

# Appendix S1

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## Comparison to US Death Rates

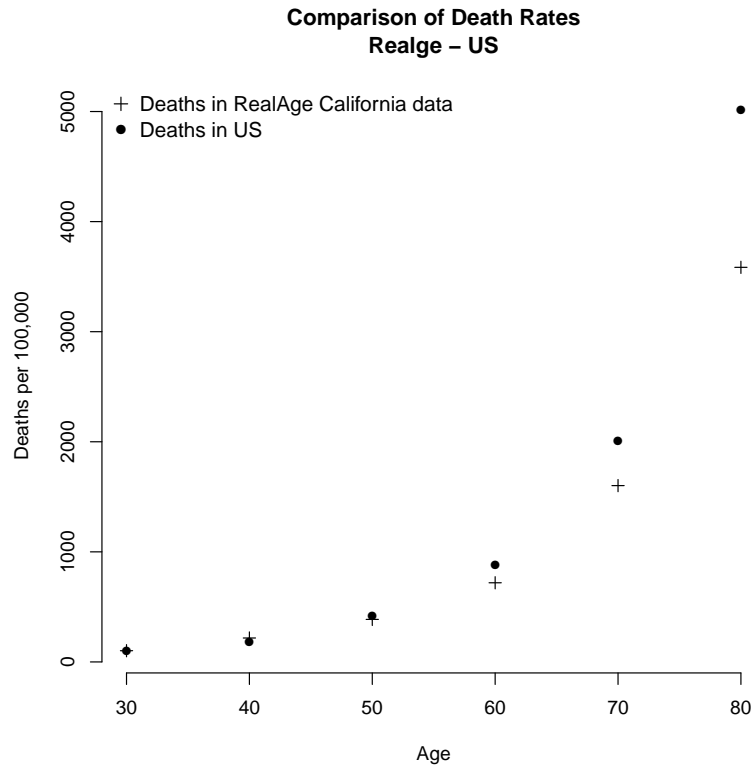


Figure S1: Comparison of death rates in RealAge sample to US death rates.

