Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.

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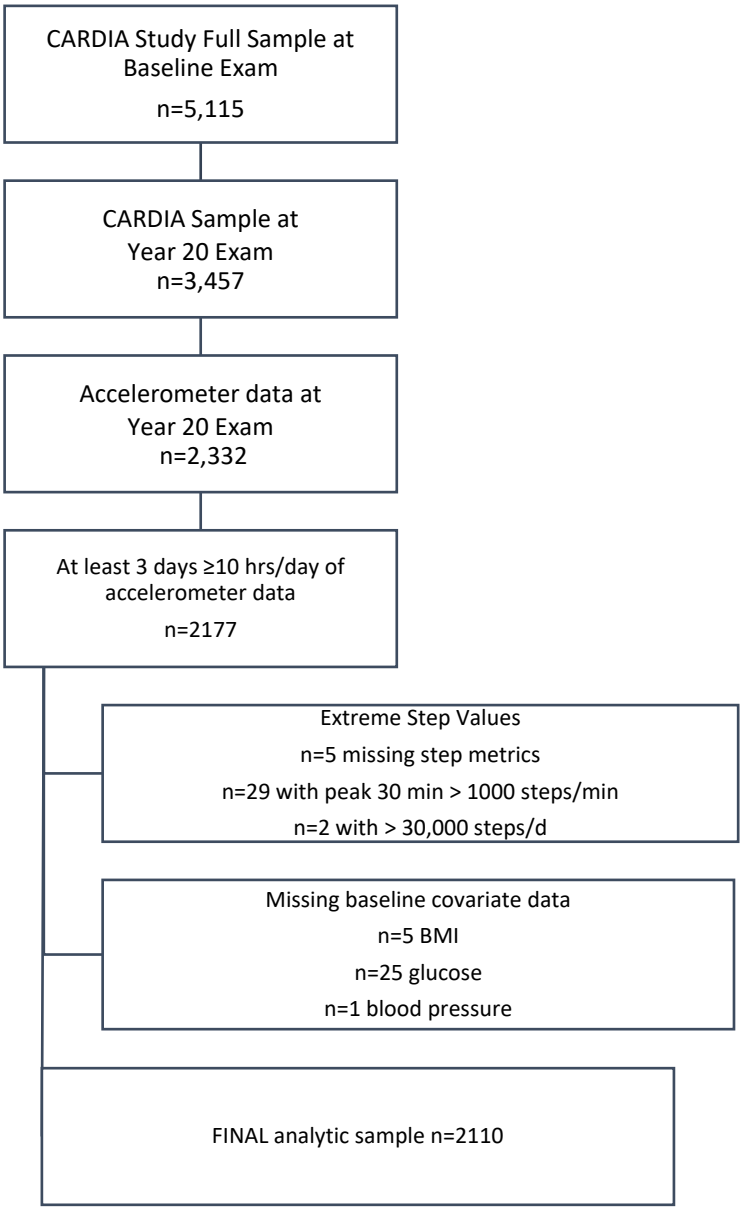
eFigure 1. Flowchart of Sample Selection Among CARDIA Study Participants



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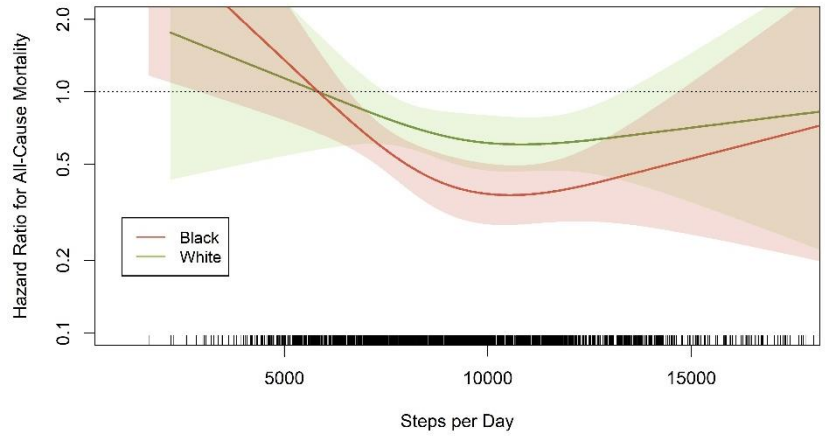
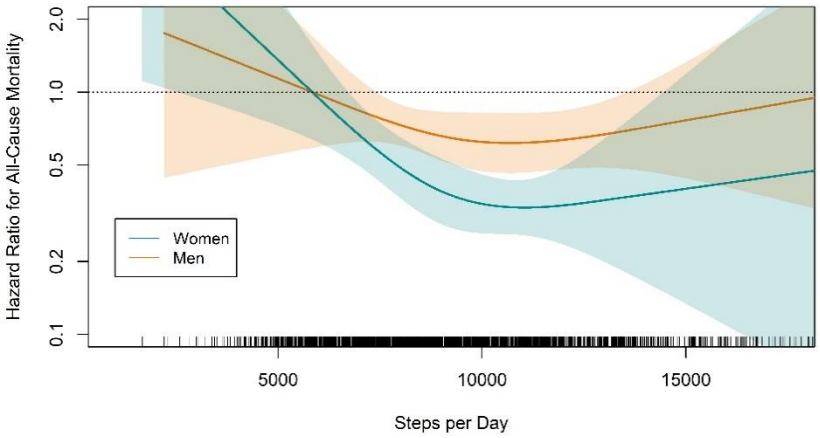
eFigures 2. Dose Response Association of Steps per Day with Premature All-Cause Mortality by Race and by Sex





