night Shift Work and Stroke, Atrial Fibrillation, and Myocardial Infarction Incidence and Mortality Attributed to Life's Essential 8

Characteristics	Life's Essential 8	
	% Mediated (95% CI) ^a	P value
Stroke		
Day workers	NA	NA
Shift but never/rarely night shifts ^b	Ø	Ø
Some night shifts ^b	Ø	Ø
Usual/permanent night shifts ^b	Ø	Ø
AF		
Day workers	NA	NA
Shift but never/rarely night shifts ^b	Ø	Ø
Some night shifts ^b	Ø	Ø
Usual/permanent night shifts	17.5 (9.2-30.8)	<0.001
MI		
Day workers	NA	NA
Shift but never/rarely night shifts ^b	Ø	Ø
Some night shifts ^b	Ø	Ø
Usual/permanent night shifts	40.8 (18.5-67.8)	<0.001
Stroke mortality		
Day workers	NA	NA
Shift but never/rarely night shifts ^b	Ø	Ø
Some night shifts ^b	Ø	Ø
Usual/permanent night shifts ^b	Ø	Ø
AF mortality		
Day workers	NA	NA
Shift but never/rarely night shifts ^b	Ø	Ø
Some night shifts ^b	Ø	Ø
Usual/permanent night shifts ^b	Ø	Ø
MI mortality		
Day workers	NA	NA
Shift but never/rarely night shifts ^b	Ø	Ø
Some night shifts ^b	Ø	Ø
Usual/permanent night shifts ^b	Ø	Ø

Abbreviations: CI, confidence interval; AF, atrial fibrillation; MI, myocardial infarction; NA, not available; Ø, no significant association.

^aAdjusted for age, sex, race and ethnicity, Townsend deprivation index, binge drinking, hours of work per week, years working in current job, walking or standing at work, and heavy manual or physical work.

^bWhile the *P* value of hazard ratio was large than 0.05, mediation proportion was not calculated.

Table S9. Sensitive Analyses of Association Between Night Shift Work and Cardiovascular Disease and Mortality

Characteristics	CVD		Cardiovascular mortality		All-cause mortality	
	HR (95% CI) ^a	P value	HR (95% CI) ^a	P value	HR (95% CI) ^a	P value
Sensitivity analysis 1^b						
Current work schedule						
Day workers	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
Shift but never/rarely night shifts	1.09 (1.05-1.13)	<0.001	0.90 (0.70-1.16)	0.43	1.04 (0.94-1.15)	0.41
Some night shifts	1.06 (1.01-1.12)	<0.05	1.06 (0.79-1.43)	0.70	1.02 (0.89-1.16)	0.78
Usual/permanent night shifts	1.17 (1.11-1.24)	<0.001	1.01 (0.72-1.43)	0.94	1.18 (1.03-1.36)	<0.05
Sensitivity analysis 2^c						
Current work schedule						
Day workers	1 [Reference]	NA	1 [Reference]	NA	1 [Reference]	NA
Shift but never/rarely night shifts	1.09 (1.05-1.13)	<0.001	0.91 (0.71-1.16)	0.44	1.04 (0.94-1.14)	0.49
Some night shifts	1.06 (1.01-1.11)	<0.05	1.03 (0.77-1.39)	0.83	1.01 (0.89-1.16)	0.83
Usual/permanent night shifts	1.17 (1.11-1.23)	<0.001	0.98 (0.70-1.39)	0.93	1.17 (1.02-1.34)	<0.05

Abbreviations: HR, hazard ratio; CI, confidence interval; CVD, cardiovascular disease; NA, not available.

^aAdjusted for age, sex, race and ethnicity, Townsend deprivation index, binge drinking, hours of work per week, years working in current job, walking or standing at work, and heavy manual or physical work.

^bIn sensitivity analysis 1, participants with events occurring within the first year of follow-up were excluded to reduce potential reverse causation.

^cIn sensitivity analysis 2, Cox models were additionally adjusted for LE8 scores to assess whether CVH attenuated the associations.