**Distribution of RealAge delta**

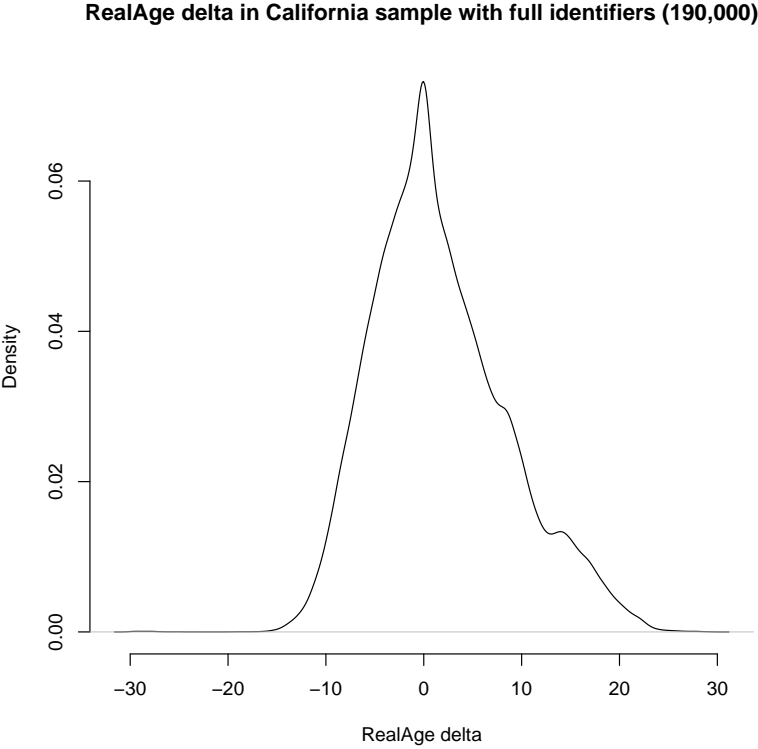


Figure S2: *RealAge delta in California sample with full identifiers*

**RealAge delta in RealAge population (10 million only)**

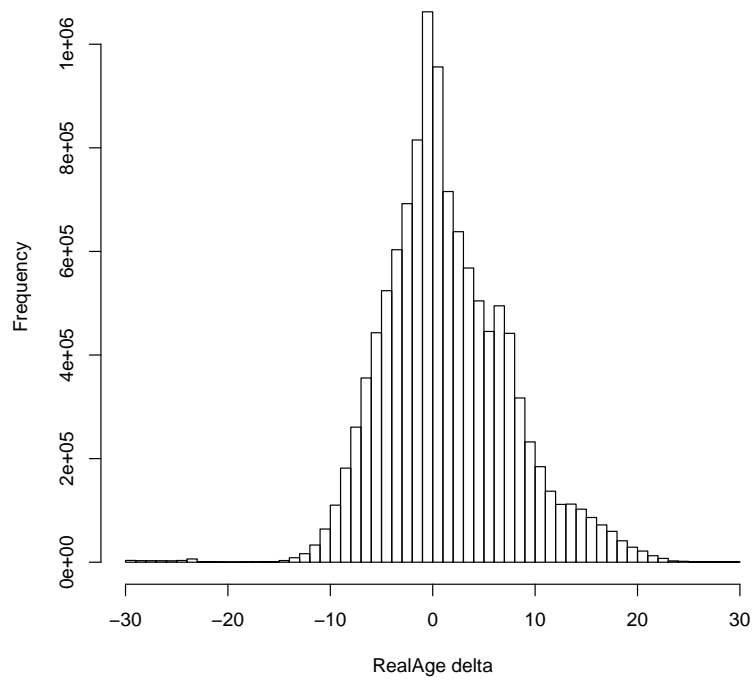


Figure S3: *RealAge delta in RealAge population*

## Causes of death and RealAge delta by age group

25 to 44

Table S1: 25 to 44 - causes of death

Cause of Death	Count	Follow-Up Mean	Follow-Up Median
External Causes	46	938.5	767
Cancer	21	1074	948
Heart Disease	16	1307.4	1041
# of users in sample	74,965		
# deceased in sample	118		

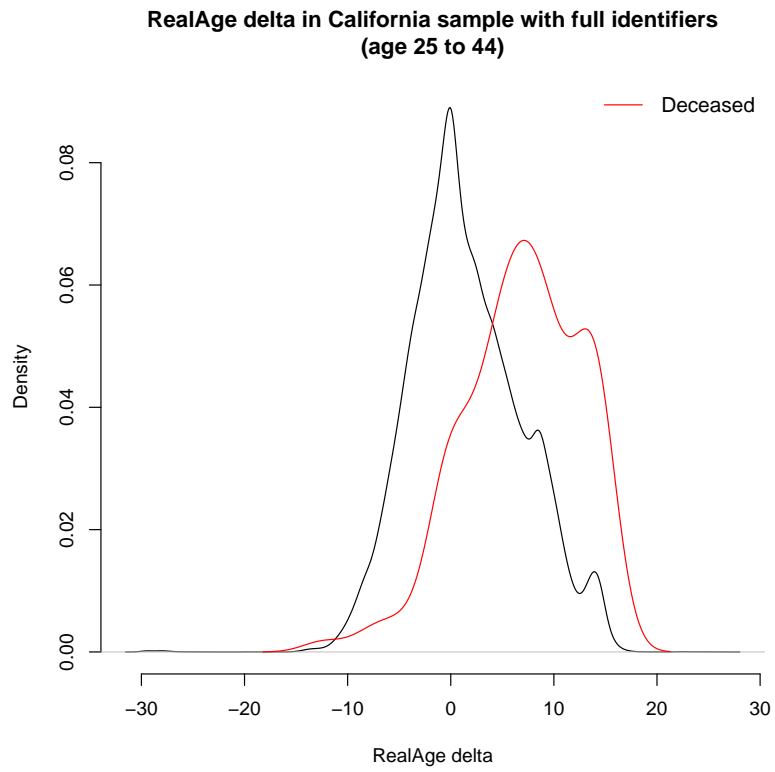


Figure S4: *RealAge delta in California sample with full identifiers - age 25 to 44*

**45 to 64**

Table S2: 45 to 64 - causes of death

Cause of Death	Count	Follow-Up Mean	Follow-Up Median
Cancer	161	1215.3	980
Heart Disease	115	970.4	779
External Causes	48	935.5	739
Chronic Lower Respiratory	29	993.2	887
# of users in sample	91,886		
# deceased in sample	479		