Restricted Cubic Splines of Hazard Ratios of steps/d with all-cause mortality. Knots set at 10th, 50th, and 90th percentile of steps/d. Reference set at 5800 steps/d (~median steps/d of low step group). Model is adjusted for age, accelerometer wear time, race (for sex models), sex (for race models), education, study center, BMI, smoking, alcohol, Systolic BP, Hypertension medication, Diabetes, Hyperlipidemia, History of CVD, Self-Rated Health. The y-axis is a log scale. Data are shown as hazard ratios and 95% confidence intervals.

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eTable 1. Participant Characteristics at Year 20 Among Individuals Included vs Excluded Based on Accelerometer Wear

	Included (n=2110)	**Excluded (n=765)**
Baseline age, years	45.2 (3.6)	45.2 (3.6)
Women, n (%)	1205 (57.1)	430 (56.2)
Black, n (%)*	888 (42.1)	401 (52.4)
Education, years*	15.6 (2.6)	15.4 (2.7)
Current Smoker, n (%)*	356 (16.9)	160 (20.9)
Alcohol consumption, mL/day, median [IQR]	2.4 [0, 14.5]	2.4 [0, 12.2]
Self-reported Physical Activity, Exercise Units*	355 (274)	310 (268)
BMI, kg/m^2	29.0 (7.0)	29.3 (6.7)
Systolic Blood Pressure, mmHg	115 (14)	115 (15)
Self-reported Health, poor/fair, n (%)*	195 (9.2)	91 (11.9)
Hyperlipidemia, n (%)	1189 (56.4)	461 (60.3)
Diabetes, n (%)	166 (7.9)	60 (7.8)
History of CVD, n (%)	25 (1.2)	14 (1.8)
Deaths, n (%)	72 (3.4)	35 (4.5)

*** indicates significant differences p value <0.05**
Continuous variables reported as means (s.d.) unless noted
Excluded participants are considered those who did not wear the accelerometer or had less than 3 days of ≥10 hrs/d of accelerometer data recorded at the year 20 examination.

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eTable 2. Summary of Cause of Death for Total Sample and by Step Groups and Race and Sex Groups

	Total Sample	**By Steps/d Group**			**By Race-Sex Groups**			
		Low <7,000	**Mod 7,000-9,999**	**High ≥10,000**	**Black Women**	**White Women**	**Black Men**	**White Men**
N	2110	448	863	799	556	636	313	554
Total Deaths	72	32	16	24	20	13	19	19
Cause of Death								
Cardiovascular Disease	17	7	5	5	4	1	5	7
Cancer	18	9	2	7	4	8	3	3
Type 2 Diabetes	1	1	0	0	1	0	0	0
Kidney Disease	1	1	0	0	1	0	0	0
AIDS	3	1	1	1	0	0	1	2
Homicide	2	1	0	1	1	0	1	0
Liver Disease	4	2	1	1	0	1	0	2
Asthmas	2	1	1	0	1	0	1	0
Other Lung Disease	3	1	1	1	1	1	1	0
Suicide	2	0	0	2	0	2	0	0
Unintentional Injury	5	2	3	0	0	0	1	4
Sepsis	5	3	0	2	1	0	3	1
Other	1	0	0	1	0	0	1	0
Unknown	8	3	2	3	6	0	2	0

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eTable 3. Hazard Ratios for the Association of All-Cause Mortality With Details of Parameters Included in Model