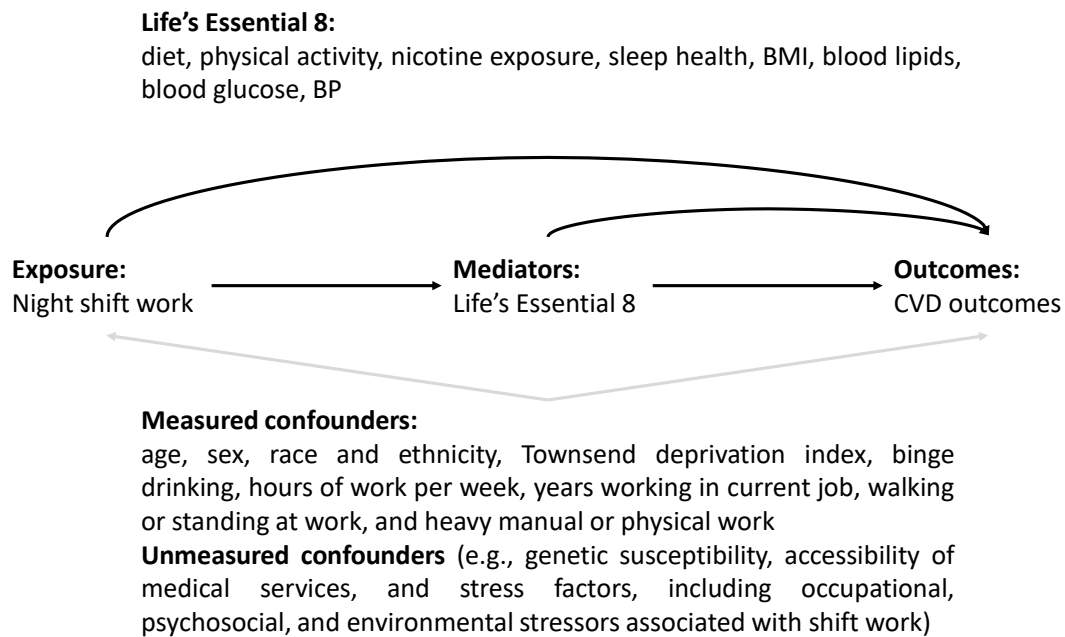


Figure S1. Directed Acyclic Graph Illustrating the Causal Pathway Between Night Shift Work and Cardiovascular Outcomes, with Life's Essential 8 as a Mediator

This Directed Acyclic Graph (DAG) represents the proposed causal structure in our study, illustrating the relationship between night shift work and cardiovascular disease (CVD) outcomes, with Life's Essential 8 (LE8) acting as a mediator. The graph shows that night shift work influences CVD outcomes both directly and indirectly, through lifestyle factors captured by LE8, including diet, physical activity, sleep health, and other behavioral factors. The DAG also highlights the potential confounding factors (e.g., age, sex, socioeconomic status) that could simultaneously affect both night shift work and CVD outcomes, and thus need to be controlled for in our analysis. Importantly, the diagram justifies the classification of LE8 as a mediator rather than a confounder, as it captures the cumulative effect of lifestyle behaviors influenced by night shift work, which subsequently affect CVD risk. This causal structure is foundational to our counterfactual mediation analysis, which estimates both the direct and indirect effects of night shift work on CVD outcomes via LE8. Abbreviations: DAG, directed acyclic graph; LE8, Life's Essential 8; CVD, cardiovascular disease; BMI, body mass index; BP, blood pressure.