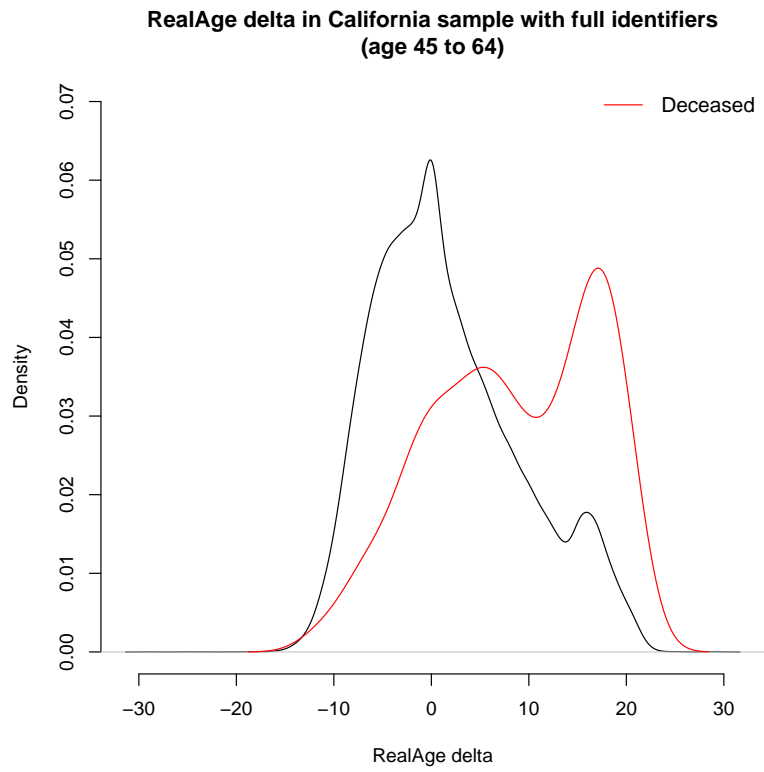


Figure S5: *RealAge delta in California sample with full identifiers - age 45 to 64*



65 to 84

Table S3: 65 to 84 - causes of death

Cause of Death	Count	Follow-Up Mean	Follow-Up Median
Cancer	157	1016.8	867
Heart Disease	121	1034	897
Chronic Lower Respiratory	29	1018.4	879
Cerebrovascular Disease	26	1120	1028.5
# of users in sample	21,847		
# deceased in sample	449		

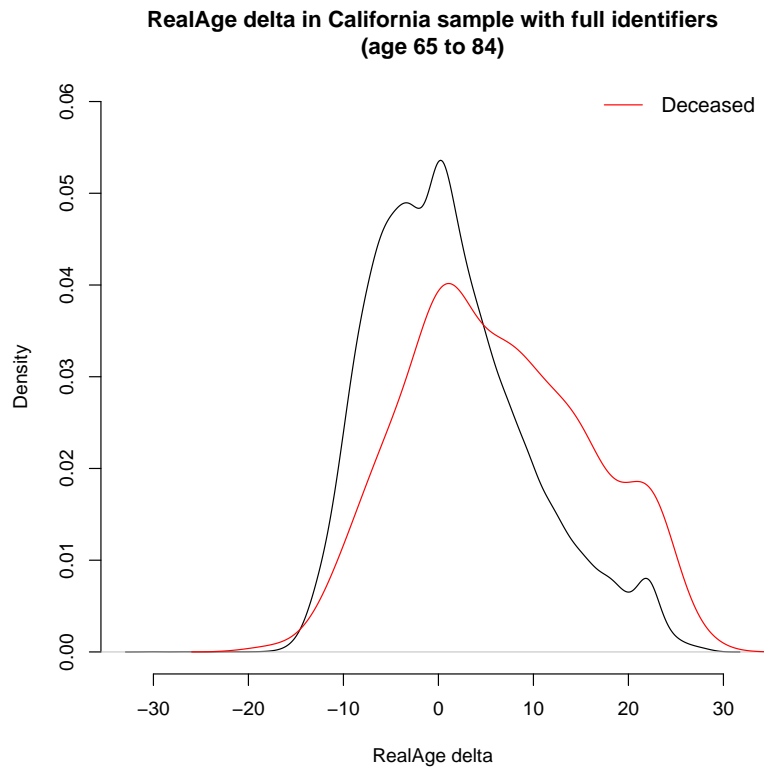


Figure S6: *RealAge delta in California sample with full identifiers - age 65 to 84*

## Log-Likelihood for Table 4 Comparison of Age and RealAge

Table S4: Log-Likelihood for Table 4 Comparison of Age and RealAge		
Model.1	Log.Likelihood	
Age	-11176.1798, -10698.1112	
Model.2	Log.Likelihood	chisq.df.p.value
RealAge	-10698.1112 -10416.2891	563.6442, 0, 0
Model.3	Log.Likelihood	chisq.df.p.value
Age.and.RealAge.Delta	-10416.2891 -10414.563	3.4523, 1, 0.0632

