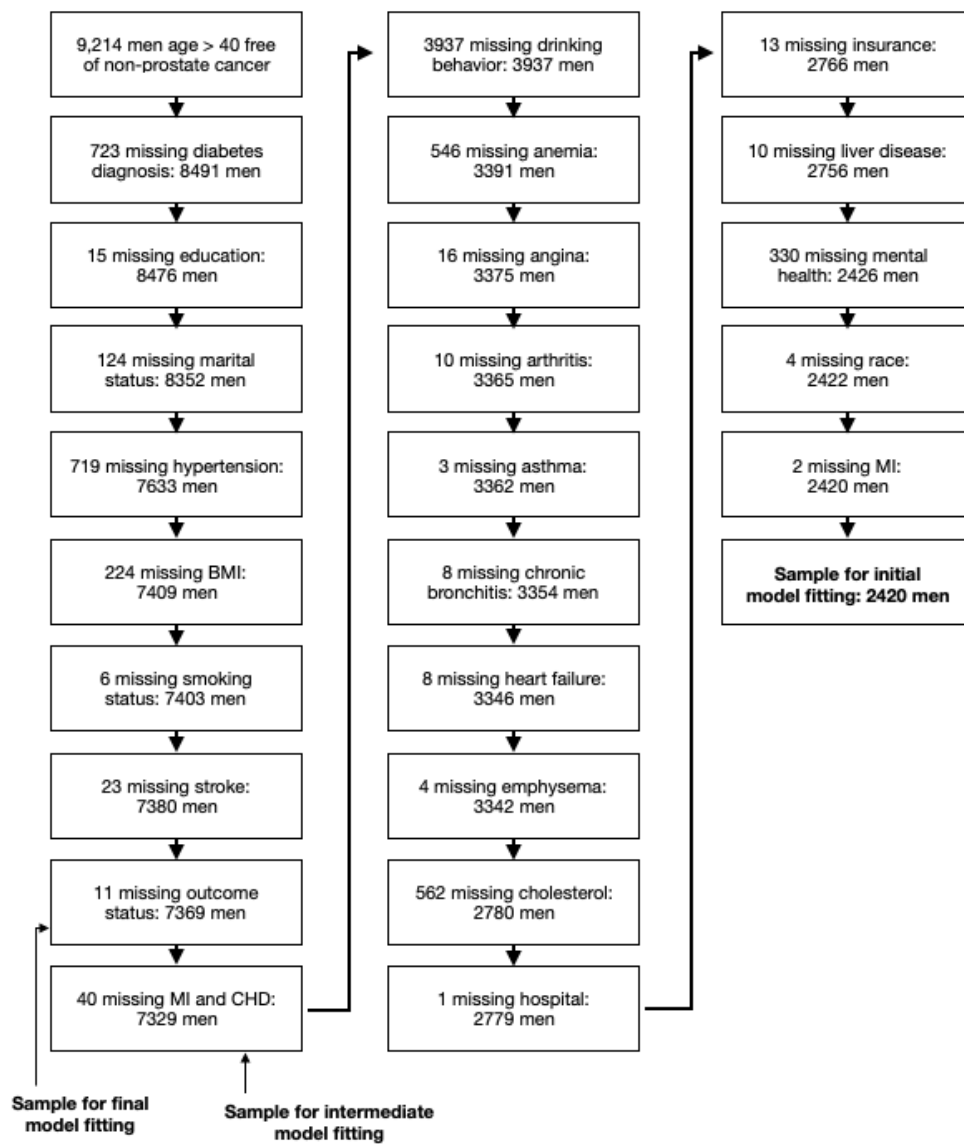


Supplement

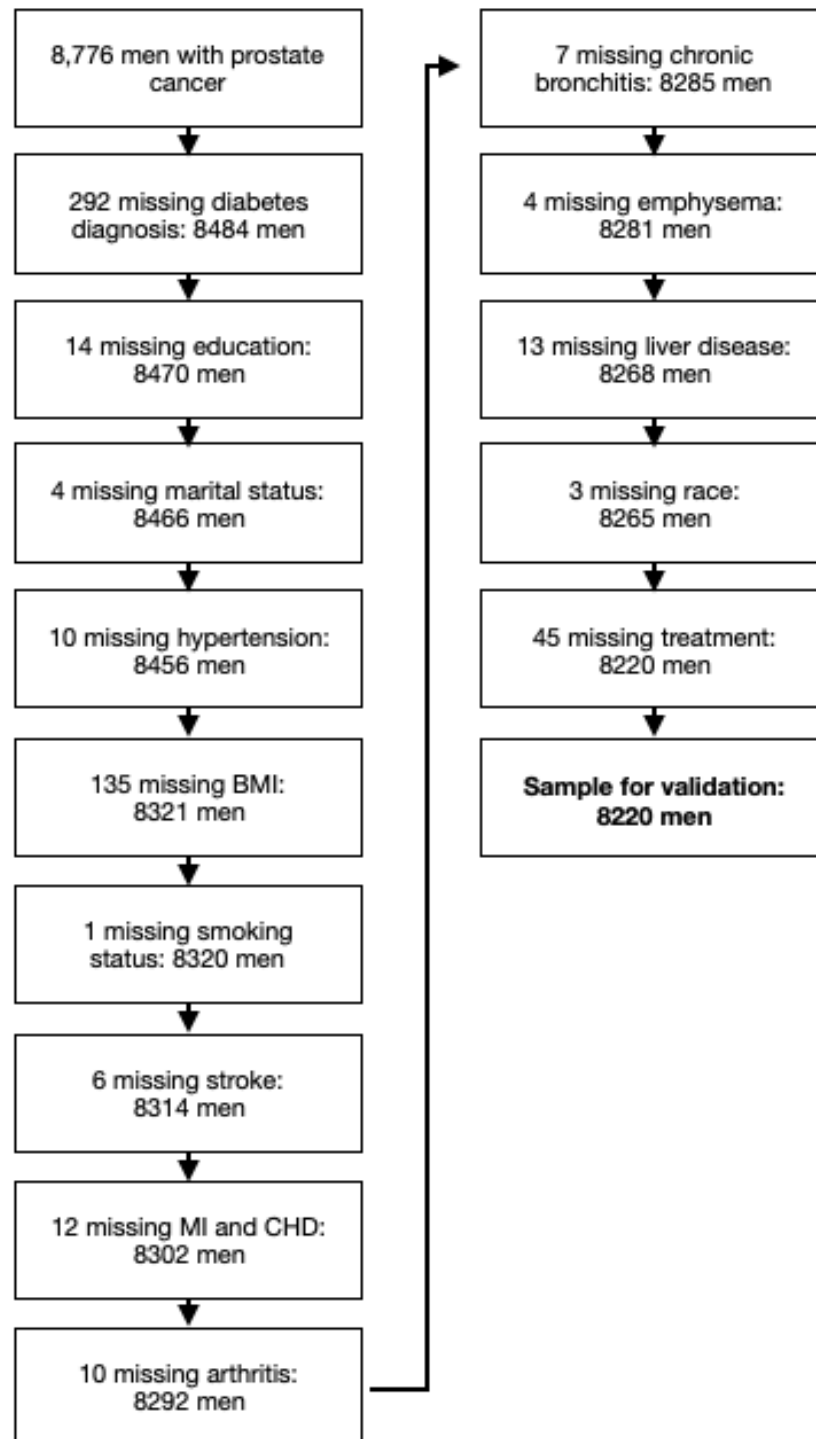
Elizabeth Chase

10/20/2020

Supplementary Figure 1: Sample exclusions used to move from a sample of 9,214 men in National Health and Nutrition Examination Survey (NHANES) 1999-2010 to the final training cohort of 2,420 men used for model-building.



Supplementary Figure 2: Sample exclusions used to move from a sample of 8,776 men in the Prostate, Lung, Colon, and Ovarian Cancer Screening Trial (PLCO) to the final validation cohort of 8,220 men used for model-building.



Supplementary Table 1: Cause-specific and competing-risks time-dependent AUCs of our final OC mortality model in the Prostate, Lung, Colon, and Ovarian Cancer Screening Trial (PLCO) validation cohort of 8,220 men.

