



**Women's Health Initiative
2023 Annual Progress Report**

Data as of: February 19, 2023

The data, if any, contained in this report/deliverable are preliminary and may contain unvalidated findings. These data are not intended for public use. Public use of these data could create erroneous conclusions which, if acted upon, could threaten public health or safety.

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I. Overview

Background

Between 1993 and 1998, forty Women's Health Initiative Clinical Centers recruited 161,808 women into the program. Of these, 68,132 women were randomized into the clinical trial component (CT) and 93,676 were enrolled into the observational study (OS) (Figure 1) with semi-annual (CT) or annual (OS) follow-up planned until 2005. During the final year of the original protocol (2004-2005), 115,407 women consented to five additional years of follow-up, representing 76.9% of the 150,076 participants who were alive and in active follow-up at that time. In 2010, participants were again offered the opportunity to continue, and 87% of the 107,706 eligible women agreed (n=93,567). Additional details on recruitment, re-consenting by age, race/ethnicity and study component have been described in detail in prior reports available on the WHI website. Active follow-up continues for all participants consenting in 2010 unless a participant withdraws consent. Follow-up through proxy respondents is offered whenever needed, with more limited data collection. Passive follow-up through the National Death Index and linkage to Medicare data continues for all participants under the original consent.

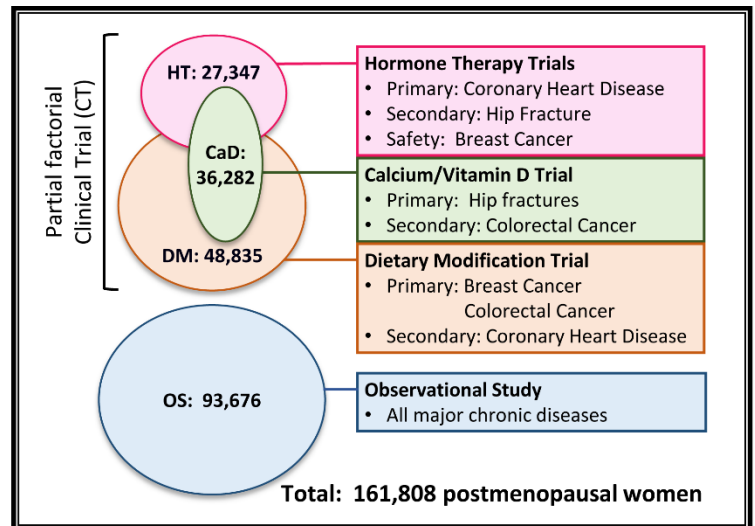


Figure 1. Original design of the WHI clinical trials and observational study, its components and outcomes.

The Extension Study

Since 2005, participants have been contacted annually by mail, telephone or more recently email (forms via RedCAP), to obtain health and selected exposure updates. The Clinical Coordinating Center (CCC) conducts annual mailings of follow-up questionnaires to all eligible participants. The Regional Centers (RC) and their collaborating centers contact non-responders and collect and submit medical records for all of the designated outcomes to the CCC.

In Extension Study II (2010-2025), program streamlining led to a change in outcomes documentation and adjudication. Since 2010, WHI seeks medical records for designated health events (cardiovascular disease and hip fractures) among only those women in the Medical Records Cohort (MRC), comprised of all former hormone trial (HT) participants and all non-Hispanic Black/African American and Hispanic/Latina participants (Figure 2). WHI funded outcome data collection for the remaining participants, referred to as the Self-Report Cohort (SRC), is limited to self-report, supplemented with linkage to Medicare data, wherever possible, and the National Death

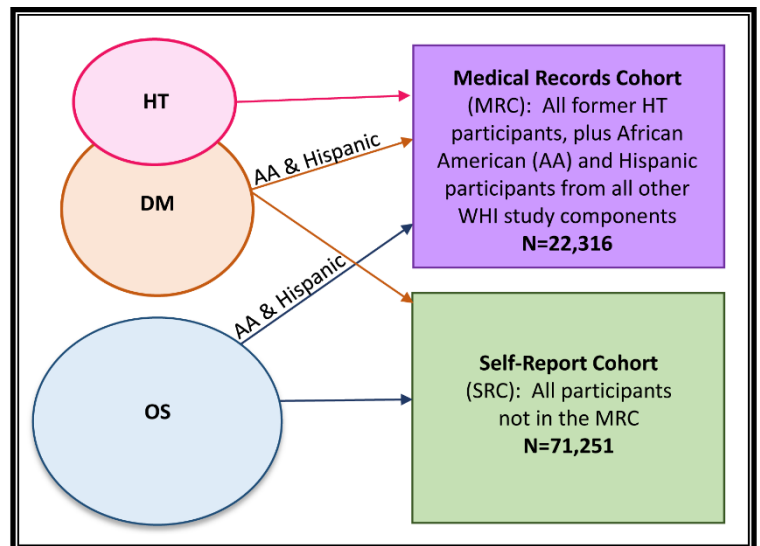


Figure 2. 2010–2020 Extension Study design reflecting differing levels of outcomes ascertainment: MRC and SRC.

Index (NDI). The two exceptions have been incident primary cancers and stroke, where additional documentation and coding of cases have been supported by NCI and NINDS, respectively. Beginning in October, 2023, NCI has indicated that they will support cancer documentation only through linkage to the National Virtual Pooled Registry. Efforts to understand and mitigate any impact of this change are being developed. Stroke documentation and adjudication efforts are continuing. Other ancillary studies have adjudicated additional outcomes in defined subsets.

As of February 19, 2023, 50,965 women were alive and remain in active follow-up (Tables 1.2 and 1.3). Approximately 13,000 (25.6%) of these women are 90 years of age or older, including 3660 who are between 95 and 106 years of age (Table 1.2). Among active participants, 1776 (3.5%) are Hispanic, 3351 (6.6%) are Black, 1170 (2.3%) are Asian or Pacific Islanders, and 113 (0.2%) are American Indian or Alaska Natives. Fifty-two percent (n=84,139) of the original cohort are now deceased (Table 1.3), with similar rates across study components.

Follow-up rates to 2022 mailings (Table 1.4) and telephone (Table 1.5), while not yet complete, suggest that response rates remain above 75%.

II. Clinical Outcomes

Tabulations of the designated WHI outcomes, along with annualized event rates, for adjudicated outcomes are provided for the cohort overall and by age at event (which differs from most displays in previous reports) and race/ethnicity. Because adjudication for many outcomes ended in the SRC in 2010, these displays reflect the person-years at risk during which an event for each participant was subject to adjudication, through September 2010 (for SRC) or February 19, 2023 (for MRC). Tabulations by race use the revised definitions of the WHI Race and Ethnicity Task Force. Annualized event rates by age at diagnosis use the same censoring limits on adjudication.

Across all WHI components, we have identified 84,139 deaths. (Table 2.1-2.3). Approximately 68% were identified only by NDI search. Cardiovascular disease accounts for nearly a third of deaths (n=26,612), well surpassing cancer deaths (n=18,681). Alzheimer's disease and other dementias took over 12,000 lives. Only 186 deaths have been directly attributed to COVID-19. We note that over 200 women died as a result of an accident whereas 83 women have died by suicide and 37 by homicide.

A new diagnosis of cancer, also documented for the entire cohort at this time, has been adjudicated 37,498 times (Tables 2.4-2.5). Breast (n=12,121 invasive), colorectal (n=3683), lung (n=4647), and melanoma (n=2921) cancer are the most commonly reported, followed by non-Hodgkins lymphoma (n=2039), endometrial (n=1934), pancreatic (n=1508) and ovarian (n=1398) cancers. Tabulations by race/ethnicity and age at diagnosis are included.

Adjudicated cardiovascular diseases, through the relevant time intervals for MRC and SRC participants, represent an increasing fraction of the morbidity and mortality of WHI participants. 9523 participants have had a documented CHD outcome (Tables 2.6-2.7), with nearly the same number of selected reperfusion procedures (CABG/PCTA, n=9316). Strokes have been adjudicated among 7753 women.

WHI fracture data reflect a mixture of adjudicated results (hip fractures, among the same participants as for CVD), and self-reported events (Tables 2.8-2.9). Nearly 70,000 women have reported a fracture, including 36,274 osteoporotic fractures.

Self-reported outcomes in WHI capture a wide range of age-related conditions (Tables 2.10-2.11). Hypertension, osteoarthritis, cataracts and intestinal polyps are most common among the conditions

assessed, ranging from over 64,000 to 42,000 newly diagnosed women. Incident treated diabetes during follow-up now numbers nearly 28,000. There are sufficient numbers of many rarer conditions to support well-powered analyses.

III. Aging Indicators

Indicators of aging were assessed at the beginning of the 2010-2025 Extension Study, forming a new baseline for comparison (Table 3.1). Using the same instruments, assessed over a decade later in the remaining cohort, we see clear evidence of the decline in their health status, activities of daily living, independence and quality of life (Table 3.2). Figures 3.1-3.2 provide new visual displays demonstrating both cohort effects (age in 2010) and the aging effects over 10 years on physical function (3.1) and activities of daily living (3.2).

IV. Long Life Study

In 2012-13, the WHI Long Life Study (LLS) enrolled 7,875 women in the MRC, and collected a blood sample and physical frailty measures (Table 4.1). The LLS visit is being repeated in 2022-2024 among surviving members of the LLS cohort. There are currently 4279 original LLS participants who continue to be actively followed (Table 4.2) who are being invited for a repeat visit. Because of the smaller than anticipated size of this cohort, additional MRC participants will also be invited to have a LLS2 visit, with oversampling of the remaining women for race/ethnicity other than non-Hispanic whites.

Verified and self-reported outcomes occurring after the LLS visit are presented by age at LLS study visit (Table 4.4) and race (Table 4.3). Since the visit, 2258 LLS participants have had verified cardiovascular outcomes, 970 have had a verified cancer, and 3,138 have died. Self-reported events in this cohort have also been tabulated (Table 4.5)

The Long Life Study 2 activities are underway with invitations continuing over the next few months and visits scheduled to be completed in approximately one year. The target enrollment is 4200 visits. Several ancillary studies, including the WHISH trial, the LILAC cancer survivorship cohort (PIs: Anderson, Bette Caan, Electra Paskett), which will add up to 2000 visits among cancer survivors, MsLILAC (PI: Hailey Banack), OPACH2 (PIs: Michael LaMonte and Andrea LaCroix), and an eye exam (PI: Emily Gower) will leverage the in-person visits for additional knowledge generation on aging related themes.

V. Other Program Activities

The WHI program leadership recognizes the importance of drawing in new investigators to use the rich WHI resources, and also providing leadership and growth opportunities. The WHI Scientific Interest Groups (SIGs) are an active opportunity to provide an entryway into understanding WHI resources and proposing ancillary studies and manuscripts. An in-person meeting was held in May 2022 and another one planned for May 2023, celebrating the 30th anniversary of the initiation of recruitment.

A full listing and status of all proposed ancillary studies and manuscripts is available on the WHI website (www.whi.org). In total, 4,295 manuscript proposals have been approved and 2,274 are published or in press, including 103 publications since last year's report. Investigators using WHI data continue to present high-quality science of broad interest, with publications in the last year in many high-impact journals such as *JAMA*, *Hypertension*, *American Journal of Epidemiology*, *Cancer* and *PLoS Medicine*. In addition to manuscripts addressing cardiovascular disease and cancer among WHI participants, a substantial number examine diabetes, genetics, and aging. WHI also participates in a

number of consortia, reflecting the collaborative nature of the WHI investigators and the value of WHI data, particularly for rarer exposures and outcomes.

The WHI hormone trial continues to draw attention. On February 5, 2023, the New York Times Magazine published a 14 page article entitled “We have been misled about menopause” by Susan Dominus. This article suggested that the beneficial effects of menopausal hormones for relief of menopausal symptoms were not available to women because the WHI findings had made physicians unwilling to prescribe them. The article suggested that the WHI design was flawed and characterized the trial as a misadventure. The article drew more than 3000 online comments, mostly from women interested in relaying their own experience. On behalf of the WHI Steering Committee, Drs. Cynthia Thomson and Garnet Anderson responded with a letter to the editor, published in the February 26, 2023 paper edition, clarifying both the context and the hypotheses that drove the WHI trial design and the recommendations for menopausal hormone use that WHI provided when the initial results were published—recommendations that have been adopted by FDA and professional societies and that persist to the present.

An effort is underway to increase the dissemination and implementation of study results with a particular focus on the original clinical trials. A recent paper summarizing WHI contributions to cardiovascular science (LaMonte and Manson 2022¹) serves as a model for this effort.

The cohort serves as the backbone for ancillary studies. The COcoa Supplement and Multivitamin Outcomes Study (COSMOS) trial (PIs: JoAnn Manson and Howard Sesso) results were published in early 2022 and shared with participants in a webinar later that month. The COSMOS trial remains of interest for longer term and broader health outcomes including cognition, eye health, and cardiovascular conditions. The WHI Strong and Healthy (WHISH) trial (PIs: Marcia Stefanick, Charles Kooperberg, Andrea LaCroix), and related ancillary trials exploring the effects of physical activity on cardiovascular conditions as the primary outcome.