## Framingham Risk Factor Estimates

Table S5: Framingham Hard Coronary Heart Disease 10-Year Risk Model results—unscaled age

	HR	(2.5%, 97.5%)	p
Age	1.073	(1.054, 1.092)	0.000
Current Smoker	4.218	(2.858, 6.221)	0.000
Blood Pressure (points)	1.266	(1.062, 1.510)	0.008
Cholesterol (points)	0.903	(0.789, 1.033)	0.136
HDL Cholesterol (points)	1.202	(0.961, 1.504)	0.108

Table S6: Framingham Hard Coronary Heart Disease 10-Year Risk Model results—indicators only, unscaled age

	HR	(2.5%, 97.5%)	p
Age	1.081	(1.064, 1.097)	0.000
Current Smoker	4.263	(2.889, 6.290)	0.000
Blood Pressure	1.567	(1.085, 2.264)	0.017
Cholesterol	0.732	(0.494, 1.085)	0.121

## Calibration plots

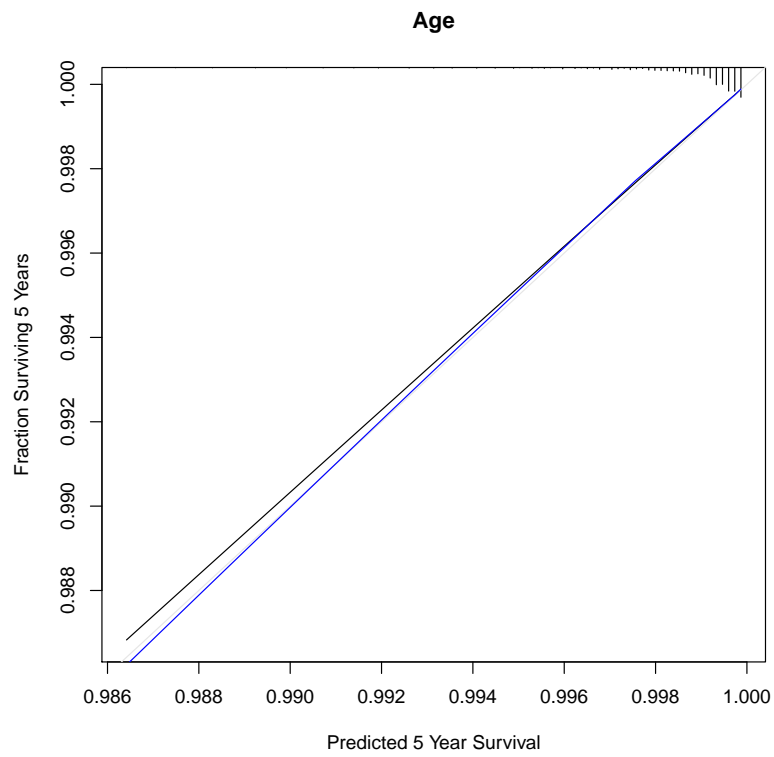


Figure S7: Calibration plot - Age.

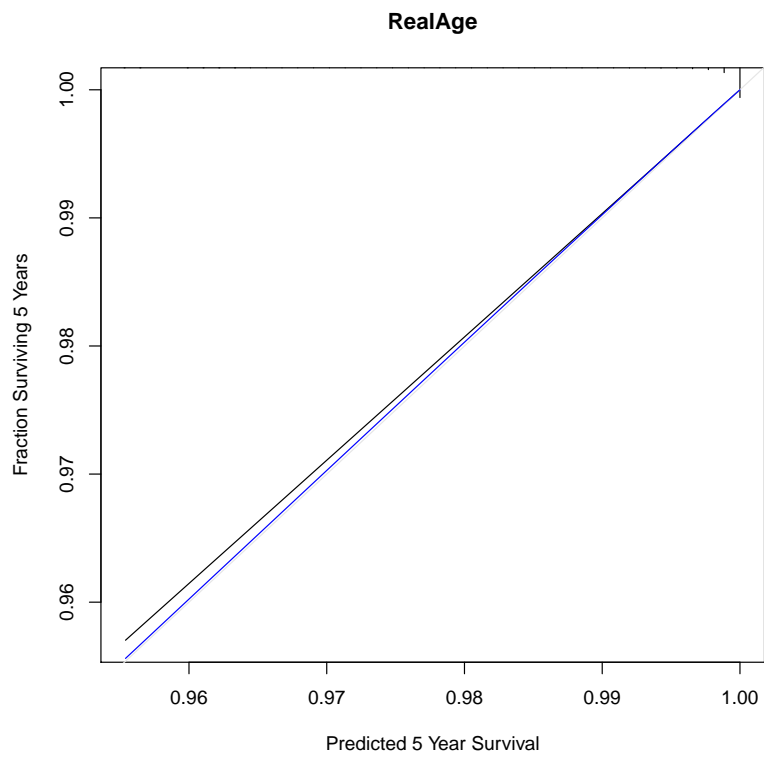


Figure S8: Calibration plot - RealAge.