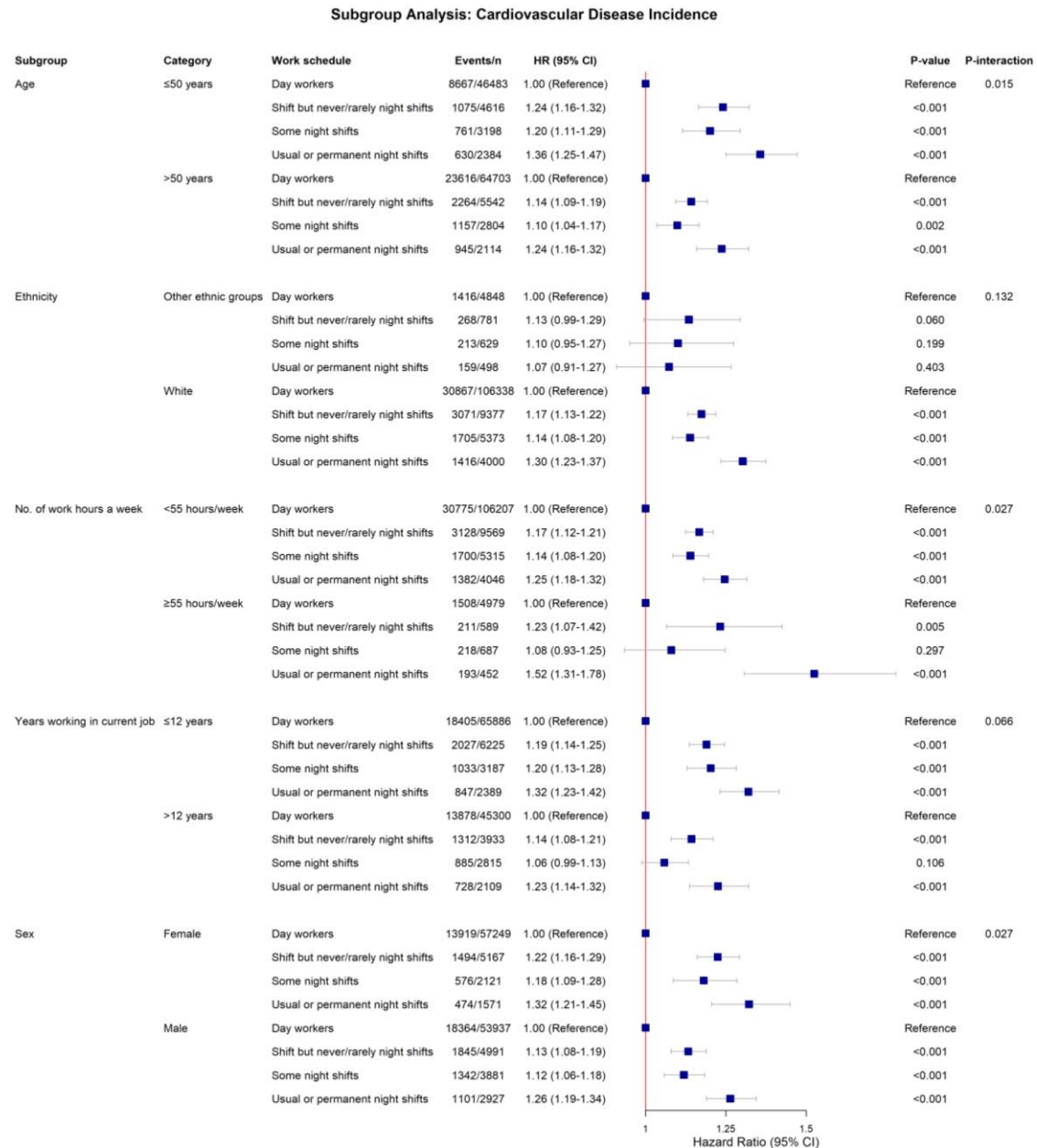


Figure S2. Associations Between Night Shift Work and Cardiovascular Disease by Subgroup Adjusted for age, sex, race and ethnicity, Townsend deprivation index, binge drinking, hours of work per week, years working in current job, walking or standing at work, and heavy manual or physical work. Each group adjusted for the other covariates except itself. Work hours were categorized as <55 or ≥55 hours/week (long working hours). Years working in current job were categorized by the median (≤12 vs >12 years). Abbreviations: HR, hazard ratio; CI, confidence interval.