Numerous studies have made use of our biorepository (N=205), including 13 funded studies in the last year. Because of the cost of maintaining such a large repository (in excess of 5 million vials stored), the CCC has completed a streamlining and consolidation process by which approximately 20% of specimens in storage considered to be in very low demand (predominately citrate plasma and extra DNA samples) were efficiently destroyed and reorganized to reduce storage needs. The current repository now consists of approximately 4.2 million samples of serum, plasma, buffy coat, DNA, RNA, and urine.

Harmonized GWAS data are available in dbGaP for approximately 30,000 WHI participants using a number of approaches, including our participation in the TOPMed program that can be linked to CVD biomarker data, providing an opportunity for outside investigators to use these resources independent of the WHI program. WHI data, including cancer survivorship data, has been submitted to the NHLBI's BIOLINCC data repository.

¹ Contributions of the Women's Health Initiative to Cardiovascular Research: JACC State-of-the-Art Review. LaMonte MJ, Manson JE, Anderson GL, Baker LD, Bea JW, Eaton CB, Follis S, Hayden KM, Kooperberg C, LaCroix AZ, Limacher MC, Neuhouser ML, Odegaard A, Perez MV, Prentice RL, Reiner AP, Stefanick ML, Van Horn L, Wells GL, Whitsel EA, Rossouw JE; WHI Investigators. *J Am Coll Cardiol.* 2022 Jul 19;80(3):256-275. doi: 10.1016/j.jacc.2022.05.016.

Table 1.1
WHI Centers and Principal Investigators

Clinical Coordinating Center

Principal Investigator	Institution	Location
Garnet Anderson, PhD	Fred Hutchinson Cancer Center	Seattle, WA

Regional Centers

Principal Investigator	Institution	Location
Electra Paskett, PhD	Ohio State University	Columbus, OH
Mara Vitolins, DrPH	Wake Forest University	Winston-Salem/Greensboro, NC
Marcia Stefanick, PhD	Stanford University	Stanford, CA
Jean Wactawski-Wende, PhD	University at Buffalo	Buffalo, NY

Associated Center

JoAnn Manson, MD DrPH	Brigham and Women's Hospital	Boston, MA
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Current WHI Committee Chairs

Investigator	Institution	Committee
Carolyn Crandall, MD	University of California Los Angeles	Chair of Chairs
Nora Franceschini, MD MPH	University of North Carolina at Chapel Hill	Ancillary Studies (ASC)
Brian Silver, MD	University of Massachusetts	Outcomes Adjudications (OAC)
Charles Kooperberg, PhD	Fred Hutchinson Cancer Center	Performance Monitoring (PMC)
Amy Millen, PhD	University at Buffalo	Publications and Presentations (P&P)
Gretchen Wells, MD PhD	University of Alabama at Birmingham	Publications and Presentations (P&P)
Marian Neuhaus, PhD RD	Fred Hutchinson Cancer Center	Scientific Resources Working Group (SRWG)
Cynthia Thomson, PhD RD	University of Arizona	Steering Committee (SC)

Table 1.2
Composition of WHI Cohort over Time

Data as of: February 19, 2023

	Enrolled in WHI (N=161,808)		Active ¹ Participation as of 2/19/2023 (N=50,965)	
	N	Mean (SD) or %	N	Mean (SD) or %
Age²	161808	90.0 (7.1)	50965	85.9 (5.4)
50-54	21569	13.3		
55-59	31990	19.8		
60-64	37210	23.0		
65-69	35379	21.9		
70-74	24906	15.4	10	<0.01
75-79	10754	6.6	5985	11.7
80-84			16309	32.0
85-89			15639	30.7
90-94			9362	18.4
95-106			3660	7.2
Ethnicity				
Not Hispanic/Latina	153117	94.6	49075	96.3
Hispanic/Latina	7312	4.5	1776	3.5
Other/Not Reported	1379	0.9	114	0.2
Race				
American Indian/Alaska Native	540	0.3	113	0.2
Asian	4025	2.5	1131	2.2
Native Hawaiian/Pacific Islander	137	0.1	39	0.1
Black/African American	14327	8.9	3351	6.6
White	137628	85.1	45193	88.7
More than one Race	1880	1.2	629	1.2
Other/Not Reported	3271	2.0	509	1.0
Education³				
0-8 years	2665	1.7	245	0.5
Some high school	5979	3.7	854	1.7
High school diploma/GED	27624	17.2	6911	13.7
School after high school	60909	37.9	17683	34.9
College degree or higher	63415	39.5	24920	49.2
Income³				
< \$10,000	6937	4.6	781	1.6
\$10,000 – \$19,999	18499	12.3	2940	6.1
\$20,000 – \$34,999	36665	24.3	8828	18.2
\$35,000 – \$49,999	30912	20.5	10002	20.6
\$50,000 – \$74,999	29948	19.8	12019	24.8
\$75,000 +	27973	18.5	13950	28.8
Study Component				
Clinical Trial	68132	42.1	22694	44.5
Observational Study	93676	57.9	28271	55.5
Medical Records Super Cohort	44174	27.3	11656	22.9
Self-Report Super Cohort	117634	72.7	39309	77.1

¹ Active participation is defined as current (Form 33 within 15 months) or recent (Form 33 between 15 and 24 months ago) follow-up.

² Age at WHI Enrollment, and on 02/19/2023.

³ Education and income reported at baseline.

Table 1.3
Participation and Vital Status of WHI Participants by Cohort

Data as of: February 19, 2023

Participation/Vital Status	Total (N=161,808)		CT (N = 68,132)		OS (N = 93,676)		MRC Super Cohort ¹ (N=44,174)		SRC Super Cohort ² (N=117,634)	
	N	%	N	%	N	%	N	%	N	%
Deceased	84139	52.0	34441	50.6	49698	53.1	22875	51.8	61264	52.1
Alive: Current Participation ³	48487	30.0	21523	31.6	26964	28.8	10981	24.9	37506	31.9
Alive: Recent Participation ⁴	2478	1.5	1171	1.7	1307	1.4	675	1.5	1803	1.5
Stopped Follow-Up ⁵	2681	1.7	1199	1.8	1482	1.6	753	1.7	1928	1.6
Lost to Follow-Up ⁶	2433	1.5	1183	1.7	1250	1.3	875	2.0	1558	1.3
Did not consent to the WHI Extension Studies and not known to be deceased	21590	13.4	8615	12.6	12975	13.8	8015	18.1	13575	11.6

¹ The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants (identified from race/ethnicity collected on Form 2 at baseline) from the CT and OS.

² The SRC Super Cohort includes all Non-Hispanic White, American Indian/Alaska Native, Asian/Pacific Islander, and Unknown race/ethnicity participants (identified from race/ethnicity collected on Form 2 at baseline) from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.

³ Participants who have filled in a Form 33 within the last 15 months.

⁴ Participants who last filled in a Form 33 between 15 and 24 months ago.

⁵ Participants with codes 5 (no follow-up) or 8 (absolutely no follow-up) on Form 7 or 9.

⁶ Extension Study II (2010-2025) participants not in any of the above categories.

Table 1.4
Response Rates to CCC Annual Mailings in 2022 by Cohort and Regional Center

Data as of: February 19, 2023

Cohort	Cumulative Response	1st Mailing Period				2nd Mailing Period				
		Form ¹	Sent Mail 1	Response N	Response %	Past 2 nd mailing period	Sent Mail 2	Response N	Response %	
Total	72.7	33	51853	34857	67.2	39954	12077	23.3	2815	23.3
	74.3	151A	49569	33978	68.5	38340	11037	22.3	2872	26.0
Medical Record Cohort²	66.0	33	11813	7104	60.1	8876	3255	27.6	693	21.3
	68.2	151A	11212	6919	61.7	8464	2959	26.4	724	24.5
Self-Report Cohort³	74.6	33	40040	27753	69.3	31078	8822	22.0	2122	24.1
	76.1	151A	38357	27059	70.5	29876	8078	21.1	2148	26.6
Regional Center⁴										
Boston	75.3	33	3525	2429	68.9	2755	876	24.9	226	25.8
	78.2	151A	3287	2347	71.4	2589	746	22.7	223	29.9
Buffalo	71.9	33	10404	6854	65.9	8212	2870	27.6	625	21.8
	74.2	151A	9781	6641	67.9	7751	2454	25.1	619	25.2
Columbus	73.7	33	13249	9049	68.3	10303	2871	21.7	717	25.0
	74.7	151A	12860	8867	69.0	10040	2819	21.9	740	26.3
Seattle	69.5	33	7013	4501	64.2	5504	1583	22.6	372	23.5
	71.6	151A	6698	4402	65.7	5270	1520	22.7	396	26.1
Stanford	75.3	33	12181	8563	70.3	9005	2491	20.4	614	24.6
	76.7	151A	11658	8319	71.4	8663	2187	18.8	626	28.6
Wake Forest	67.9	33	5481	3461	63.1	4175	1386	25.3	261	18.8
	69.4	151A	5285	3402	64.4	4027	1311	24.8	268	20.4

¹ Form 33 = Medical History Update; Form 151A: Activities of Daily Life.

² The MRC includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants (identified from race/ethnicity collected on Form 2 at baseline) from the CT and OS who consented to WHI Extension Study II (2010-2025).

³ The SRC includes all Non-Hispanic White, American Indian/Alaska Native, Asian/Pacific Islander, and Unknown race/ethnicity participants (identified from race/ethnicity collected on Form 2 at baseline) from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study II (2010-2025).

⁴ Regional Center is determined based on the participant’s responsible clinic at the start of the mailing window (2 months prior to the participant’s mailing anniversary).

Table 1.5
Response Rates to Regional Center Follow-up and Cumulative Response in 2022 by Cohort and Regional Center

Data as of: February 19, 2023

Cohort	Total Estimated Response Rate	Eligible for RC Follow-up		Respondents	
	%	Form ¹	N	N	%
Total	75.1	33	12767	6584	51.6
	66.7	151A	11481	181	1.6
Medical Record Cohort²	69.9	33	3789	2066	54.5
	58.1	151A	3479	45	1.3
Self Report Cohort³	76.7	33	8978	4518	50.3
	69.4	151A	8002	136	1.7
Regional Center⁴					
Boston	75.7	33	797	358	44.9
	72.2	151A	620	24	3.9
Buffalo	76.1	33	2697	1564	58.0
	67.1	151A	2358	57	2.4
Columbus	75.7	33	2914	1537	52.7
	66.9	151A	2839	34	1.2
Seattle	75.2	33	1985	1137	57.3
	64.4	151A	1773	28	1.6
Stanford	74.6	33	2799	1227	43.8
	68.1	151A	2447	25	1.0
Wake Forest	72.0	33	1575	761	48.3
	62.1	151A	1444	13	0.9

¹ Form 33 = Medical History Update; Form 151A =Activities of Daily Life.

² The MRC Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants (identified from race/ethnicity collected on Form 2 at baseline) from the CT and OS who consented to WHI Extension Study II (2010-2025).

³ The SRC Cohort includes all Non-Hispanic White, American Indian/Alaska Native, Asian/Pacific Islander, and Unknown race/ethnicity participants (identified from race/ethnicity collected on Form 2 at baseline) from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study II (2010-2025).

⁴ Regional Center is determined based on the participant's responsible clinic at the start of the mailing window (2 months prior to the participant's mailing anniversary).