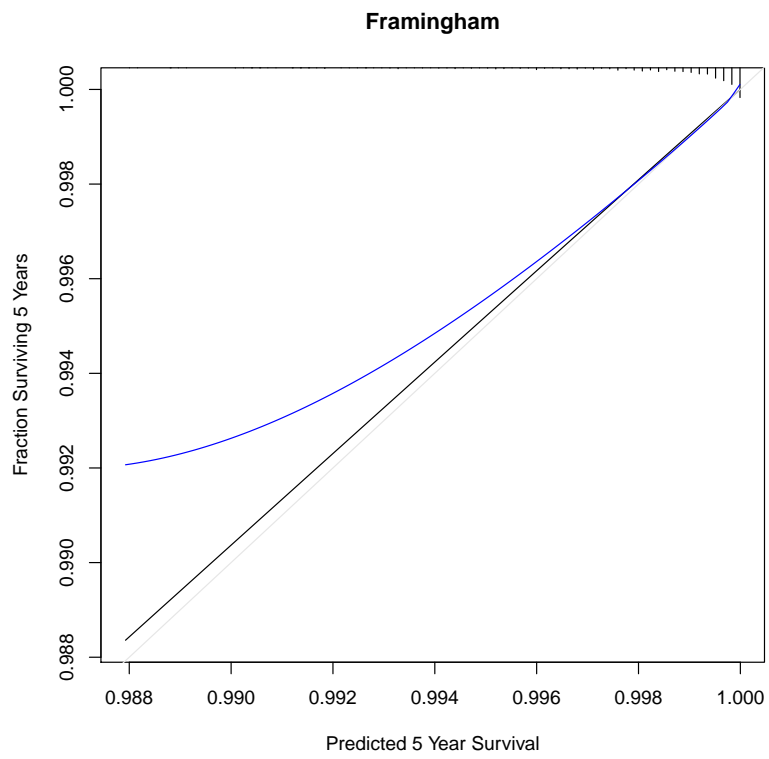


Figure S9: Calibration plot - Framingham.

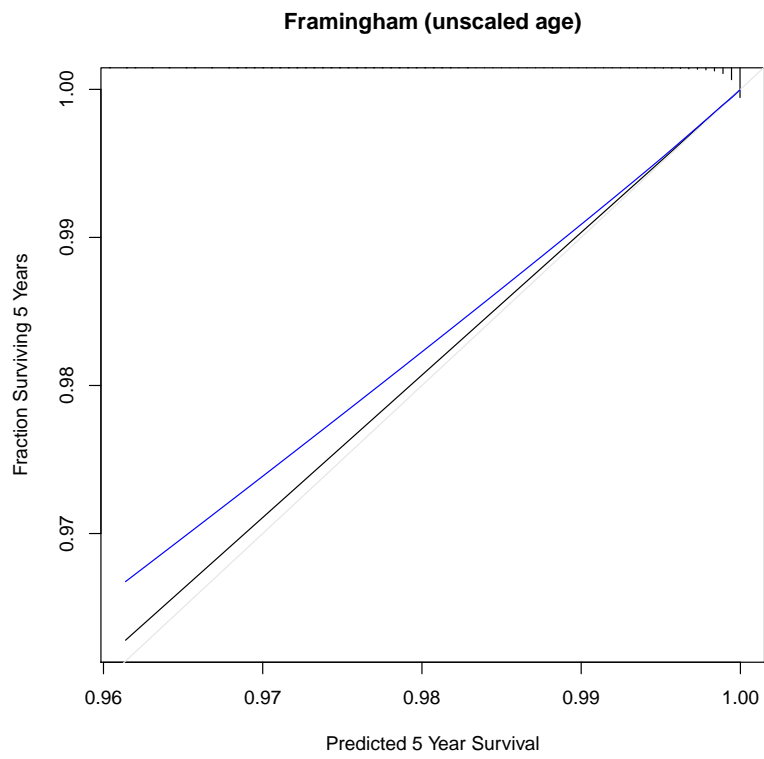


Figure S10: Calibration plot - Framingham (unscaled age)