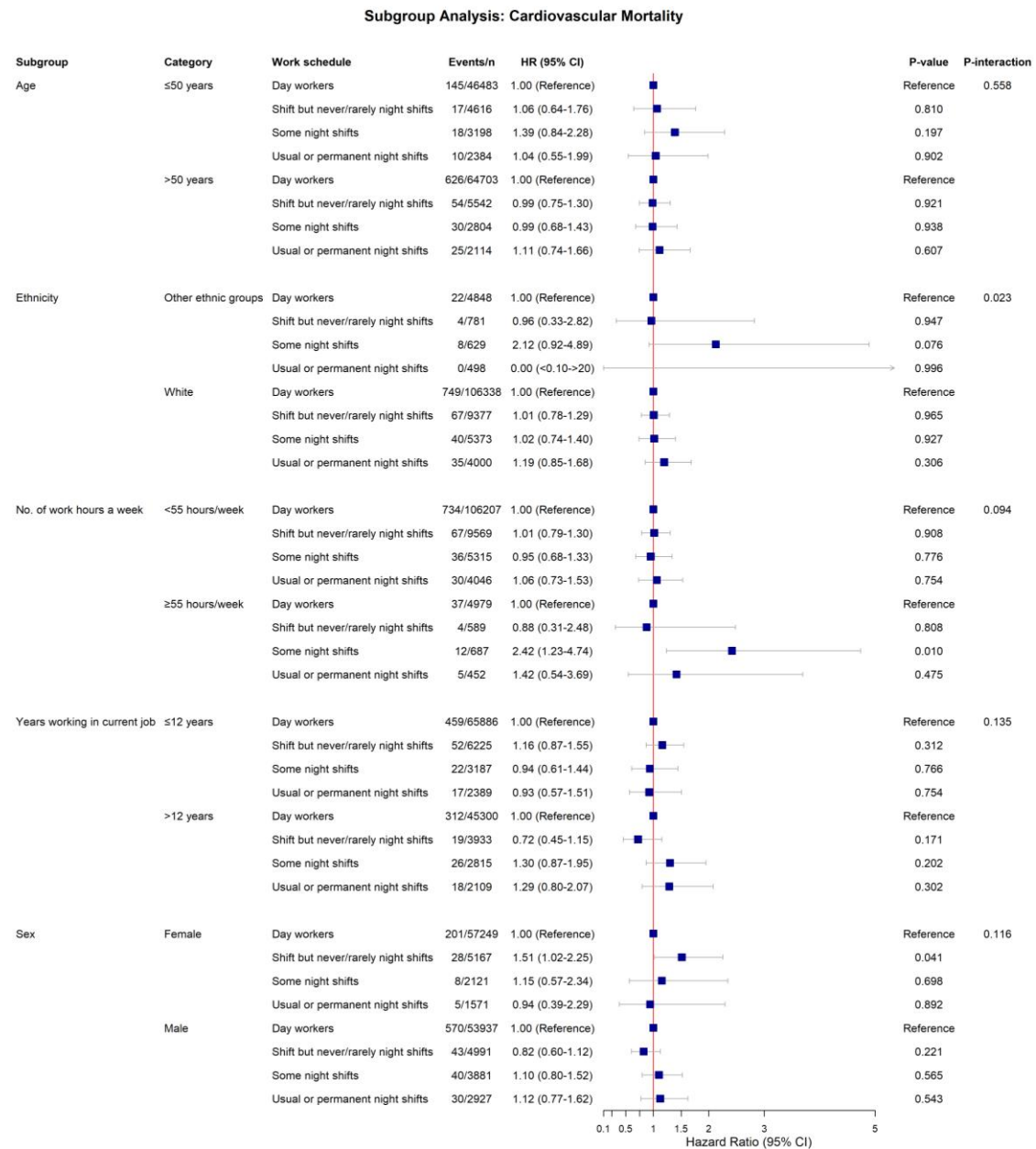


Figure S3. Associations Between Night Shift Work and Cardiovascular Mortality by Subgroup Adjusted for age, sex, race and ethnicity, Townsend deprivation index, binge drinking, hours of work per week, years working in current job, walking or standing at work, and heavy manual or physical work. Each group adjusted for the other covariates except itself. Work hours were categorized as <55 or ≥55 hours/week (long working hours). Years working in current job were categorized by the median (≤12 vs >12 years). Abbreviations: HR, hazard ratio; CI, confidence interval.