Table 2.1
Cause of Death¹ (Annualized Percentages) by Cohort

Data as of: February 19, 2023

	Total	CT	OS	MRC Super Cohort²	SRC Super Cohort³
Number of participants	161808	68132	93676	44174	117634
Mean person years	21.1	21.6	20.8	21.0	21.1
Total death	84139 (2.46%)	34441 (2.35%)	49698 (2.55%)	22875 (2.47%)	61264 (2.46%)
Adjudicated death	81276 (2.38%)	33298 (2.27%)	47978 (2.47%)	22453 (2.42%)	58823 (2.37%)
Centrally adjudicated death	18022 (0.53%)	12609 (0.86%)	5413 (0.28%)	10606 (1.14%)	7416 (0.30%)
Locally adjudicated death (final)	5417 (0.16%)	1 (<0.01%)	5416 (0.28%)	690 (0.07%)	4727 (0.19%)
Identified only by NDI search	57837 (1.69%)	20688 (1.41%)	37149 (1.91%)	11157 (1.20%)	46680 (1.88%)
Not yet adjudicated	416 (0.01%)	350 (0.02%)	66 (<0.01%)	416 (0.04%)	0 (0.00%)
Form 120 death ⁴	2447 (0.07%)	793 (0.05%)	1654 (0.09%)	6 (<0.01%)	2441 (0.10%)
Cardiovascular					
Atherosclerotic cardiac	10308 (0.30%)	4337 (0.30%)	5971 (0.31%)	3171 (0.34%)	7137 (0.29%)
Cerebrovascular	6392 (0.19%)	2646 (0.18%)	3746 (0.19%)	1871 (0.20%)	4521 (0.18%)
Pulmonary embolism	359 (0.01%)	177 (0.01%)	182 (0.01%)	128 (0.01%)	231 (0.01%)
Other cardiovascular	9422 (0.28%)	3812 (0.26%)	5610 (0.29%)	2454 (0.26%)	6968 (0.28%)
Unknown cardiovascular	131 (<0.01%)	30 (<0.01%)	101 (0.01%)	33 (<0.01%)	98 (<0.01%)
Total cardiovascular deaths	26612 (0.78%)	11002 (0.75%)	15610 (0.80%)	7657 (0.83%)	18955 (0.76%)
Cancer					
Brain	476 (0.01%)	205 (0.01%)	271 (0.01%)	95 (0.01%)	381 (0.02%)
Breast	2239 (0.07%)	749 (0.05%)	1490 (0.08%)	547 (0.06%)	1692 (0.07%)
Colorectum	1540 (0.05%)	662 (0.05%)	878 (0.05%)	462 (0.05%)	1078 (0.04%)
Endometrium	314 (0.01%)	134 (0.01%)	180 (0.01%)	61 (0.01%)	253 (0.01%)
Leukemia	861 (0.03%)	370 (0.03%)	491 (0.03%)	209 (0.02%)	652 (0.03%)
Lung	4067 (0.12%)	1760 (0.12%)	2307 (0.12%)	1218 (0.13%)	2849 (0.11%)
Lymphoma, non-Hodgkins	928 (0.03%)	370 (0.03%)	558 (0.03%)	216 (0.02%)	712 (0.03%)
Melanoma	225 (0.01%)	100 (0.01%)	125 (0.01%)	56 (0.01%)	169 (0.01%)
Multiple myeloma	573 (0.02%)	248 (0.02%)	325 (0.02%)	184 (0.02%)	389 (0.02%)
Ovary	1163 (0.03%)	457 (0.03%)	706 (0.04%)	253 (0.03%)	910 (0.04%)
Pancreas	1714 (0.05%)	740 (0.05%)	974 (0.05%)	479 (0.05%)	1235 (0.05%)
Uterus	207 (0.01%)	91 (0.01%)	116 (0.01%)	60 (0.01%)	147 (0.01%)
Other cancer site	3563 (0.10%)	1500 (0.10%)	2063 (0.11%)	956 (0.10%)	2607 (0.10%)
Unknown cancer site	811 (0.02%)	337 (0.02%)	474 (0.02%)	196 (0.02%)	615 (0.02%)
Total cancer deaths	18681 (0.55%)	7723 (0.53%)	10958 (0.56%)	4992 (0.54%)	13689 (0.55%)

¹ Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

² The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants (identified from race/ethnicity collected on Form 2 at baseline) from the CT and OS.

³ The SRC Super Cohort includes all Non-Hispanic White, American Indian/Alaska Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants (identified from race/ethnicity collected on Form 2 at baseline) from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.

⁴ Includes SRC participants and discovered deaths among non-Extension Study 2010-2025 participants that occurred during Extension Study 2010-2025.

Table 2.1 (continued)
Cause of Death¹ (Annualized Percentages) by Cohort

Data as of: February 19, 2023

	Total	CT	OS	MRC Super Cohort²	SRC Super Cohort³
Number of participants	161808	68132	93676	44174	117634
Mean person years	21.1	21.6	20.8	21.0	21.1
Accident/injury					
Homicide	37 (<0.01%)	15 (<0.01%)	22 (<0.01%)	17 (<0.01%)	20 (<0.01%)
Accident	2003 (0.06%)	805 (0.05%)	1198 (0.06%)	493 (0.05%)	1510 (0.06%)
Suicide	83 (<0.01%)	27 (<0.01%)	56 (<0.01%)	18 (<0.01%)	65 (<0.01%)
Other injury	51 (<0.01%)	22 (<0.01%)	29 (<0.01%)	20 (<0.01%)	31 (<0.01%)
Total accident/injury deaths	2174 (0.06%)	869 (0.06%)	1305 (0.07%)	548 (0.06%)	1626 (0.07%)
Other					
Alzheimer's disease	6147 (0.18%)	2417 (0.16%)	3730 (0.19%)	1544 (0.17%)	4603 (0.19%)
Dementia, not Alzheimer's	6029 (0.18%)	2427 (0.17%)	3602 (0.19%)	1563 (0.17%)	4466 (0.18%)
COPD	3219 (0.09%)	1371 (0.09%)	1848 (0.09%)	867 (0.09%)	2352 (0.09%)
Pneumonia	1886 (0.06%)	807 (0.05%)	1079 (0.06%)	577 (0.06%)	1309 (0.05%)
Pulmonary fibrosis	810 (0.02%)	373 (0.03%)	437 (0.02%)	229 (0.02%)	581 (0.02%)
Renal failure	1406 (0.04%)	600 (0.04%)	806 (0.04%)	523 (0.06%)	883 (0.04%)
Sepsis	1839 (0.05%)	794 (0.05%)	1045 (0.05%)	605 (0.07%)	1234 (0.05%)
Amyotrophic lateral sclerosis	305 (0.01%)	117 (0.01%)	188 (0.01%)	52 (0.01%)	253 (0.01%)
Parkinson's	1211 (0.04%)	470 (0.03%)	741 (0.04%)	274 (0.03%)	937 (0.04%)
Hepatic cirrhosis	368 (0.01%)	165 (0.01%)	203 (0.01%)	124 (0.01%)	244 (0.01%)
COVID-19	186 (0.01%)	129 (0.01%)	57 (<0.01%)	130 (0.01%)	56 (<0.01%)
Other known cause	10756 (0.32%)	4105 (0.28%)	6651 (0.34%)	2639 (0.28%)	8117 (0.33%)
Unknown cause	2094 (0.06%)	722 (0.05%)	1372 (0.07%)	135 (0.01%)	1959 (0.08%)
Total other cause deaths	36256 (1.06%)	14497 (0.99%)	21759 (1.12%)	9262 (1.00%)	26994 (1.09%)

¹ Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

² The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants (identified from race/ethnicity collected on Form 2 at baseline) from the CT and OS.

³ The SRC Super Cohort includes all Non-Hispanic White, American Indian/Alaska Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants (identified from race/ethnicity collected on Form 2 at baseline) from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.

Table 2.2
Cause of Death¹ (Annualized Percentages) by Race/Ethnicity
 Data as of: February 19, 2023

	Total	Race/Ethnicity						
		American Indian/ Alaska Native	Asian or Native Hawaiian/ Other Pacific Islander ²	Hispanic/ Latina	Non-Hispanic Black/African American	Non-Hispanic White	More than one Race	Other/ Not Reported
Number of participants	161808	487	4084	7312	14167	133328	1669	761
Mean person years	21.1	19.4	22.0	22.2	20.8	21.1	22.0	18.9
Total death	84139 (2.46%)	272 (2.87%)	1656 (1.85%)	2788 (1.72%)	7051 (2.39%)	71157 (2.53%)	796 (2.17%)	419 (2.91%)
Adjudicated death	81276 (2.38%)	265 (2.80%)	1622 (1.81%)	2727 (1.68%)	6947 (2.36%)	68546 (2.44%)	759 (2.07%)	410 (2.85%)
Centrally adjudicated death	18022 (0.53%)	47 (0.50%)	191 (0.21%)	737 (0.45%)	2345 (0.80%)	14444 (0.51%)	183 (0.50%)	75 (0.52%)
Locally adjudicated death (final)	5417 (0.16%)	45 (0.48%)	112 (0.12%)	161 (0.10%)	532 (0.18%)	4505 (0.16%)	6 (0.02%)	56 (0.39%)
Identified only by NDI search	57837 (1.69%)	173 (1.83%)	1319 (1.47%)	1829 (1.13%)	4070 (1.38%)	49597 (1.77%)	570 (1.55%)	279 (1.94%)
Not yet adjudicated	416 (0.01%)	2 (0.02%)	4 (<0.01%)	44 (0.03%)	101 (0.03%)	255 (0.01%)	7 (0.02%)	3 (0.02%)
Form 120 death ³	2447 (0.07%)	5 (0.05%)	30 (0.03%)	17 (0.01%)	3 (<0.01%)	2356 (0.08%)	30 (0.08%)	6 (0.04%)
Cardiovascular								
Atherosclerotic cardiac	10308 (0.30%)	42 (0.44%)	188 (0.21%)	325 (0.20%)	1106 (0.38%)	8474 (0.30%)	104 (0.28%)	69 (0.48%)
Cerebrovascular	6392 (0.19%)	19 (0.20%)	146 (0.16%)	231 (0.14%)	593 (0.20%)	5319 (0.19%)	52 (0.14%)	32 (0.22%)
Pulmonary embolism	359 (0.01%)	1 (0.01%)	2 (<0.01%)	10 (0.01%)	48 (0.02%)	293 (0.01%)	5 (0.01%)	0 (0.00%)
Other cardiovascular	9422 (0.28%)	19 (0.20%)	168 (0.19%)	243 (0.15%)	771 (0.26%)	8100 (0.29%)	86 (0.23%)	35 (0.24%)
Unknown cardiovascular	131 (<0.01%)	0 (0.00%)	4 (<0.01%)	2 (<0.01%)	19 (0.01%)	102 (<0.01%)	1 (<0.01%)	3 (0.02%)
Total cardiovascular deaths	26612 (0.78%)	81 (0.86%)	508 (0.57%)	811 (0.50%)	2537 (0.86%)	22288 (0.79%)	248 (0.68%)	139 (0.96%)
Cancer								
Brain	476 (0.01%)	1 (0.01%)	6 (0.01%)	13 (0.01%)	19 (0.01%)	436 (0.02%)	0 (0.00%)	1 (0.01%)
Breast	2239 (0.07%)	3 (0.03%)	37 (0.04%)	100 (0.06%)	225 (0.08%)	1839 (0.07%)	19 (0.05%)	16 (0.11%)
Colorectum	1540 (0.05%)	8 (0.08%)	37 (0.04%)	51 (0.03%)	168 (0.06%)	1262 (0.04%)	10 (0.03%)	4 (0.03%)
Endometrium	314 (0.01%)	0 (0.00%)	9 (0.01%)	8 (<0.01%)	20 (0.01%)	276 (0.01%)	1 (<0.01%)	0 (0.00%)
Leukemia	861 (0.03%)	2 (0.02%)	9 (0.01%)	21 (0.01%)	66 (0.02%)	749 (0.03%)	9 (0.02%)	5 (0.03%)
Lung cancer	4067 (0.12%)	11 (0.12%)	75 (0.08%)	101 (0.06%)	345 (0.12%)	3468 (0.12%)	48 (0.13%)	19 (0.13%)
Lymphoma, non-Hodgkins	928 (0.03%)	1 (0.01%)	23 (0.03%)	39 (0.02%)	52 (0.02%)	801 (0.03%)	4 (0.01%)	8 (0.06%)
Melanoma	225 (0.01%)	0 (0.00%)	3 (<0.01%)	7 (<0.01%)	8 (<0.01%)	204 (0.01%)	3 (0.01%)	0 (0.00%)
Multiple myeloma	573 (0.02%)	3 (0.03%)	4 (<0.01%)	24 (0.01%)	77 (0.03%)	455 (0.02%)	6 (0.02%)	4 (0.03%)
Ovary	1163 (0.03%)	3 (0.03%)	13 (0.01%)	38 (0.02%)	74 (0.03%)	1013 (0.04%)	10 (0.03%)	12 (0.08%)

¹ Includes deaths for non-Extension Study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

² Native Hawaiian/Other Pacific Islander participants (n=119) are combined with Asian participants for reporting purposes due to small numbers.

³ Includes SRC Cohort participants and discovered deaths among non-Extension Study II (2010-2025) participants that occurred during Extension Study II (2010-2025).