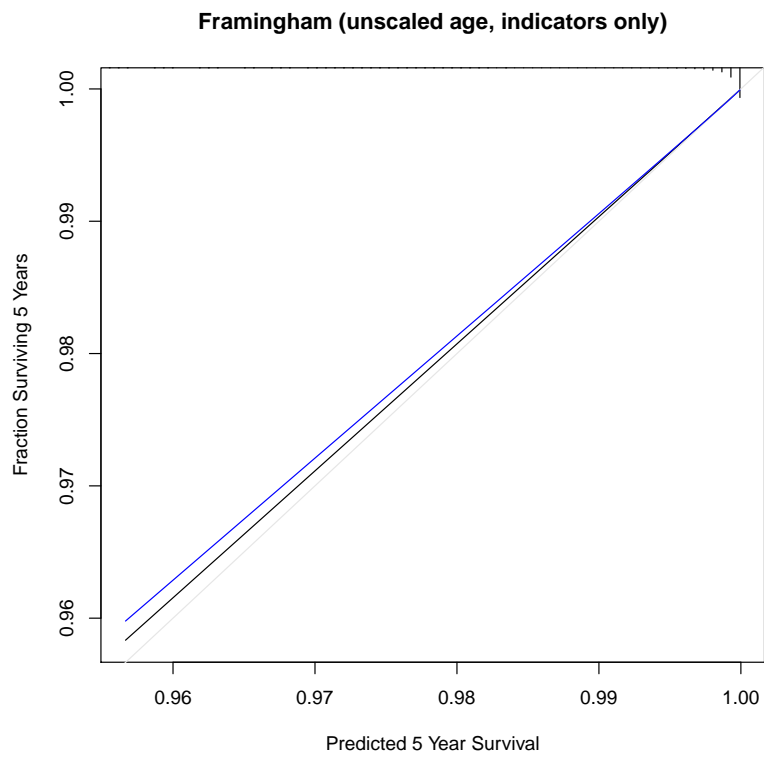


Figure S11: Calibration plot - Framingham (unscaled age, indicators only)

## Estimates by age group

### 25 to 44

Table S7: 25 to 44 - model results			
	HR	(2.5%, 97.5%)	p
Age	1.054	(1.021, 1.087)	0.001
<hr/>			
	HR	(2.5%, 97.5%)	p
RealAge	1.081	(1.066, 1.095)	0.000
<hr/>			
	HR	(2.5%, 97.5%)	p
Age	1.049	(1.017, 1.082)	0.002
RealAgeDelta	1.087	(1.073, 1.102)	0.000

Table S8: 25 to 44 - model results (age base)			
	HR	(2.5%, 97.5%)	p
RealAgeDelta	1.087	(1.071, 1.103)	0.000

45 to 64

Table S9: 45 to 64 - model results

	HR	(2.5%, 97.5%)	p
Age	1.068	(1.050, 1.085)	0.000
RealAge	1.088	(1.079, 1.096)	0.000
Age	1.064	(1.047, 1.082)	0.000
RealAgeDelta	1.094	(1.085, 1.103)	0.000

Table S10: 45 to 64 - model results (age base)

	HR	(2.5%, 97.5%)	p
RealAgeDelta	1.095	(1.084, 1.105)	0.000

65 to 84

Table S11: 65 to 84 - model results

	HR	(2.5%, 97.5%)	p
Age	1.081	(1.064, 1.100)	0.000

	HR	(2.5%, 97.5%)	p
RealAge	1.074	(1.064, 1.083)	0.000

	HR	(2.5%, 97.5%)	p
Age	1.086	(1.067, 1.104)	0.000
RealAgeDelta	1.070	(1.059, 1.081)	0.000

Table S12: 65 to 84 - model results (age base)

	HR	(2.5%, 97.5%)	p
RealAgeDelta	1.071	(1.060, 1.082)	0.000

## Heart Disease Estimates

Table S13: All users - Death from Heart Disease

	HR	(2.5%, 97.5%)	p
Age	1.088	(1.077, 1.099)	0.000
RealAge	1.096	(1.087, 1.105)	0.000
Age	1.088	(1.077, 1.100)	0.000
RealAgeDelta	1.105	(1.092, 1.119)	0.000
# of users in sample	187,904		
# deceased in sample	252		

Table S14: Death from Heart Disease (age in base hazard)