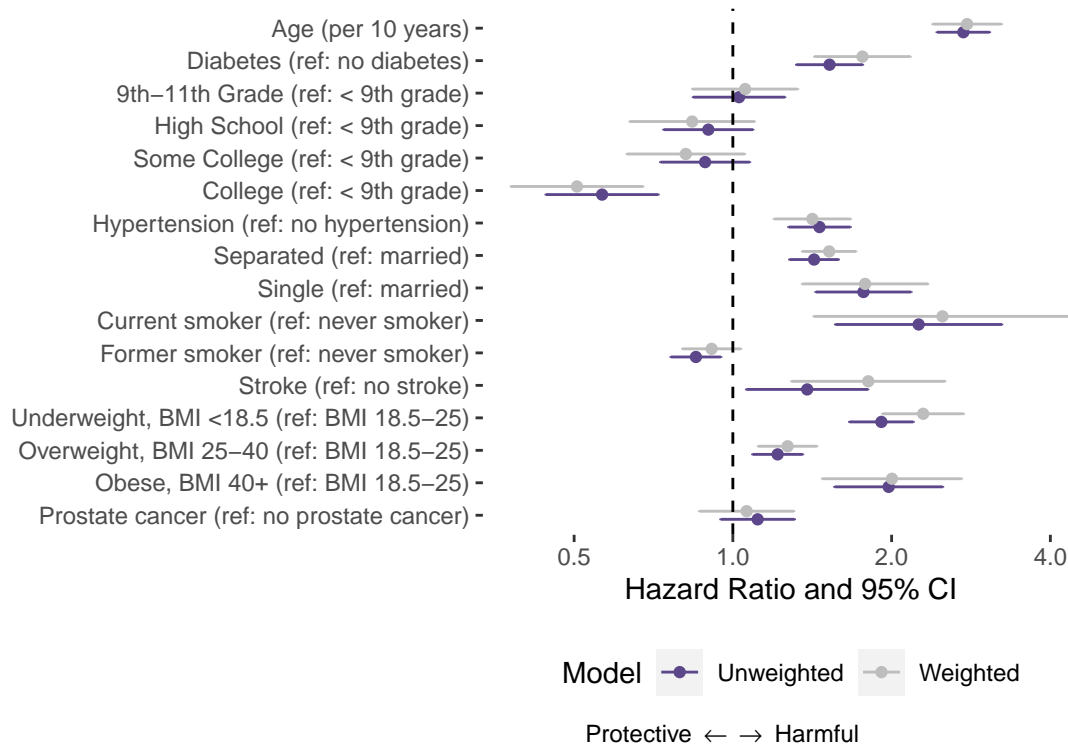
Metric	5 Years	10 Years	15 Years
Cause-Specific AUC	0.7	0.75	0.78
Competing-Risks AUC	0.7	0.74	0.73

Supplementary Table 2: Time-dependent AUC of our final OC mortality model in the three main treatment groups in the Prostate, Lung, Colon, and Ovarian Cancer Screening Trial (PLCO) validation cohort of 8,220 men.

Treatment	Cause-Specific AUC			Competing-Risks AUC		
	5 Years	10 Years	15 Years	5 Years	10 Years	15 Years
Prostatectomy	0.68	0.69	0.72	0.68	0.69	0.71
Radiation alone	0.65	0.71	0.75	0.65	0.70	0.72
Radiation + hormone	0.63	0.71	0.73	0.63	0.70	0.67

Supplementary Figure 3: Forest plot comparing the effect sizes of predictors from the unweighted and survey weighted versions of our final OC mortality prediction model fit in the NHANES training cohort of 7,369 men. The model also includes interactions between age and diabetes, education, hypertension, and stroke.

```
## Stratified 1 - level Cluster Sampling design (with replacement)
## With (180) clusters.
## subset(nhanes_svy, inmodel4 == 1)
```



Supplementary Table 3: Characteristics of a cohort of 7,596 men from the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial, grouped by predicted median survival time from our OC mortality model.