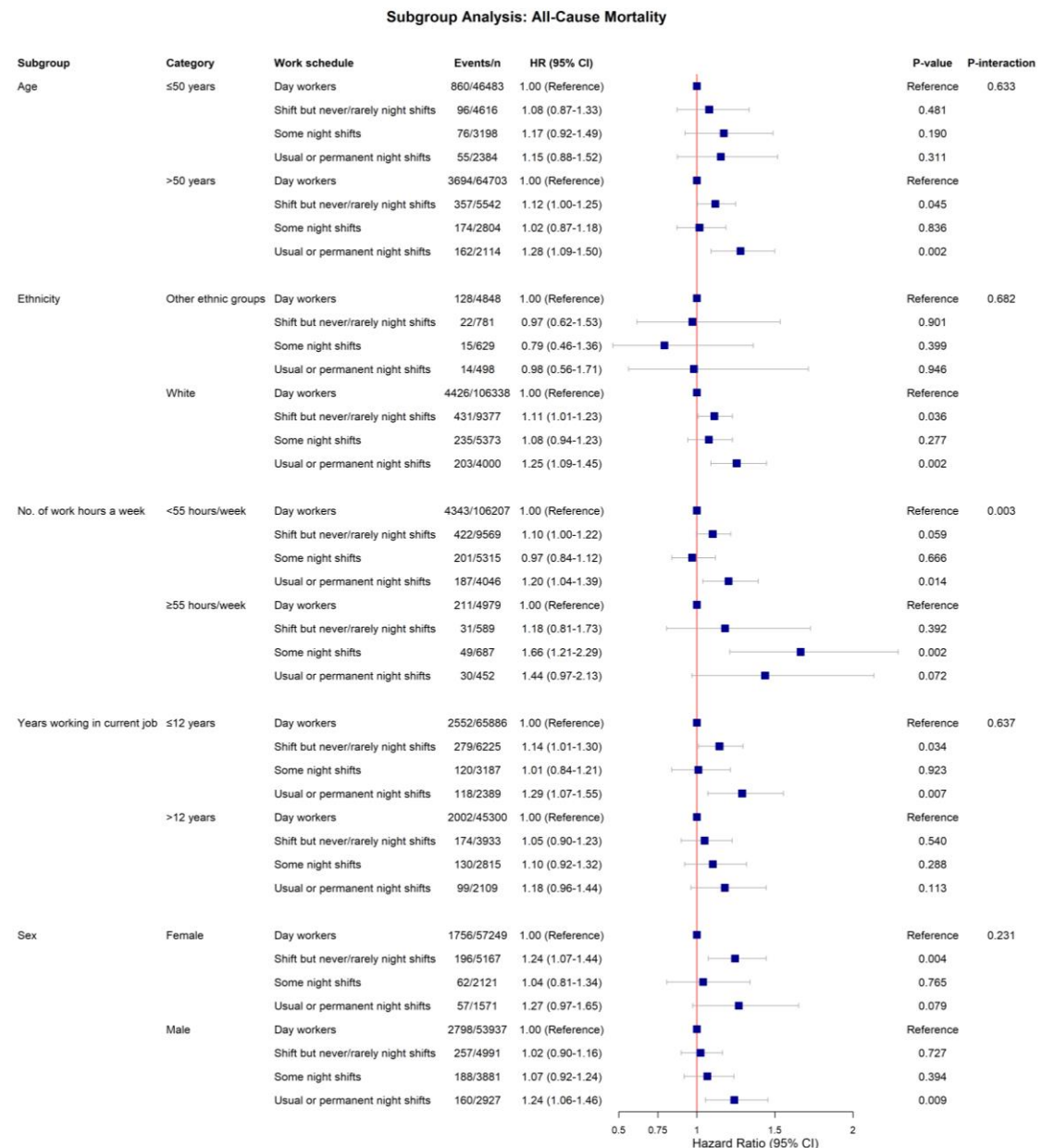


Figure S4. Associations Between Night Shift Work and All-Cause Mortality by Subgroup Adjusted for age, sex, race and ethnicity, Townsend deprivation index, binge drinking, hours of work per week, years working in current job, walking or standing at work, and heavy manual or physical work. Each group adjusted for the other covariates except itself. Work hours were categorized as <55 or ≥55 hours/week (long working hours). Years working in current job were categorized by the median (≤12 vs >12 years). Abbreviations: HR, hazard ratio; CI, confidence interval.