	HR	(2.5%, 97.5%)	p
RealAgeDelta	1.109	(1.095, 1.123)	0.000

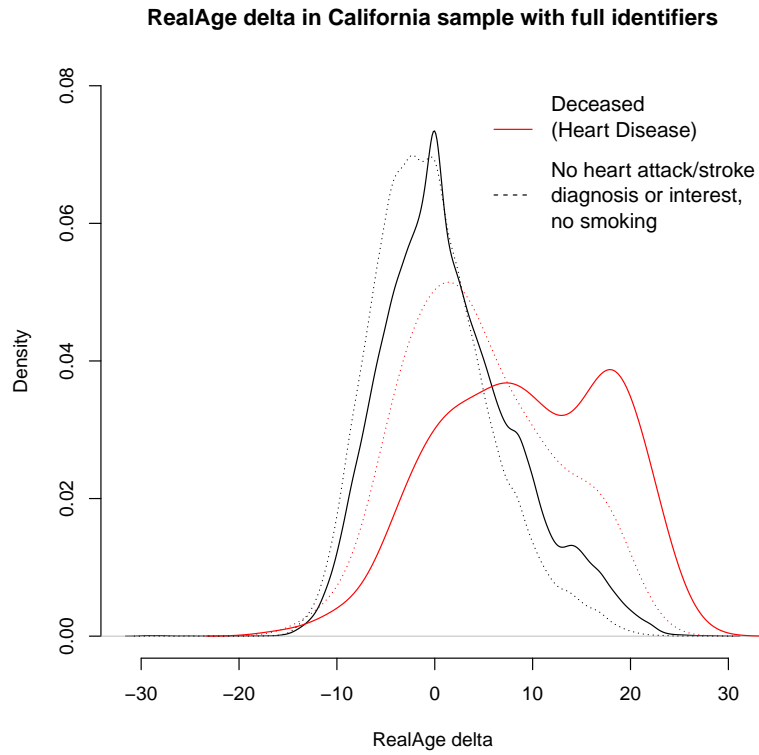


Figure S12: Comparison of RealAge score distributions for all deceased/surviving users and deceased/surviving "healthy" users (heart disease).

## Cancer Estimates

Table S15: All users - Death from Cancer

	HR	(2.5%, 97.5%)	p
Age	1.094	(1.084, 1.103)	0.000
RealAge	1.079	(1.071, 1.085)	0.000
Age	1.094	(1.084, 1.103)	0.000
RealAgeDelta	1.054	(1.042, 1.067)	0.000
# of users in sample	187,991		
# deceased in sample	339		

Table S16: Death from Cancer (age in base hazard)

	HR	(2.5%, 97.5%)	p
RealAgeDelta	1.051	(1.039, 1.064)	0.000

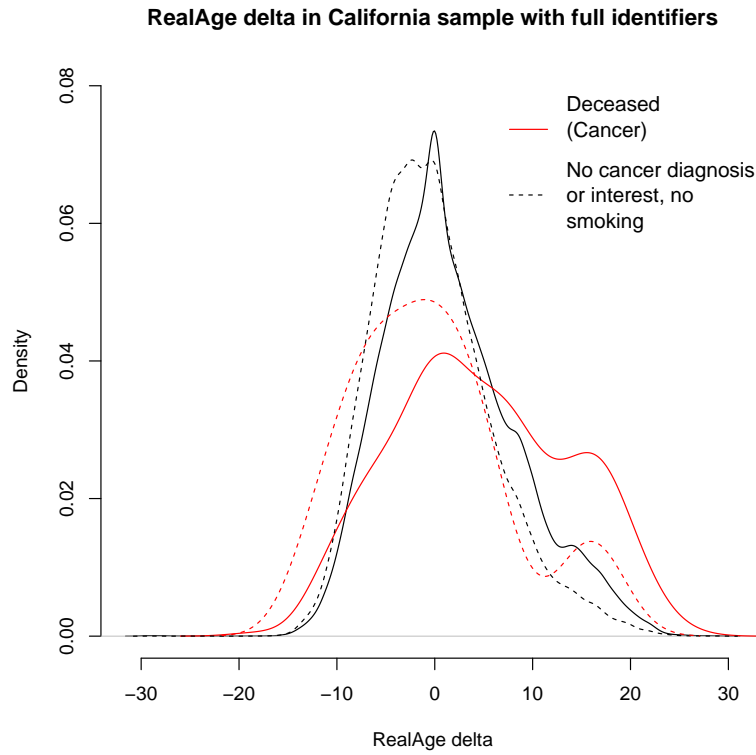


Figure S13: Comparison of RealAge score distributions for all deceased/surviving users and deceased/surviving "healthy" users (cancer).