Table 2.2 (continued)
Cause of Death¹ (Annualized Percentages) by Race/Ethnicity
 Data as of: February 19, 2023

	Total	Race/Ethnicity						
		American Indian/ Alaska Native	Asian or Native Hawaiian/ Other Pacific Islander ²	Hispanic/ Latina	Non-Hispanic Black/African American	Non-Hispanic White	More than one Race	Other/ Not Reported
Number of participants	161808	487	4084	7312	14167	133328	1669	761
Mean person years	21.1	19.4	22.0	22.2	20.8	21.1	22.0	18.9
Cancer (continued)								
Pancreas	1714 (0.05%)	1 (0.01%)	61 (0.07%)	58 (0.04%)	171 (0.06%)	1398 (0.05%)	17 (0.05%)	8 (0.06%)
Uterus	207 (0.01%)	2 (0.02%)	7 (0.01%)	7 (<0.01%)	27 (0.01%)	162 (0.01%)	2 (0.01%)	0 (0.00%)
Other cancer site	3563 (0.10%)	14 (0.15%)	82 (0.09%)	148 (0.09%)	275 (0.09%)	2999 (0.11%)	28 (0.08%)	17 (0.12%)
Unknown cancer site	811 (0.02%)	1 (0.01%)	20 (0.02%)	16 (0.01%)	72 (0.02%)	690 (0.02%)	5 (0.01%)	7 (0.05%)
Total cancer deaths	18681 (0.55%)	50 (0.53%)	386 (0.43%)	631 (0.39%)	1599 (0.54%)	15752 (0.56%)	162 (0.44%)	101 (0.70%)
Accident/injury								
Homicide	37 (<0.01%)	1 (0.01%)	0 (0.00%)	1 (<0.01%)	8 (<0.01%)	27 (<0.01%)	0 (0.00%)	0 (0.00%)
Accident	2003 (0.06%)	10 (0.11%)	44 (0.05%)	75 (0.05%)	74 (0.03%)	1779 (0.06%)	13 (0.04%)	8 (0.06%)
Suicide	83 (<0.01%)	0 (0.00%)	3 (<0.01%)	4 (<0.01%)	1 (<0.01%)	75 (<0.01%)	0 (0.00%)	0 (0.00%)
Other injury	51 (<0.01%)	0 (0.00%)	1 (<0.01%)	4 (<0.01%)	1 (<0.01%)	45 (<0.01%)	0 (0.00%)	0 (0.00%)
Total accident/ injury deaths	2174 (0.06%)	11 (0.12%)	48 (0.05%)	84 (0.05%)	84 (0.03%)	1926 (0.07%)	13 (0.04%)	8 (0.06%)
Other								
Alzheimer's disease	6147 (0.18%)	13 (0.14%)	130 (0.15%)	232 (0.14%)	387 (0.13%)	5316 (0.19%)	46 (0.13%)	23 (0.16%)
Dementia, not Alzheimer's ¹	6029 (0.18%)	14 (0.15%)	144 (0.16%)	146 (0.09%)	405 (0.14%)	5230 (0.19%)	63 (0.17%)	27 (0.19%)
COPD	3219 (0.09%)	13 (0.14%)	23 (0.03%)	69 (0.04%)	166 (0.06%)	2898 (0.10%)	35 (0.10%)	15 (0.10%)
Pneumonia	1886 (0.06%)	8 (0.08%)	60 (0.07%)	60 (0.04%)	128 (0.04%)	1604 (0.06%)	15 (0.04%)	11 (0.08%)
Pulmonary fibrosis	810 (0.02%)	1 (0.01%)	21 (0.02%)	47 (0.03%)	39 (0.01%)	689 (0.02%)	9 (0.02%)	4 (0.03%)
Renal failure	1406 (0.04%)	15 (0.16%)	30 (0.03%)	73 (0.04%)	238 (0.08%)	1029 (0.04%)	16 (0.04%)	5 (0.03%)
Sepsis	1839 (0.05%)	8 (0.08%)	18 (0.02%)	56 (0.03%)	213 (0.07%)	1505 (0.05%)	21 (0.06%)	18 (0.12%)
Amyotrophic lateral sclerosis	305 (0.01%)	1 (0.01%)	3 (<0.01%)	5 (<0.01%)	21 (0.01%)	270 (0.01%)	5 (0.01%)	0 (0.00%)
Parkinson's	1211 (0.04%)	4 (0.04%)	26 (0.03%)	42 (0.03%)	54 (0.02%)	1069 (0.04%)	10 (0.03%)	6 (0.04%)
Hepatic cirrhosis	368 (0.01%)	5 (0.05%)	8 (0.01%)	42 (0.03%)	24 (0.01%)	284 (0.01%)	5 (0.01%)	0 (0.00%)
COVID-19	186 (0.01%)	0 (0.00%)	1 (<0.01%)	12 (0.01%)	42 (0.01%)	129 (<0.01%)	2 (0.01%)	0 (0.00%)
Other known cause	10756 (0.32%)	40 (0.42%)	218 (0.24%)	402 (0.25%)	978 (0.33%)	8952 (0.32%)	113 (0.31%)	53 (0.37%)
Unknown cause	2094 (0.06%)	6 (0.06%)	28 (0.03%)	32 (0.02%)	35 (0.01%)	1961 (0.07%)	26 (0.07%)	6 (0.04%)
Total other cause deaths	36256 (1.06%)	128 (1.35%)	710 (0.79%)	1218 (0.75%)	2730 (0.93%)	30936 (1.10%)	366 (1.00%)	168 (1.17%)

¹ Includes deaths for non-Extension Study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

² Native Hawaiian/Other Pacific Islander participants (n=119) are combined with Asian participants for reporting purposes due to small numbers.

Table 2.3
Cause of Death¹ (Age-Specific Annualized Percentages²) by Age at Death

Data as of: February 19, 2023

	Age at Death									
	50-59	60-64	65-69	70-74	75-79	80-84	85-89	≥90		
Number of participants³	50947	87534	122004	144974	150620	127289	85540	41976		
Mean person years	4.3	3.9	4.2	4.5	4.5	4.2	3.7	3.7		
Total death	441 (0.20%)	1266 (0.37%)	2905 (0.56%)	6091 (0.93%)	11523 (1.69%)	17344 (3.24%)	21091 (6.69%)	23478 (15.07%)		
Adjudicated death	441 (0.20%)	1265 (0.37%)	2902 (0.56%)	6066 (0.93%)	11390 (1.67%)	16930 (3.16%)	20296 (6.44%)	21986 (14.11%)		
Centrally adjudicated death	171 (0.08%)	529 (0.15%)	1272 (0.25%)	2260 (0.35%)	3359 (0.49%)	4102 (0.77%)	3609 (1.15%)	2720 (1.75%)		
Locally adjudicated death (final)	222 (0.10%)	482 (0.14%)	808 (0.16%)	1174 (0.18%)	1418 (0.21%)	1045 (0.20%)	268 (0.09%)	0 (0.00%)		
Identified only by NDI search	48 (0.02%)	254 (0.07%)	822 (0.16%)	2632 (0.40%)	6613 (0.97%)	11783 (2.20%)	16419 (5.21%)	19266 (12.36%)		
Not yet adjudicated	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	17 (<0.01%)	72 (0.01%)	120 (0.04%)	206 (0.13%)		
Form 120 death ⁴	0 (0.00%)	1 (<0.01%)	3 (<0.01%)	24 (<0.01%)	116 (0.02%)	342 (0.06%)	675 (0.21%)	1286 (0.83%)		
Cardiovascular										
Atherosclerotic cardiac	51 (0.02%)	135 (0.04%)	328 (0.06%)	792 (0.12%)	1375 (0.20%)	2133 (0.40%)	2636 (0.84%)	2858 (1.83%)		
Cerebrovascular	20 (0.01%)	50 (0.01%)	146 (0.03%)	363 (0.06%)	816 (0.12%)	1300 (0.24%)	1765 (0.56%)	1932 (1.24%)		
Pulmonary embolism	3 (<0.01%)	13 (<0.01%)	22 (<0.01%)	46 (0.01%)	66 (0.01%)	86 (0.02%)	75 (0.02%)	48 (0.03%)		
Other cardiovascular	21 (0.01%)	75 (0.02%)	170 (0.03%)	365 (0.06%)	916 (0.13%)	1671 (0.31%)	2519 (0.80%)	3685 (2.37%)		
Unknown cardiovascular	3 (<0.01%)	11 (<0.01%)	16 (<0.01%)	21 (<0.01%)	24 (<0.01%)	38 (0.01%)	14 (<0.01%)	4 (<0.01%)		
Total cardiovascular deaths	98 (0.05%)	284 (0.08%)	682 (0.13%)	1587 (0.24%)	3197 (0.47%)	5228 (0.98%)	7009 (2.22%)	8527 (5.47%)		
Cancer										
Brain	12 (0.01%)	23 (0.01%)	55 (0.01%)	104 (0.02%)	106 (0.02%)	101 (0.02%)	51 (0.02%)	24 (0.02%)		
Breast	59 (0.03%)	123 (0.04%)	226 (0.04%)	290 (0.04%)	442 (0.06%)	460 (0.09%)	370 (0.12%)	269 (0.17%)		
Colorectum	16 (0.01%)	62 (0.02%)	118 (0.02%)	212 (0.03%)	284 (0.04%)	304 (0.06%)	308 (0.10%)	236 (0.15%)		
Endometrium	3 (<0.01%)	12 (<0.01%)	30 (0.01%)	55 (0.01%)	70 (0.01%)	67 (0.01%)	49 (0.02%)	28 (0.02%)		
Leukemia	7 (<0.01%)	22 (0.01%)	68 (0.01%)	111 (0.02%)	181 (0.03%)	181 (0.03%)	169 (0.05%)	122 (0.08%)		
Lung cancer	46 (0.02%)	144 (0.04%)	353 (0.07%)	689 (0.11%)	957 (0.14%)	919 (0.17%)	607 (0.19%)	352 (0.23%)		
Lymphoma, non-Hodgkins	6 (<0.01%)	25 (0.01%)	65 (0.01%)	115 (0.02%)	188 (0.03%)	222 (0.04%)	202 (0.06%)	105 (0.07%)		
Melanoma	1 (<0.01%)	15 (<0.01%)	20 (<0.01%)	35 (0.01%)	41 (0.01%)	46 (0.01%)	48 (0.02%)	19 (0.01%)		
Multiple myeloma	3 (<0.01%)	14 (<0.01%)	35 (0.01%)	78 (0.01%)	126 (0.02%)	144 (0.03%)	119 (0.04%)	54 (0.03%)		

¹ Includes deaths for non-Extension Study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

² Age specific annualized percentages are calculated as the number with an event in the age interval divided by the total person years of all participants with time in the interval.

³ Number of participants with any follow-up time in the age interval.

⁴ Includes SRC Cohort participants and discovered deaths among non-Extension Study II (2010-2025) participants that occurred during Extension Study II (2010-2025).

Table 2.3 (continued)
Cause of Death¹ (Age-Specific Annualized Percentages²) by Age at Death

Data as of: February 19, 2023

	Age at Death							
	50-59	60-64	65-69	70-74	75-79	80-84	85-89	≥90
Number of participants³	50947	87534	122004	144974	150620	127289	85540	41976
Mean person years	4.3	3.9	4.2	4.5	4.5	4.2	3.7	3.7
Cancer (continued)								
Ovary	22 (0.01%)	51 (0.01%)	118 (0.02%)	213 (0.03%)	271 (0.04%)	259 (0.05%)	154 (0.05%)	75 (0.05%)
Pancreas	19 (0.01%)	56 (0.02%)	125 (0.02%)	248 (0.04%)	363 (0.05%)	420 (0.08%)	315 (0.10%)	168 (0.11%)
Uterus	1 (<0.01%)	6 (<0.01%)	23 (<0.01%)	25 (<0.01%)	43 (0.01%)	52 (0.01%)	32 (0.01%)	25 (0.02%)
Other cancer site	36 (0.02%)	94 (0.03%)	261 (0.05%)	491 (0.08%)	749 (0.11%)	809 (0.15%)	675 (0.21%)	448 (0.29%)
Unknown cancer site	9 (<0.01%)	28 (0.01%)	50 (0.01%)	108 (0.02%)	141 (0.02%)	163 (0.03%)	187 (0.06%)	125 (0.08%)
Total cancer deaths	240 (0.11%)	675 (0.20%)	1547 (0.30%)	2774 (0.43%)	3962 (0.58%)	4147 (0.78%)	3286 (1.04%)	2050 (1.32%)
Accident/injury								
Homicide	1 (<0.01%)	5 (<0.01%)	8 (<0.01%)	4 (<0.01%)	7 (<0.01%)	3 (<0.01%)	9 (<0.01%)	0 (0.00%)
Accident	19 (0.01%)	48 (0.01%)	69 (0.01%)	123 (0.02%)	243 (0.04%)	439 (0.08%)	503 (0.16%)	559 (0.36%)
Suicide	11 (0.01%)	9 (<0.01%)	16 (<0.01%)	11 (<0.01%)	17 (<0.01%)	9 (<0.01%)	7 (<0.01%)	3 (<0.01%)
Other injury	0 (0.00%)	7 (<0.01%)	5 (<0.01%)	5 (<0.01%)	11 (<0.01%)	9 (<0.01%)	9 (<0.01%)	5 (<0.01%)
Total accident/injury deaths	31 (0.01%)	69 (0.02%)	98 (0.02%)	143 (0.02%)	278 (0.04%)	460 (0.09%)	528 (0.17%)	567 (0.36%)
Other								
Alzheimer's disease	0 (0.00%)	6 (<0.01%)	15 (<0.01%)	87 (0.01%)	450 (0.07%)	1204 (0.23%)	1964 (0.62%)	2421 (1.55%)
Dementia, not Alzheimer's	0 (0.00%)	3 (<0.01%)	15 (<0.01%)	89 (0.01%)	379 (0.06%)	1024 (0.19%)	1832 (0.58%)	2687 (1.72%)
COPD	1 (<0.01%)	27 (0.01%)	72 (0.01%)	226 (0.03%)	531 (0.08%)	753 (0.14%)	844 (0.27%)	765 (0.49%)
Pneumonia	3 (<0.01%)	11 (<0.01%)	48 (0.01%)	95 (0.01%)	237 (0.03%)	424 (0.08%)	530 (0.17%)	538 (0.35%)
Pulmonary fibrosis	5 (<0.01%)	10 (<0.01%)	23 (<0.01%)	68 (0.01%)	160 (0.02%)	188 (0.04%)	231 (0.07%)	125 (0.08%)
Renal failure	5 (<0.01%)	15 (<0.01%)	33 (0.01%)	85 (0.01%)	214 (0.03%)	317 (0.06%)	349 (0.11%)	388 (0.25%)
Sepsis	5 (<0.01%)	21 (0.01%)	59 (0.01%)	121 (0.02%)	275 (0.04%)	432 (0.08%)	496 (0.16%)	430 (0.28%)
Amyotrophic lateral sclerosis	0 (0.00%)	14 (<0.01%)	32 (0.01%)	59 (0.01%)	85 (0.01%)	81 (0.02%)	25 (0.01%)	9 (0.01%)
Parkinson's	1 (<0.01%)	1 (<0.01%)	13 (<0.01%)	46 (0.01%)	162 (0.02%)	319 (0.06%)	392 (0.12%)	277 (0.18%)
Hepatic cirrhosis	9 (<0.01%)	18 (0.01%)	27 (0.01%)	61 (0.01%)	87 (0.01%)	87 (0.02%)	57 (0.02%)	22 (0.01%)
COVID-19	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	12 (<0.01%)	43 (0.01%)	48 (0.02%)	82 (0.05%)
Other known cause	41 (0.02%)	96 (0.03%)	221 (0.04%)	617 (0.09%)	1353 (0.20%)	2282 (0.43%)	2829 (0.90%)	3317 (2.13%)
Unknown cause	2 (<0.01%)	16 (<0.01%)	20 (<0.01%)	31 (<0.01%)	124 (0.02%)	283 (0.05%)	551 (0.17%)	1067 (0.68%)
Total other cause deaths	72 (0.03%)	238 (0.07%)	578 (0.11%)	1586 (0.24%)	4069 (0.60%)	7437 (1.39%)	10148 (3.22%)	12128 (7.78%)

¹ Includes deaths for non-Extension Study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

² Age specific annualized percentages are calculated as the number with an event in the age interval divided by the total person years of all participants with time in the interval.