	15+	10-15	5-10	< 5	p	test
n	3458	2799	1307	32		
Age (years) (mean (SD))	65.1 (4.0)	71.4 (3.9)	76.4 (4.3)	80.8 (3.8)	<0.001	
Race (%)					<0.001	
NHB	165 (4.8)	175 (6.3)	97 (7.4)	3 (9.4)		
NHW	3143 (90.9)	2468 (88.2)	1114 (85.2)	26 (81.2)		
Other	150 (4.3)	156 (5.6)	96 (7.3)	3 (9.4)		
Education (%)					<0.001	
Less than 9th grade	31 (0.9)	38 (1.4)	13 (1.0)	3 (9.4)		
9th-11th grade	127 (3.7)	248 (8.9)	106 (8.1)	2 (6.2)		
HS graduate	849 (24.6)	426 (15.2)	115 (8.8)	2 (6.2)		
Some college	675 (19.5)	1041 (37.2)	666 (51.0)	15 (46.9)		
College graduate	1776 (51.4)	1046 (37.4)	407 (31.1)	10 (31.2)		
Marital status (%)					<0.001	
Married	3173 (91.8)	2379 (85.0)	947 (72.5)	11 (34.4)		
Separated	234 (6.8)	350 (12.5)	273 (20.9)	17 (53.1)		
Single	51 (1.5)	70 (2.5)	87 (6.7)	4 (12.5)		
Smoking status (%)					<0.001	
Current	175 (5.1)	262 (9.4)	226 (17.3)	16 (50.0)		
Former	1565 (45.3)	1510 (53.9)	736 (56.3)	12 (37.5)		
Never	1718 (49.7)	1027 (36.7)	345 (26.4)	4 (12.5)		
Diabetes = Yes (%)	101 (2.9)	224 (8.0)	149 (11.4)	3 (9.4)	<0.001	
Hypertension = Yes (%)	846 (24.5)	1112 (39.7)	571 (43.7)	11 (34.4)	<0.001	
Previous stroke = Yes (%)	8 (0.2)	58 (2.1)	101 (7.7)	5 (15.6)	<0.001	
BMI category (%)					<0.001	
Underweight (BMI < 18.5)	2 (0.1)	8 (0.3)	6 (0.5)	4 (12.5)		
Normal weight (BMI 18.5-25)	802 (23.2)	811 (29.0)	517 (39.6)	17 (53.1)		
Overweight (BMI 25-40)	2636 (76.2)	1963 (70.1)	761 (58.2)	9 (28.1)		
Obese (BMI 40+)	18 (0.5)	17 (0.6)	23 (1.8)	2 (6.2)		
N Stage (%)					<0.001	
N0	3067 (88.7)	2389 (85.4)	1099 (84.1)	23 (71.9)		
N1	47 (1.4)	32 (1.1)	15 (1.1)	1 (3.1)		
N2	9 (0.3)	2 (0.1)	0 (0.0)	0 (0.0)		
NX	335 (9.7)	376 (13.4)	193 (14.8)	8 (25.0)		

Supplementary Table 3, cont.: Characteristics of a cohort of 7,596 men from the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial, grouped by predicted median survival time from our OC mortality model.

	15+	10-15	5-10	< 5	p	test
n	3458	2799	1307	32		
T Stage (%)					<0.001	
T0	1 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)		
T1-T2a	1619 (46.8)	1813 (64.8)	963 (73.7)	25 (78.1)		
T2b-T2c	1390 (40.2)	727 (26.0)	270 (20.7)	7 (21.9)		
T3a-T4	446 (12.9)	258 (9.2)	73 (5.6)	0 (0.0)		
TX	2 (0.1)	1 (0.0)	1 (0.1)	0 (0.0)		
Gleason (%)					<0.001	
<= 6	2028 (58.6)	1524 (54.4)	604 (46.2)	12 (37.5)		
7	1134 (32.8)	893 (31.9)	451 (34.5)	9 (28.1)		
8	166 (4.8)	223 (8.0)	141 (10.8)	6 (18.8)		
9	116 (3.4)	147 (5.3)	90 (6.9)	4 (12.5)		
10	14 (0.4)	12 (0.4)	21 (1.6)	1 (3.1)		
PSA at diagnosis (mean (SD))	10.7 (88.7)	11.6 (42.5)	17.0 (64.8)	48.2 (133.6)	0.015	
Prostate cancer risk group (%)					<0.001	
Low	906 (26.2)	809 (28.9)	326 (24.9)	3 (9.4)		
Intermediate	794 (23.0)	622 (22.2)	327 (25.0)	5 (15.6)		
High	613 (17.7)	550 (19.6)	296 (22.6)	12 (37.5)		
Regional	56 (1.6)	34 (1.2)	15 (1.1)	1 (3.1)		
NA	1089 (31.5)	784 (28.0)	343 (26.2)	11 (34.4)		
Treatment (%)					<0.001	
Active surveillance	219 (6.3)	352 (12.6)	279 (21.3)	15 (46.9)		
Other ablative treatment	41 (1.2)	73 (2.6)	52 (4.0)	1 (3.1)		
Hormone alone	99 (2.9)	215 (7.7)	224 (17.1)	10 (31.2)		
Radiation alone	627 (18.1)	690 (24.7)	297 (22.7)	2 (6.2)		
Prostatectomy	1973 (57.1)	759 (27.1)	112 (8.6)	0 (0.0)		
Radiation + hormone	499 (14.4)	710 (25.4)	343 (26.2)	4 (12.5)		
Outcome (%)					<0.001	
Alive	2636 (76.2)	1714 (61.2)	619 (47.4)	8 (25.0)		
Died of OC	665 (19.2)	903 (32.3)	592 (45.3)	21 (65.6)		
Died of PC	157 (4.5)	182 (6.5)	96 (7.3)	3 (9.4)		

““