## External Cause Estimates

Table S17: All users - Death from External Cause			
	HR	(2.5%, 97.5%)	p
Age	0.996	(0.980, 1.012)	0.584
RealAge	1.024	(1.010, 1.038)	0.000
Age	0.992	(0.976, 1.008)	0.348
RealAgeDelta	1.090	(1.070, 1.108)	0.000
# of users in sample	187,741		
# deceased in sample	89		

Table S18: Death from External Cause (age in base hazard)

	HR	(2.5%, 97.5%)	p
RealAgeDelta	1.087	(1.063, 1.111)	0.000

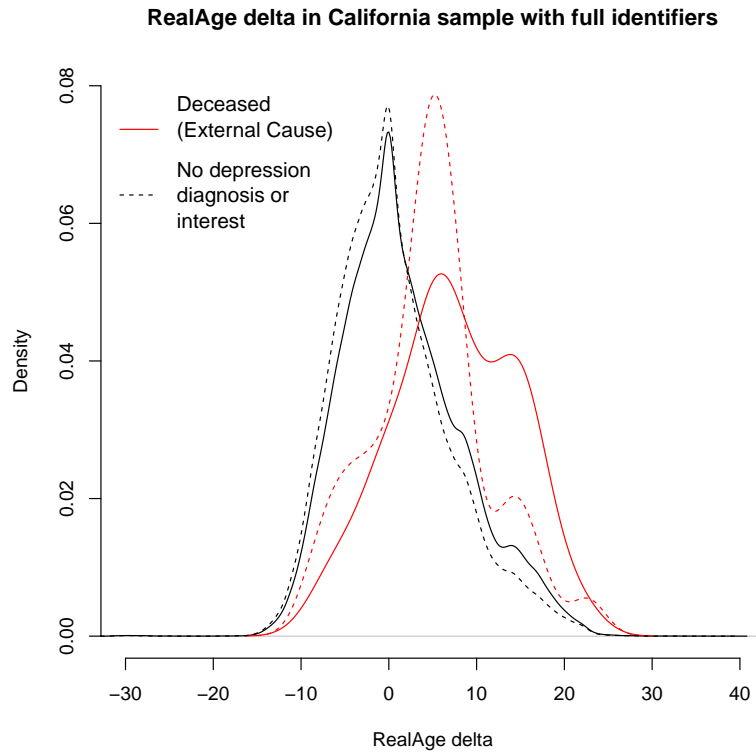


Figure S14: Comparison of RealAge score distributions for all deceased/surviving users and deceased/surviving "healthy" users (external causes).

## Estimates for users with at least two years of follow-up

Table S19: All users - at least two years follow-up

	HR	(2.5%, 97.5%)	p
Age	1.079	(1.073, 1.085)	0.000
RealAge	1.080	(1.075, 1.084)	0.000
Age	1.078	(1.071, 1.085)	0.000
RealAgeDelta	1.081	(1.074, 1.090)	0.000
# of users in sample	160,261		
# deceased in sample	642		

## Estimates for "healthy" users

Table S20: All users - Death from Heart Disease, no Report Diagnosis or Interest for Heart Attack or Stroke, no Smoking

	HR	(2.5%, 97.5%)	p
Age	1.071	(1.046, 1.097)	0.000
RealAge	1.085	(1.063, 1.107)	0.000
Age	1.076	(1.050, 1.102)	0.000
RealAgeDelta	1.103	(1.070, 1.137)	0.000
# of users in sample	84,190		
# deceased in sample	40		

Table S21: All users - Death from Cancer, no Reported Diagnosis or Interest for Cancer, no Smoking

	HR	(2.5%, 97.5%)	p
Age	1.108	(1.083, 1.132)	0.000
RealAge	1.071	(1.054, 1.088)	0.000
Age	1.108	(1.083, 1.132)	0.000
RealAgeDelta	1.004	(0.968, 1.041)	0.847
# of users in sample	71,271		
# deceased in sample	52		

Table S22: All users - Death from External Cause, no Reported Diagnosis or Interest for Depression

	HR	(2.5%, 97.5%)	p
Age	0.992	(0.965, 1.020)	0.594
RealAge	1.010	(0.985, 1.035)	0.440
Age	0.991	(0.963, 1.019)	0.509
RealAgeDelta	1.066	(1.019, 1.115)	0.005
# of users in sample	124,919		
# deceased in sample	27		