³ Number of participants with any follow-up time in the age interval.

Table 2.4
Verified Primary and Other Cancers (Annualized Percentages) by Race/Ethnicity

Data as of: February 19, 2023

	Total	Race/Ethnicity						
		American Indian/ Alaska Native	Asian or Native Hawaiian/ Other Pacific Islander ¹	Hispanic/ Latina	Non-Hispanic Black/African American	Non-Hispanic White	More than one Race	Other/ Not Reported
Number of participants	161808	487	4084	7312	14167	133328	1669	761
Mean person years	17.3	13.4	15.2	14.4	14.7	17.8	18.1	12.3
Total cancer	37498 (1.49%)	83 (1.37%)	645 (1.13%)	991 (1.00%)	2405 (1.25%)	32910 (1.55%)	326 (1.18%)	138 (1.62%)
Accessory sinus	16 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	15 (<0.01%)	0 (0.00%)	0 (0.00%)
Adrenal gland	19 (<0.01%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	2 (<0.01%)	16 (<0.01%)	0 (0.00%)	0 (0.00%)
Anus	148 (0.01%)	0 (0.00%)	2 (<0.01%)	6 (0.01%)	13 (0.01%)	127 (0.01%)	0 (0.00%)	0 (0.00%)
Appendix	53 (<0.01%)	0 (0.00%)	0 (0.00%)	3 (<0.01%)	4 (<0.01%)	45 (<0.01%)	0 (0.00%)	1 (0.01%)
Base of tongue	38 (<0.01%)	0 (0.00%)	0 (0.00%)	2 (<0.01%)	0 (0.00%)	35 (<0.01%)	0 (0.00%)	1 (0.01%)
Biliary tract, parts of	220 (0.01%)	1 (0.02%)	3 (<0.01%)	16 (0.02%)	16 (0.01%)	181 (0.01%)	2 (0.01%)	1 (0.01%)
Bladder	1192 (0.04%)	1 (0.02%)	11 (0.02%)	20 (0.02%)	68 (0.03%)	1078 (0.05%)	13 (0.04%)	1 (0.01%)
Bones/joints/articular cartilage (limbs)	14 (<0.01%)	1 (0.02%)	1 (<0.01%)	0 (0.00%)	0 (0.00%)	12 (<0.01%)	0 (0.00%)	0 (0.00%)
Bones/joints/articular cartilage (other)	35 (<0.01%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	1 (<0.01%)	31 (<0.01%)	1 (<0.01%)	1 (0.01%)
Brain	427 (0.02%)	1 (0.02%)	5 (0.01%)	7 (0.01%)	14 (0.01%)	399 (0.02%)	0 (0.00%)	1 (0.01%)
Breast	14414 (0.54%)	27 (0.43%)	290 (0.49%)	408 (0.40%)	959 (0.48%)	12556 (0.56%)	129 (0.45%)	45 (0.51%)
Invasive breast	12121 (0.45%)	24 (0.38%)	231 (0.39%)	334 (0.33%)	774 (0.38%)	10607 (0.47%)	113 (0.39%)	38 (0.42%)
In situ breast	2563 (0.09%)	4 (0.06%)	63 (0.10%)	83 (0.08%)	211 (0.10%)	2175 (0.09%)	19 (0.06%)	8 (0.09%)
Central nervous system (excludes brain)	6 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	6 (<0.01%)	0 (0.00%)	0 (0.00%)
Cervix	142 (0.01%)	0 (0.00%)	2 (<0.01%)	6 (0.01%)	21 (0.01%)	112 (<0.01%)	1 (<0.01%)	0 (0.00%)
Colorectum	3683 (0.13%)	9 (0.14%)	62 (0.10%)	107 (0.10%)	307 (0.15%)	3152 (0.13%)	33 (0.11%)	13 (0.14%)
Connective/subcutaneous/ soft tissues	224 (0.01%)	0 (0.00%)	4 (0.01%)	5 (<0.01%)	10 (<0.01%)	200 (0.01%)	4 (0.01%)	1 (0.01%)
Endocrine glands, related structures	5 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	5 (<0.01%)	0 (0.00%)	0 (0.00%)
Endometrium ²	1934 (0.12%)	3 (0.09%)	25 (0.06%)	46 (0.08%)	93 (0.10%)	1752 (0.12%)	11 (0.07%)	4 (0.07%)
Esophagus	215 (0.01%)	1 (0.02%)	1 (<0.01%)	3 (<0.01%)	10 (<0.01%)	196 (0.01%)	3 (0.01%)	1 (0.01%)
Eye and adnexa	85 (<0.01%)	0 (0.00%)	0 (0.00%)	4 (<0.01%)	0 (0.00%)	79 (<0.01%)	2 (0.01%)	0 (0.00%)

¹ Native Hawaiian/Other Pacific Islander participants (n=119) are combined with Asian participants for reporting purposes due to small numbers.

² Only women without a baseline hysterectomy are used to compute the annual rates of endometrial and uterine cancer.

Table 2.4 (continued)
Verified Primary and Other Cancers (Annualized Percentages) by Race/Ethnicity

Data as of: February 19, 2023

	Total	Race/Ethnicity						
		American Indian/ Alaska Native	Asian or Native Hawaiian/ Other Pacific Islander ¹	Hispanic/ Latina	Non-Hispanic Black/African American	Non-Hispanic White	More than one Race	Other/ Not Reported
Number of participants	161808	487	4084	7312	14167	133328	1669	761
Mean person years	17.3	13.4	15.2	14.4	14.7	17.8	18.1	12.3
Floor of Mouth	20 (<0.01%)	0 (0.00%)	1 (<0.01%)	1 (<0.01%)	2 (<0.01%)	15 (<0.01%)	0 (0.00%)	1 (0.01%)
Gallbladder	164 (0.01%)	0 (0.00%)	1 (<0.01%)	9 (0.01%)	11 (0.01%)	141 (0.01%)	2 (0.01%)	0 (0.00%)
Genital organs	187 (0.01%)	0 (0.00%)	3 (<0.01%)	6 (0.01%)	6 (<0.01%)	171 (0.01%)	0 (0.00%)	1 (0.01%)
Gum	55 (<0.01%)	0 (0.00%)	1 (<0.01%)	2 (<0.01%)	2 (<0.01%)	50 (<0.01%)	0 (0.00%)	0 (0.00%)
Heart	44 (<0.01%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	0 (0.00%)	43 (<0.01%)	0 (0.00%)	0 (0.00%)
Kidney	848 (0.03%)	7 (0.11%)	14 (0.02%)	24 (0.02%)	68 (0.03%)	723 (0.03%)	8 (0.03%)	4 (0.04%)
Larynx	56 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	6 (<0.01%)	50 (<0.01%)	0 (0.00%)	0 (0.00%)
Leukemia	1325 (0.05%)	2 (0.03%)	17 (0.03%)	30 (0.03%)	72 (0.03%)	1182 (0.05%)	15 (0.05%)	7 (0.07%)
Liver	390 (0.01%)	3 (0.05%)	17 (0.03%)	22 (0.02%)	32 (0.02%)	310 (0.01%)	3 (0.01%)	3 (0.03%)
Lung	4647 (0.17%)	12 (0.19%)	68 (0.11%)	92 (0.09%)	315 (0.15%)	4098 (0.17%)	41 (0.14%)	21 (0.23%)
Lymph nodes	3 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	3 (<0.01%)	0 (0.00%)	0 (0.00%)
Lymphoma, Hodgkins	85 (<0.01%)	0 (0.00%)	1 (<0.01%)	9 (0.01%)	4 (<0.01%)	69 (<0.01%)	1 (<0.01%)	1 (0.01%)
Lymphoma, non-Hodgkins	2039 (0.07%)	1 (0.02%)	41 (0.07%)	65 (0.06%)	75 (0.04%)	1840 (0.08%)	9 (0.03%)	8 (0.09%)
Melanoma of the skin	2921 (0.11%)	2 (0.03%)	7 (0.01%)	24 (0.02%)	9 (<0.01%)	2856 (0.12%)	18 (0.06%)	5 (0.05%)
Meninges	8 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	8 (<0.01%)	0 (0.00%)	0 (0.00%)
Multiple myeloma	718 (0.03%)	3 (0.05%)	4 (0.01%)	26 (0.02%)	88 (0.04%)	586 (0.02%)	8 (0.03%)	3 (0.03%)
Mycosis fungoides	31 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	4 (<0.01%)	27 (<0.01%)	0 (0.00%)	0 (0.00%)
Nasal cavity mid ear	23 (<0.01%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	0 (0.00%)	22 (<0.01%)	0 (0.00%)	0 (0.00%)
Oral (mouth)	46 (<0.01%)	0 (0.00%)	0 (0.00%)	2 (<0.01%)	2 (<0.01%)	42 (<0.01%)	0 (0.00%)	0 (0.00%)
Other digestive	69 (<0.01%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	4 (<0.01%)	63 (<0.01%)	0 (0.00%)	1 (0.01%)
Other lip	17 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	16 (<0.01%)	0 (0.00%)	0 (0.00%)
Ovary	1398 (0.05%)	5 (0.08%)	17 (0.03%)	41 (0.04%)	77 (0.04%)	1237 (0.05%)	10 (0.03%)	11 (0.12%)
Palate	36 (<0.01%)	0 (0.00%)	1 (<0.01%)	0 (0.00%)	0 (0.00%)	35 (<0.01%)	0 (0.00%)	0 (0.00%)
Pancreas	1508 (0.05%)	1 (0.02%)	42 (0.07%)	39 (0.04%)	130 (0.06%)	1272 (0.05%)	18 (0.06%)	6 (0.06%)
Parotid gland (Stensen's duct)	75 (<0.01%)	0 (0.00%)	2 (<0.01%)	1 (<0.01%)	8 (<0.01%)	64 (<0.01%)	0 (0.00%)	0 (0.00%)

¹ Native Hawaiian/Other Pacific Islander participants (n=119) are combined with Asian participants for reporting purposes due to small numbers.

Table 2.4 (continued)
Verified Primary and Other Cancers (Annualized Percentages) by Race/Ethnicity

Data as of: February 19, 2023

	Total	Race/Ethnicity						
		American Indian/ Alaska Native	Asian or Native Hawaiian/ Other Pacific Islander ¹	Hispanic/ Latina	Non-Hispanic Black/African American	Non-Hispanic White	More than one Race	Other/ Not Reported
Number of participants	161808	487	4084	7312	14167	133328	1669	761
Mean person years	17.3	13.4	15.2	14.4	14.7	17.8	18.1	12.3
Peripheral nerves and autonomic nervous system	2 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	2 (<0.01%)	0 (0.00%)	0 (0.00%)
Peritoneum	244 (0.01%)	1 (0.02%)	3 (<0.01%)	8 (0.01%)	14 (0.01%)	215 (0.01%)	2 (0.01%)	1 (0.01%)
Pharynx	33 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	3 (<0.01%)	30 (<0.01%)	0 (0.00%)	0 (0.00%)
Pyriform sinus	2 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	2 (<0.01%)	0 (0.00%)	0 (0.00%)
Renal pelvis	149 (0.01%)	0 (0.00%)	2 (<0.01%)	2 (<0.01%)	10 (<0.01%)	133 (0.01%)	1 (<0.01%)	1 (0.01%)
Respiratory system, intrathoracic, other	3 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	3 (<0.01%)	0 (0.00%)	0 (0.00%)
Salivary glands, major (other/unspecified)	19 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	19 (<0.01%)	0 (0.00%)	0 (0.00%)
Small intestine	180 (0.01%)	0 (0.00%)	4 (0.01%)	5 (<0.01%)	14 (0.01%)	155 (0.01%)	2 (0.01%)	0 (0.00%)
Stomach	348 (0.01%)	0 (0.00%)	16 (0.03%)	12 (0.01%)	48 (0.02%)	263 (0.01%)	7 (0.02%)	2 (0.02%)
Thymus	15 (<0.01%)	0 (0.00%)	1 (<0.01%)	0 (0.00%)	0 (0.00%)	13 (<0.01%)	1 (<0.01%)	0 (0.00%)
Thyroid	532 (0.02%)	0 (0.00%)	8 (0.01%)	16 (0.02%)	38 (0.02%)	467 (0.02%)	3 (0.01%)	0 (0.00%)
Tongue, part of (other/unspecified)	99 (<0.01%)	0 (0.00%)	3 (<0.01%)	0 (0.00%)	2 (<0.01%)	91 (<0.01%)	2 (0.01%)	1 (0.01%)
Tonsil	25 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	23 (<0.01%)	1 (<0.01%)	0 (0.00%)
Trachea	1 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Ureter	95 (<0.01%)	1 (0.02%)	3 (<0.01%)	2 (<0.01%)	2 (<0.01%)	85 (<0.01%)	2 (0.01%)	0 (0.00%)
Urinary organs (other/unspecified)	42 (<0.01%)	1 (0.02%)	2 (<0.01%)	2 (<0.01%)	4 (<0.01%)	32 (<0.01%)	1 (<0.01%)	0 (0.00%)
Uterus, not otherwise specified ²	147 (0.01%)	1 (0.03%)	4 (0.01%)	5 (0.01%)	17 (0.02%)	119 (0.01%)	1 (0.01%)	0 (0.00%)
Vagina	54 (<0.01%)	1 (0.02%)	1 (<0.01%)	1 (<0.01%)	3 (<0.01%)	47 (<0.01%)	1 (<0.01%)	0 (0.00%)
Vulva	202 (0.01%)	0 (0.00%)	2 (<0.01%)	13 (0.01%)	13 (0.01%)	172 (0.01%)	2 (0.01%)	0 (0.00%)
Other/unknown site	1514 (0.05%)	8 (0.12%)	30 (0.05%)	32 (0.03%)	97 (0.05%)	1331 (0.06%)	5 (0.02%)	11 (0.12%)

¹ Native Hawaiian/Other Pacific Islander participants (n=119) are combined with Asian participants for reporting purposes due to small numbers.