	Model 2				Model 3			
Parameter	**Hazard Ratio**	**95% Confidence Interval**		**P-value**	**Hazard Ratio**	**95% Confidence Interval**		**P-value**
Step group moderate (vs. low (ref))	0.270	0.144	0.508	0.001	0.285	0.150	0.541	0.008
Step group high (vs. low (ref))	0.402	0.225	0.720	0.002	0.446	0.246	0.809	0.001
Age	1.146	1.066	1.232	0.001	1.136	1.056	1.224	0.001
Sex (Female vs Male(ref))	0.625	0.378	1.032	0.066	0.594	0.353	1.000	0.050
Race (White vs Black (ref))	0.788	0.473	1.313	0.360	0.781	0.455	1.338	0.367
Education	0.894	0.809	0.987	0.026	0.910	0.825	1.004	0.060
Field Center (Birmingham vs Oakland (ref))	2.409	1.219	4.764	0.011	2.436	1.230	4.826	0.011
Field Center (Chicago vs Oakland (ref)	1.193	0.571	2.492	0.638	1.203	0.572	2.527	0.626
Field Center (Minneapolis vs Oakland (ref))	1.665	0.837	3.312	0.146	1.557	0.775	3.126	0.213
Accelerometer wear time (min/d)	1.001	0.998	1.004	0.434	1.001	0.998	1.003	0.599
BMI (kg/m^2)	1.015	0.986	1.045	0.302	1.011	0.980	1.042	0.492
Smoking Status (former vs never (ref))	0.947	0.487	1.842	0.872	0.950	0.487	1.855	0.881
Smoking Status (current vs never (ref))	1.570	0.878	2.807	0.128	1.432	0.785	2.614	0.241
Alcohol intake (none vs >12 ml/d (ref))	0.856	0.478	1.532	0.600	0.832	0.464	1.491	0.535
Alcohol intake (<12 ml/d vs >12 ml/d (ref))	0.679	0.346	1.331	0.259	0.649	0.330	1.275	0.209
Blood pressure medication (no vs yes (ref))					1.249	0.650	2.402	0.504
Diabetes (no vs. yes (ref))					0.989	0.455	2.150	0.978
Hyperlipidemia (no vs. yes (ref))					1.370	0.822	2.284	0.226
History of CVD (no vs. year (ref))					0.304	0.110	0.839	0.021
Systolic Blood Pressure (mmHg)					1.004	0.989	1.019	0.573
Self-Rated Health (poor/fair vs good/very good/excellent (ref))					1.592	0.831	3.052	0.161
Likelihood Ratio Test[a]								
Comparing to nested model 1				0.001				0.002
Comparing to nested model 2				-				0.261

[a]Likelihood ratio test for nested model comparison. P-values calculated using a chi-squared test for nested vs full model. Model 1adjusted for age, sex, race, accelerometer wear time.

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eTable 4. Dose-Response Association of Steps per Day With Premature All-Cause Mortality Excluding Individuals Who Died in First 2 Years

	No.	Events	Model 1 HR (95% CI)	Model 3 HR (95% CI)
<7,000 steps/d	447	31	1.00 (ref)	1.00 (ref)
7,000-9,999 steps/d	862	15	0.22 (0.12 - 0.42)	0.27 (0.14 - 0.52)
≥10,000 steps/d	798	23	0.37 (0.21 - 0.63)	0.42 (0.23 - 0.76)
p-value for trend			<0.01	<0.01

Model 1: Adjust models for age, sex, race, accelerometer wear time
Model 3: Model 1 + education, center, BMI, smoking, alcohol intake, systolic blood pressure, Hypertension medication, Diabetes, Hyperlipidemia, CVD, Self-rated Health

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eTable 5. Extended Cox Regression Model Using Time Varying Covariates for the Dose-Response Association of Steps per Day Wwith Premature All-Cause Mortality

	No.	Events	HR (95% CI) adjusting for time-updated covariates
<7,000 steps/d	448	32	1.00 (ref)
7,000-9,999 steps/d	863	16	0.28 (0.15 - 0.54)
≥10,000 steps/d	779	24	0.44 (0.25 - 0.80)
p-value for trend			0.01
Models adjusted for baseline variables of age, sex, race, accelerometer wear time, education, center, and time-varying variables of BMI, smoking, alcohol, systolic blood pressure, Hypertension medication, Diabetes, Hyperlipidemia, CVD, Self-Rated Health Time-varying variables were measured at year 20, year 25, and year 30 examinations.			

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eTable 6. Dose-Response Association of Steps per Day With Premature All-Cause Mortality Among Subsample Sample With Diet Data Available

	n Events/n Total	Healthy Eating Index Included in Model HR (95% CI)	Healthy Eating Index Not Included in Model HR (95% CI)
<7,000 steps/day	32/447	1.00 (ref)	1.00 (ref)
7,000-9,999 Steps/day	13/862	0.22 (0.11 - 0.43)	0.22 (0.11 - 0.43)
≥10,000 Steps	18/798	0.29 (0.15 - 0.54)	0.29 (0.15 - 0.54)
p-value for trend		<0.01	<0.01
Models adjusted for age, sex, race, accelerometer wear time, education, center, BMI, smoking, alcohol (with or without diet variable)			

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