² Only women without a baseline hysterectomy are used to compute the annual rates of endometrial and uterine cancer

Table 2.5
Verified Primary and Other Cancers (Age-Specific Annualized Percentages¹) by Age at Diagnosis

Data as of: February 19, 2023

	Age at Diagnosis							
	50-59	60-64	65-69	70-74	75-79	80-84	85-89	≥90
Number of participants²	50943	85384	113869	128388	125434	99134	61353	28170
Mean person years	4.1	3.7	4.0	4.3	4.3	4.0	3.6	3.6
Total cancer	1698 (0.82%)	3366 (1.10%)	5634 (1.32%)	7880 (1.58%)	8177 (1.71%)	6057 (1.78%)	3289 (1.82%)	1397 (1.68%)
Accessory sinus	0 (0.00%)	0 (0.00%)	1 (<0.01%)	5 (<0.01%)	3 (<0.01%)	4 (<0.01%)	2 (<0.01%)	1 (<0.01%)
Adrenal gland	2 (<0.01%)	5 (<0.01%)	2 (<0.01%)	3 (<0.01%)	3 (<0.01%)	1 (<0.01%)	1 (<0.01%)	2 (<0.01%)
Anus	1 (<0.01%)	7 (<0.01%)	13 (<0.01%)	29 (0.01%)	40 (0.01%)	35 (0.01%)	14 (0.01%)	9 (0.01%)
Appendix	0 (0.00%)	5 (<0.01%)	5 (<0.01%)	12 (<0.01%)	9 (<0.01%)	14 (<0.01%)	7 (<0.01%)	1 (<0.01%)
Base of tongue	1 (<0.01%)	6 (<0.01%)	4 (<0.01%)	5 (<0.01%)	8 (<0.01%)	11 (<0.01%)	1 (<0.01%)	2 (<0.01%)
Biliary tract, parts of	2 (<0.01%)	12 (<0.01%)	25 (0.01%)	48 (0.01%)	53 (0.01%)	48 (0.01%)	25 (0.01%)	7 (0.01%)
Bladder	33 (0.02%)	73 (0.02%)	109 (0.02%)	206 (0.04%)	276 (0.05%)	246 (0.06%)	159 (0.07%)	90 (0.09%)
Bones/joints/articular cartilage (limbs)	1 (<0.01%)	1 (<0.01%)	3 (<0.01%)	2 (<0.01%)	4 (<0.01%)	3 (<0.01%)	0 (0.00%)	0 (0.00%)
Bones/joints/articular cartilage (other)	1 (<0.01%)	0 (0.00%)	4 (<0.01%)	10 (<0.01%)	8 (<0.01%)	7 (<0.01%)	2 (<0.01%)	3 (<0.01%)
Brain	15 (0.01%)	31 (0.01%)	63 (0.01%)	96 (0.02%)	85 (0.02%)	81 (0.02%)	36 (0.02%)	20 (0.02%)
Breast	903 (0.43%)	1651 (0.53%)	2473 (0.56%)	3191 (0.61%)	3106 (0.61%)	1946 (0.53%)	861 (0.43%)	283 (0.30%)
Invasive breast	721 (0.34%)	1341 (0.43%)	1988 (0.45%)	2629 (0.50%)	2641 (0.51%)	1707 (0.45%)	806 (0.40%)	288 (0.30%)
In situ breast	187 (0.09%)	323 (0.10%)	506 (0.11%)	614 (0.11%)	542 (0.10%)	300 (0.08%)	78 (0.04%)	13 (0.01%)
Central nervous system (excludes brain)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	2 (<0.01%)	1 (<0.01%)	1 (<0.01%)	0 (0.00%)	1 (<0.01%)
Cervix	18 (0.01%)	24 (0.01%)	16 (<0.01%)	21 (<0.01%)	27 (<0.01%)	22 (0.01%)	7 (<0.01%)	7 (0.01%)
Colorectum	111 (0.05%)	258 (0.08%)	481 (0.11%)	723 (0.13%)	771 (0.14%)	679 (0.17%)	436 (0.20%)	224 (0.23%)
Connective/subcutaneous/soft tissues	10 (<0.01%)	15 (<0.01%)	24 (0.01%)	37 (0.01%)	44 (0.01%)	44 (0.01%)	29 (0.01%)	21 (0.02%)
Endocrine glands, related structures	0 (0.00%)	0 (0.00%)	1 (<0.01%)	2 (<0.01%)	0 (0.00%)	2 (<0.01%)	0 (0.00%)	0 (0.00%)
Endometrium ³	97 (0.08%)	206 (0.11%)	373 (0.14%)	443 (0.14%)	404 (0.13%)	272 (0.12%)	100 (0.08%)	39 (0.07%)
Esophagus	3 (<0.01%)	12 (<0.01%)	21 (<0.01%)	30 (0.01%)	51 (0.01%)	45 (0.01%)	38 (0.02%)	15 (0.01%)
Eye and adnexa	5 (<0.01%)	3 (<0.01%)	18 (<0.01%)	21 (<0.01%)	16 (<0.01%)	11 (<0.01%)	7 (<0.01%)	4 (<0.01%)

¹ Age specific annualized percentages are calculated as the number with an event in the age interval divided by the total person years of all participants with time in the interval.

² Number of participants with any follow-up time in the age interval.

³ Only women without a baseline hysterectomy are used to compute the annual rates of endometrial and uterine cancer.

Table 2.5 (continued)
Verified Primary and Other Cancers (Age-Specific Annualized Percentages¹) by Age at Diagnosis

Data as of: February 19, 2023

	Age at Diagnosis							
	50-59	60-64	65-69	70-74	75-79	80-84	85-89	≥90
Number of participants²	50665	85221	113756	128299	125387	99134	61353	28170
Mean person years	4.2	3.7	4.0	4.3	4.3	4.0	3.6	3.6
Floor of Mouth	2 (<0.01%)	1 (<0.01%)	3 (<0.01%)	4 (<0.01%)	2 (<0.01%)	3 (<0.01%)	4 (<0.01%)	1 (<0.01%)
Gallbladder	2 (<0.01%)	5 (<0.01%)	16 (<0.01%)	32 (0.01%)	36 (0.01%)	41 (0.01%)	22 (0.01%)	10 (0.01%)
Genital organs	5 (<0.01%)	12 (<0.01%)	20 (<0.01%)	32 (0.01%)	38 (0.01%)	50 (0.01%)	22 (0.01%)	8 (0.01%)
Gum	0 (0.00%)	3 (<0.01%)	4 (<0.01%)	9 (<0.01%)	17 (<0.01%)	9 (<0.01%)	9 (<0.01%)	4 (<0.01%)
Heart	0 (0.00%)	1 (<0.01%)	5 (<0.01%)	10 (<0.01%)	9 (<0.01%)	9 (<0.01%)	7 (<0.01%)	3 (<0.01%)
Kidney	27 (0.01%)	65 (0.02%)	110 (0.02%)	152 (0.03%)	220 (0.04%)	157 (0.04%)	79 (0.04%)	38 (0.04%)
Larynx	2 (<0.01%)	10 (<0.01%)	10 (<0.01%)	8 (<0.01%)	11 (<0.01%)	6 (<0.01%)	9 (<0.01%)	0 (0.00%)
Leukemia	20 (0.01%)	69 (0.02%)	175 (0.04%)	234 (0.04%)	297 (0.05%)	252 (0.06%)	183 (0.08%)	95 (0.09%)
Liver	4 (<0.01%)	16 (0.01%)	26 (0.01%)	68 (0.01%)	87 (0.02%)	84 (0.02%)	71 (0.03%)	34 (0.03%)
Lung	89 (0.04%)	257 (0.08%)	552 (0.12%)	929 (0.17%)	1131 (0.21%)	929 (0.23%)	520 (0.24%)	240 (0.24%)
Lymph nodes	0 (0.00%)	0 (0.00%)	1 (<0.01%)	2 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Lymphoma, Hodgkins	2 (<0.01%)	5 (<0.01%)	12 (<0.01%)	17 (<0.01%)	21 (<0.01%)	18 (<0.01%)	8 (<0.01%)	2 (<0.01%)
Lymphoma, non-Hodgkins	51 (0.02%)	122 (0.04%)	255 (0.06%)	415 (0.08%)	476 (0.09%)	380 (0.10%)	252 (0.12%)	88 (0.09%)
Melanoma of the skin	127 (0.06%)	220 (0.07%)	402 (0.09%)	575 (0.11%)	698 (0.13%)	490 (0.12%)	301 (0.14%)	108 (0.11%)
Meninges	0 (0.00%)	0 (0.00%)	0 (0.00%)	2 (<0.01%)	1 (<0.01%)	2 (<0.01%)	2 (<0.01%)	1 (<0.01%)
Multiple myeloma	16 (0.01%)	29 (0.01%)	81 (0.02%)	148 (0.03%)	160 (0.03%)	164 (0.04%)	90 (0.04%)	30 (0.03%)
Mycosis fungoides	7 (<0.01%)	3 (<0.01%)	3 (<0.01%)	6 (<0.01%)	4 (<0.01%)	3 (<0.01%)	4 (<0.01%)	1 (<0.01%)
Nasal cavity mid ear	0 (0.00%)	0 (0.00%)	3 (<0.01%)	4 (<0.01%)	8 (<0.01%)	5 (<0.01%)	1 (<0.01%)	2 (<0.01%)
Oral (mouth)	1 (<0.01%)	1 (<0.01%)	3 (<0.01%)	8 (<0.01%)	9 (<0.01%)	7 (<0.01%)	9 (<0.01%)	8 (0.01%)
Other digestive	0 (0.00%)	0 (0.00%)	4 (<0.01%)	8 (<0.01%)	17 (<0.01%)	17 (<0.01%)	13 (0.01%)	10 (0.01%)
Other lip	0 (0.00%)	0 (0.00%)	3 (<0.01%)	2 (<0.01%)	2 (<0.01%)	4 (<0.01%)	2 (<0.01%)	4 (<0.01%)
Ovary	61 (0.03%)	124 (0.04%)	244 (0.05%)	291 (0.05%)	279 (0.05%)	218 (0.05%)	133 (0.06%)	48 (0.05%)
Palate	2 (<0.01%)	1 (<0.01%)	5 (<0.01%)	6 (<0.01%)	6 (<0.01%)	12 (<0.01%)	3 (<0.01%)	1 (<0.01%)
Pancreas	26 (0.01%)	68 (0.02%)	138 (0.03%)	240 (0.04%)	331 (0.06%)	340 (0.08%)	248 (0.11%)	117 (0.11%)
Parotid gland (Stensen's duct)	0 (0.00%)	7 (<0.01%)	11 (<0.01%)	17 (<0.01%)	20 (<0.01%)	13 (<0.01%)	6 (<0.01%)	1 (<0.01%)
Peripheral nerves and autonomic nervous system	0 (0.00%)	0 (0.00%)	0 (0.00%)	2 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

¹ Age specific annualized percentages are calculated as the number with an event in the age interval divided by the total person years of all participants with time in the interval.

² Number of participants with any follow-up time in the age interval.

Table 2.5 (continued)
Verified Primary and Other Cancers (Age-Specific Annualized Percentages¹) by Age at Diagnosis

Data as of: February 19, 2023

	Age at Diagnosis							
	50-59	60-64	65-69	70-74	75-79	80-84	85-89	≥90
Number of participants²	50665	85221	113756	128299	125387	99134	61353	28170
Mean person years	4.2	3.7	4.0	4.3	4.3	4.0	3.6	3.6
Peritoneum	7 (<0.01%)	14 (<0.01%)	36 (0.01%)	65 (0.01%)	49 (0.01%)	45 (0.01%)	26 (0.01%)	2 (<0.01%)
Pharynx	1 (<0.01%)	1 (<0.01%)	5 (<0.01%)	9 (<0.01%)	2 (<0.01%)	7 (<0.01%)	5 (<0.01%)	3 (<0.01%)
Pyriform sinus	0 (0.00%)	0 (0.00%)	2 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Renal pelvis	5 (<0.01%)	6 (<0.01%)	15 (<0.01%)	23 (<0.01%)	35 (0.01%)	44 (0.01%)	15 (0.01%)	6 (0.01%)
Respiratory system, intrathoracic, other	0 (0.00%)	0 (0.00%)	2 (<0.01%)	0 (0.00%)	1 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Salivary glands, major (other/unspecified)	2 (<0.01%)	2 (<0.01%)	0 (0.00%)	7 (<0.01%)	2 (<0.01%)	4 (<0.01%)	1 (<0.01%)	1 (<0.01%)
Small intestine	4 (<0.01%)	8 (<0.01%)	27 (0.01%)	30 (0.01%)	44 (0.01%)	35 (0.01%)	23 (0.01%)	9 (0.01%)
Stomach	7 (<0.01%)	22 (0.01%)	28 (0.01%)	65 (0.01%)	83 (0.02%)	78 (0.02%)	42 (0.02%)	23 (0.02%)
Thymus	0 (0.00%)	1 (<0.01%)	3 (<0.01%)	1 (<0.01%)	5 (<0.01%)	4 (<0.01%)	0 (0.00%)	1 (<0.01%)
Thyroid	28 (0.01%)	65 (0.02%)	91 (0.02%)	130 (0.02%)	119 (0.02%)	69 (0.02%)	22 (0.01%)	8 (0.01%)
Tongue, part of (other/unspecified)	6 (<0.01%)	3 (<0.01%)	10 (<0.01%)	23 (<0.01%)	22 (<0.01%)	15 (<0.01%)	16 (0.01%)	4 (<0.01%)
Tonsil	2 (<0.01%)	0 (0.00%)	3 (<0.01%)	6 (<0.01%)	6 (<0.01%)	3 (<0.01%)	4 (<0.01%)	1 (<0.01%)
Trachea	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Ureter	2 (<0.01%)	4 (<0.01%)	5 (<0.01%)	18 (<0.01%)	29 (0.01%)	18 (<0.01%)	14 (0.01%)	5 (<0.01%)
Urinary organs (other/unspecified)	2 (<0.01%)	2 (<0.01%)	4 (<0.01%)	6 (<0.01%)	8 (<0.01%)	13 (<0.01%)	6 (<0.01%)	1 (<0.01%)
Uterus, not otherwise specified ³	1 (<0.01%)	4 (<0.01%)	15 (0.01%)	20 (0.01%)	31 (0.01%)	37 (0.02%)	17 (0.01%)	22 (0.04%)
Vagina	0 (0.00%)	2 (<0.01%)	9 (<0.01%)	4 (<0.01%)	16 (<0.01%)	12 (<0.01%)	9 (<0.01%)	2 (<0.01%)
Vulva	11 (0.01%)	11 (<0.01%)	23 (0.01%)	42 (0.01%)	38 (0.01%)	41 (0.01%)	27 (0.01%)	9 (0.01%)
Other/unknown site	27 (0.01%)	70 (0.02%)	119 (0.03%)	265 (0.05%)	291 (0.05%)	292 (0.07%)	266 (0.12%)	184 (0.18%)

¹ Age specific annualized percentages are calculated as the number with an event in the age interval divided by the total person years of all participants with time in the interval.

² Number of participants with any follow-up time in the age interval.

³ Only women without a baseline hysterectomy are used to compute the annual rates of endometrial and uterine cancer.

Table 2.6
Adjudicated Cardiovascular Outcomes (Annualized Percentages) by Race/Ethnicity

Data as of: February 19, 2023

	Total	Race/Ethnicity						
		American Indian/ Alaska Native	Asian or Native Hawaiian/ Other Pacific Islander ¹	Hispanic/ Latina	Non-Hispanic Black/African American	Non-Hispanic White	More than one Race	Other/ Not Reported
Number of participants	161808	487	4084	7312	14167	133328	1669	761
Mean person years	17.3	13.4	15.2	14.4	14.7	17.8	18.1	12.3
Cardiovascular outcomes²								
CHD	9523 (0.51%)	29 (0.62%)	126 (0.29%)	322 (0.43%)	1137 (0.78%)	7769 (0.50%)	95 (0.48%)	45 (0.66%)
CHD death ³	3924 (0.21%)	16 (0.33%)	45 (0.10%)	131 (0.17%)	638 (0.42%)	3022 (0.19%)	41 (0.20%)	31 (0.44%)
Clinical MI	6714 (0.37%)	19 (0.41%)	96 (0.22%)	233 (0.32%)	655 (0.45%)	5619 (0.36%)	65 (0.33%)	27 (0.40%)
Angina ⁴	5248 (0.41%)	26 (0.75%)	70 (0.22%)	188 (0.35%)	534 (0.50%)	4356 (0.41%)	51 (0.38%)	23 (0.44%)
CABG/PTCA	9316 (0.50%)	26 (0.56%)	103 (0.24%)	344 (0.46%)	770 (0.52%)	7958 (0.51%)	85 (0.42%)	30 (0.44%)
Carotid artery disease	1651 (0.09%)	10 (0.21%)	13 (0.03%)	37 (0.05%)	102 (0.07%)	1466 (0.09%)	15 (0.07%)	8 (0.12%)
Heart failure ⁵	3511 (0.50%)	10 (0.66%)	23 (0.28%)	219 (0.24%)	889 (0.44%)	2308 (0.60%)	51 (0.53%)	11 (0.49%)
Recurrent heart failure ⁶	1168 (9.65%)	5 (14.09%)	2 (2.28%)	61 (7.74%)	292 (9.02%)	788 (10.18%)	18 (10.50%)	2 (4.62%)
Stroke ⁷	7753 (0.28%)	26 (0.40%)	120 (0.20%)	307 (0.29%)	997 (0.49%)	6182 (0.26%)	82 (0.28%)	39 (0.42%)
PAD	1713 (0.09%)	6 (0.13%)	17 (0.04%)	46 (0.06%)	255 (0.17%)	1361 (0.09%)	23 (0.11%)	5 (0.07%)
DVT ⁸	1477 (0.30%)	6 (0.53%)	2 (0.03%)	90 (0.14%)	400 (0.27%)	954 (0.36%)	19 (0.28%)	6 (0.37%)
Pulmonary embolism ⁸	1211 (0.24%)	5 (0.45%)	3 (0.05%)	58 (0.09%)	368 (0.25%)	757 (0.28%)	14 (0.21%)	6 (0.36%)
DVT/PE ⁸	2162 (0.43%)	9 (0.81%)	4 (0.07%)	125 (0.19%)	630 (0.42%)	1357 (0.51%)	28 (0.41%)	9 (0.55%)
Aortic aneurysm ⁹	85 (0.04%)	0 (0.00%)	2 (0.09%)	5 (0.02%)	22 (0.04%)	53 (0.04%)	3 (0.10%)	0 (0.00%)
Valvular heart disease ⁹	635 (0.30%)	0 (0.00%)	4 (0.17%)	58 (0.23%)	86 (0.15%)	476 (0.39%)	9 (0.29%)	2 (0.30%)
Total cardiovascular disease¹⁰	29635 (1.64%)	99 (2.24%)	382 (0.90%)	1133 (1.52%)	3716 (2.54%)	2384 (1.58%)	325 (1.67%)	135 (2.04%)

¹ Native Hawaiian/Other Pacific Islander participants (n=119) are combined with Asian participants for reporting purposes due to small numbers.

² Cardiovascular events are adjudicated through 2010 for SRC participants and through the present for MRC participants. To calculate annualized event rates, person-years at risk are limited to the time intervals during which events for each participant were subject to adjudication.

³ "CHD death" includes definite and possible CHD death.

⁴ Angina is not a verified outcome in the WHI Extension Studies. Reported counts and event rates are limited to participation during the original program (1993-2005).

⁵ Definite or possible decompensated heart failure adjudicated by UNC.

⁶ Recurrent definite or possible decompensated heart failure adjudicated by UNC among participants with a first event.

⁷ Starting on 2/1/2021 all new stroke self-reports are adjudicated for SRC participants. Adjudications for stroke cases among SRC participants between October 1, 2010 and January 31, 2021 are approximately 50% complete.

⁸ DVT and PE are only adjudicated and reported for MRC Super Cohort participants.

⁹ Aortic aneurysm and valvular heart disease are new adjudicated outcomes during WHI Extension Study II (2010-2025). To calculate annualized event rates, person-years at risk are limited to MRC participants with time during Extension Study II (2010-2025).

¹⁰ Total CVD does not include aortic aneurysm or valvular heart disease.

Table 2.7
Adjudicated Cardiovascular Outcomes (Age-Specific Annualized Percentages¹) by Age at Diagnosis

Data as of: February 19, 2023

	Age at Diagnosis							
	50-59	60-64	65-69	70-74	75-79	80-84	85-89	≥90
Number of participants²	50943	85384	113869	128388	125442	99165	61399	28234
Mean person years	4.1	3.7	4.0	4.3	4.3	4.0	3.6	3.6
Cardiovascular Outcomes³								
CHD	220 (0.10%)	551 (0.17%)	1157 (0.26%)	1791 (0.37%)	2197 (0.54%)	1926 (0.77%)	1098 (1.09%)	583 (1.73%)
CHD death ⁴	49 (0.02%)	124 (0.04%)	273 (0.06%)	542 (0.11%)	780 (0.19%)	912 (0.35%)	712 (0.67%)	532 (1.47%)
Clinical MI	180 (0.09%)	451 (0.14%)	950 (0.21%)	1397 (0.29%)	1657 (0.41%)	1280 (0.51%)	609 (0.60%)	190 (0.56%)
Angina ⁵	349 (0.17%)	702 (0.26%)	1182 (0.41%)	1435 (0.55%)	1115 (0.63%)	425 (0.63%)	40 (0.50%)	0 (0.00%)
CABG/PTCA	286 (0.14%)	789 (0.25%)	1678 (0.38%)	2393 (0.50%)	2367 (0.60%)	1342 (0.55%)	406 (0.41%)	55 (0.16%)
Carotid artery disease	52 (0.02%)	109 (0.03%)	270 (0.06%)	463 (0.09%)	425 (0.10%)	256 (0.10%)	65 (0.06%)	11 (0.03%)
Heart failure ⁶	70 (0.11%)	150 (0.17%)	259 (0.22%)	494 (0.36%)	683 (0.53%)	791 (0.88%)	643 (1.38%)	421 (2.03%)
Recurrent heart failure ⁷	18 (12.20%)	28 (6.51%)	70 (8.14%)	126 (8.17%)	216 (8.91%)	282 (9.96%)	265 (11.50%)	163 (10.44%)
Stroke ⁸	136 (0.06%)	355 (0.11%)	807 (0.18%)	1459 (0.27%)	1888 (0.35%)	1638 (0.42%)	981 (0.46%)	489 (0.50%)
PAD	40 (0.02%)	102 (0.03%)	247 (0.05%)	369 (0.08%)	455 (0.11%)	340 (0.13%)	116 (0.11%)	44 (0.12%)
DVT ⁹	37 (0.06%)	82 (0.09%)	196 (0.16%)	274 (0.20%)	332 (0.26%)	290 (0.32%)	176 (0.37%)	90 (0.41%)
Pulmonary embolism ⁹	27 (0.04%)	60 (0.07%)	139 (0.11%)	238 (0.17%)	282 (0.22%)	231 (0.25%)	160 (0.33%)	74 (0.33%)
DVT/PE ⁹	51 (0.08%)	115 (0.13%)	270 (0.22%)	416 (0.31%)	500 (0.39%)	409 (0.45%)	268 (0.57%)	133 (0.62%)
Aortic aneurysm ¹⁰	-- --	-- --	1 (0.01%)	6 (0.02%)	17 (0.03%)	33 (0.06%)	17 (0.04%)	11 (0.05%)
Valvular heart disease ¹⁰	-- --	-- --	7 (0.07%)	39 (0.12%)	119 (0.22%)	183 (0.34%)	183 (0.49%)	104 (0.49%)
Total cardiovascular disease¹¹	937 (0.45%)	2181 (0.70%)	4329 (1.00%)	6430 (1.41%)	6963 (1.87%)	5105 (2.33%)	2450 (2.92%)	1240 (4.60%)

¹ Age specific annualized percentages are calculated as the number with an event in the age interval divided by the total person years of all participants with time in the interval.

² Number of participants with any follow-up time in the age interval.

³ Cardiovascular events are adjudicated through 2010 for SRC participants and through the present for MRC participants. To calculate annualized event rates, person-years at risk are limited to the time intervals during which events for each participant were subject to adjudication.

⁴ "CHD death" includes definite and possible CHD death.

⁵ Angina is not a verified outcome in the WHI Extension Studies. Reported counts and event rates are limited to participation during the original program (1993-2005).

⁶ Definite or possible decompensated heart failure adjudicated by UNC.

⁷ Recurrent definite or possible decompensated heart failure adjudicated by UNC among participants with a first event.

⁸ Starting on 2/1/2021 all new stroke self-reports are adjudicated for SRC participants. Adjudications for stroke cases among SRC participants between October 1, 2010 and January 31, 2021 are approximately 50% complete.

⁹ DVT and PE are only adjudicated and reported for MRC Super Cohort participants.

¹⁰ Aortic aneurysm and valvular heart disease are new adjudicated outcomes during WHI Extension Study II (2010-2025). To calculate annualized event rates, person-years at risk are limited to MRC participants with time during Extension Study II (2010-2025).

¹¹ Total CVD does not include aortic aneurysm or valvular heart disease.

Table 2.8
Fracture Outcomes (Annualized Percentages) by Race/Ethnicity

Data as of: February 19, 2023

	Total	Race/Ethnicity						
		American Indian/ Alaska Native	Asian or Native Hawaiian/ Other Pacific Islander ¹	Hispanic/ Latina	Non-Hispanic Black/African American	Non-Hispanic White	More than one Race	Other/ Not Reported
Number of participants	161808	487	4084	7312	14167	133328	1669	761
Mean person years	17.3	13.3	15.1	14.4	14.6	17.8	18.1	12.2
Fracture site²								
Elbow	3246 (0.12%)	7 (0.11%)	34 (0.06%)	99 (0.09%)	101 (0.05%)	2972 (0.13%)	25 (0.08%)	8 (0.09%)
Foot	9716 (0.36%)	24 (0.38%)	125 (0.21%)	269 (0.26%)	486 (0.24%)	8671 (0.38%)	113 (0.39%)	28 (0.31%)
Hand	2863 (0.10%)	6 (0.09%)	35 (0.06%)	119 (0.11%)	118 (0.06%)	2548 (0.11%)	28 (0.09%)	9 (0.10%)
Hip	9293 (0.34%)	11 (0.17%)	100 (0.16%)	136 (0.13%)	153 (0.07%)	8775 (0.38%)	91 (0.31%)	27 (0.29%)
Knee	4699 (0.17%)	19 (0.30%)	112 (0.18%)	217 (0.21%)	256 (0.12%)	4017 (0.17%)	59 (0.20%)	19 (0.21%)
Lower arm	14765 (0.56%)	34 (0.54%)	230 (0.38%)	458 (0.45%)	495 (0.24%)	13376 (0.60%)	128 (0.44%)	44 (0.50%)
Lower leg	10672 (0.40%)	27 (0.43%)	143 (0.24%)	315 (0.31%)	613 (0.30%)	9419 (0.41%)	121 (0.42%)	34 (0.38%)
Pelvis	5066 (0.18%)	8 (0.12%)	55 (0.09%)	99 (0.09%)	95 (0.05%)	4759 (0.20%)	41 (0.14%)	9 (0.10%)
Spine	11585 (0.43%)	21 (0.33%)	190 (0.31%)	266 (0.26%)	200 (0.10%)	10762 (0.47%)	118 (0.40%)	28 (0.31%)
Tailbone	1711 (0.06%)	3 (0.05%)	26 (0.04%)	56 (0.05%)	52 (0.03%)	1536 (0.06%)	30 (0.10%)	8 (0.09%)
Upper arm	9293 (0.34%)	11 (0.17%)	99 (0.16%)	338 (0.33%)	309 (0.15%)	8412 (0.36%)	98 (0.33%)	26 (0.28%)
Upper leg	4355 (0.16%)	11 (0.17%)	54 (0.09%)	81 (0.08%)	99 (0.05%)	4061 (0.17%)	36 (0.12%)	13 (0.14%)
Other	33200 (1.34%)	97 (1.75%)	588 (1.04%)	1147 (1.21%)	1562 (0.81%)	29310 (1.40%)	377 (1.42%)	119 (1.41%)
Osteoporotic ³	36274 (1.45%)	67 (1.10%)	543 (0.94%)	1002 (1.03%)	1042 (0.52%)	33178 (1.58%)	343 (1.25%)	99 (1.17%)
Any fracture	69934 (3.34%)	172 (3.52%)	1199 (2.35%)	2243 (2.65%)	3272 (1.86%)	62121 (3.55%)	697 (3.05%)	230 (3.10%)

¹ Native Hawaiian/Other Pacific Islander participants (n=119) are combined with Asian participants for reporting purposes due to small numbers.

² Hip fracture includes adjudicated hip fracture for MRC participants through Extension Study II (2010-2025) and adjudicated hip fracture for SRC participants through Extension Study I (2005-2010) plus self-reported hip fracture for SRC participants during Extension Study II (2010-2025). All other fracture sites are obtained from self-reported data.

³ Osteoporotic fractures include spine, upper arm, lower arm and hip.

Table 2.9
Fracture Outcomes (Age-Specific Annualized Percentages¹) by Age at Diagnosis

Data as of: February 19, 2023

	Age at Diagnosis							
	50-59	60-64	65-69	70-74	75-79	80-84	85-89	≥90
Number of participants²	50943	85308	113773	128256	125286	99023	61323	28231
Mean person years	4.1	3.7	4.0	4.3	4.3	4.0	3.6	3.6
Fracture site³								
Elbow	157 (0.07%)	272 (0.09%)	456 (0.10%)	602 (0.11%)	711 (0.13%)	522 (0.13%)	361 (0.17%)	165 (0.17%)
Foot	727 (0.35%)	1155 (0.37%)	1719 (0.39%)	1995 (0.38%)	1850 (0.36%)	1363 (0.36%)	635 (0.31%)	272 (0.28%)
Hand	98 (0.05%)	189 (0.06%)	370 (0.08%)	553 (0.10%)	641 (0.12%)	512 (0.13%)	343 (0.16%)	157 (0.16%)
Hip	61 (0.03%)	144 (0.05%)	346 (0.08%)	863 (0.16%)	1726 (0.32%)	2476 (0.64%)	2186 (1.06%)	1491 (1.62%)
Knee	140 (0.07%)	281 (0.09%)	533 (0.12%)	879 (0.16%)	1104 (0.21%)	996 (0.25%)	529 (0.25%)	237 (0.24%)
Lower arm	599 (0.29%)	1154 (0.37%)	1978 (0.45%)	2826 (0.54%)	3297 (0.64%)	2557 (0.69%)	1585 (0.81%)	769 (0.87%)
Lower leg	766 (0.37%)	1199 (0.38%)	1761 (0.40%)	2071 (0.39%)	2062 (0.40%)	1571 (0.41%)	817 (0.40%)	425 (0.45%)
Pelvis	62 (0.03%)	121 (0.04%)	269 (0.06%)	583 (0.11%)	938 (0.17%)	1273 (0.32%)	1090 (0.52%)	730 (0.76%)
Spine	162 (0.08%)	397 (0.13%)	943 (0.21%)	1687 (0.31%)	2621 (0.50%)	2884 (0.76%)	1950 (0.97%)	941 (1.04%)
Tailbone	50 (0.02%)	78 (0.02%)	128 (0.03%)	199 (0.04%)	326 (0.06%)	366 (0.09%)	350 (0.16%)	214 (0.21%)
Upper arm	197 (0.09%)	460 (0.15%)	852 (0.19%)	1491 (0.28%)	2072 (0.39%)	2033 (0.53%)	1437 (0.70%)	751 (0.80%)
Upper leg	33 (0.02%)	98 (0.03%)	220 (0.05%)	483 (0.09%)	785 (0.15%)	1077 (0.27%)	1007 (0.47%)	652 (0.67%)
Other	2077 (1.01%)	3257 (1.08%)	4888 (1.16%)	6279 (1.27%)	6774 (1.44%)	5398 (1.63%)	3021 (1.76%)	1506 (1.98%)
Osteoporotic ⁴	993 (0.48%)	2047 (0.66%)	3802 (0.88%)	6109 (1.20%)	8077 (1.68%)	7631 (2.31%)	5077 (3.09%)	2538 (3.72%)
Any fracture	4366 (2.19%)	6977 (2.45%)	10516 (2.74%)	13554 (3.14%)	14376 (3.72%)	11208 (4.49%)	6144 (5.32%)	2793 (6.24%)

¹ Age specific annualized percentages are calculated as the number with an event in the age interval divided by the total person years of all participants with time in the interval.

² Number of participants with any follow-up time in the age interval.

³ Hip fracture includes adjudicated hip fracture for MRC participants through Extension Study II (2010-2025) and adjudicated hip fracture for SRC participants through Extension Study I (2005-2010) plus self-reported hip fracture for SRC participants during Extension Study II (2010-2025). All other fracture sites are obtained from self-reported data.

⁴ Osteoporotic fractures include spine, upper arm, lower arm and hip.

Table 2.10
Self-Reported Outcomes¹ (Annualized Percentages) by Race/Ethnicity

Data as of: February 19, 2023

	Total	Race/Ethnicity						
		American Indian/ Alaska Native	Asian or Native Hawaiian/ Other Pacific Islander ²	Hispanic/ Latina	Non-Hispanic Black/African American	Non-Hispanic White	More than one Race	Other/ Not Reported
Number of participants	161808	487	4084	7312	14167	133328	1669	761
Mean person years	17.3	13.3	15.1	14.4	14.6	17.8	18.1	12.2
Self-reported outcomes								
Cataracts ³	48674 (5.46%)	127 (5.25%)	1087 (5.06%)	2014 (4.91%)	3803 (4.85%)	40865 (5.56%)	581 (6.12%)	197 (5.44%)
Gallbladder disease ³	10921 (1.08%)	37 (1.48%)	163 (0.60%)	528 (1.32%)	769 (0.84%)	9259 (1.11%)	120 (1.15%)	45 (1.08%)
Glaucoma ³	16048 (1.40%)	51 (1.70%)	395 (1.42%)	740 (1.52%)	1919 (2.10%)	12670 (1.33%)	195 (1.61%)	78 (1.68%)
Kidney stones ³	4194 (0.35%)	22 (0.70%)	82 (0.28%)	244 (0.49%)	433 (0.43%)	3334 (0.34%)	56 (0.44%)	23 (0.47%)
Osteoporosis ³	35417 (3.44%)	83 (2.87%)	997 (4.05%)	1589 (3.58%)	1921 (2.01%)	30316 (3.58%)	357 (3.19%)	154 (3.77%)
Rheumatoid arthritis ³	8598 (0.74%)	37 (1.24%)	168 (0.59%)	806 (1.71%)	1299 (1.41%)	6097 (0.63%)	120 (0.99%)	71 (1.57%)
Diabetes (treated)	27886 (1.13%)	85 (1.75%)	722 (1.35%)	1399 (1.60%)	2973 (1.87%)	22231 (1.04%)	353 (1.40%)	123 (1.56%)
Hypertension treated w/pills	64100 (4.89%)	170 (6.41%)	1400 (4.81%)	2803 (5.47%)	4332 (7.48%)	54474 (4.72%)	699 (5.65%)	222 (5.09%)
Intestinal polyps	42063 (2.02%)	99 (1.96%)	880 (1.88%)	1596 (1.93%)	3519 (2.26%)	35341 (2.00%)	472 (2.13%)	156 (2.17%)
Lupus	2757 (0.10%)	11 (0.17%)	43 (0.07%)	145 (0.14%)	282 (0.14%)	2218 (0.09%)	46 (0.16%)	12 (0.13%)
Osteoarthritis	54186 (4.78%)	129 (5.12%)	1378 (4.44%)	2468 (5.33%)	4117 (4.81%)	45303 (4.75%)	598 (5.25%)	193 (4.66%)
Dementia ^{4,5}	24984 (1.76%)	48 (1.71%)	403 (1.38%)	872 (1.86%)	1513 (1.63%)	21780 (1.77%)	298 (1.95%)	70 (1.83%)
Macular degeneration ⁴	26251 (1.96%)	44 (1.65%)	337 (1.19%)	779 (1.71%)	1038 (1.13%)	23715 (2.06%)	274 (1.85%)	64 (1.73%)
Parkinson's disease ⁴	3268 (0.22%)	6 (0.20%)	61 (0.20%)	101 (0.20%)	157 (0.16%)	2891 (0.23%)	44 (0.27%)	8 (0.20%)
COPD ⁶	11829 (1.44%)	23 (1.46%)	129 (0.74%)	358 (1.31%)	760 (1.46%)	10383 (1.45%)	155 (1.79%)	21 (0.97%)

¹ Excludes participants with a prevalent condition at baseline.

² Native Hawaiian/Other Pacific Islander participants (n=119) are combined with Asian participants for reporting purposes due to small numbers.

³ Data not collected during WHI Extension Studies I and II (2005-2025). Reported counts and event rates are limited to participation during the original program (1993-2005).

⁴ Data only collected during WHI Extension Studies I and II (2005-2025). Reported counts and event rates are limited to participation during WHI Extension Studies I and II (2005-2025).

⁵ During Extension Study 2005-2010, women were asked to report "Moderate or severe memory problems (for example, dementia or Alzheimer's)". During Extension Study II (2010-2025), women are asked to report "Dementia or Alzheimer's"

⁶ Data only collected during WHI Extension Study II (2010-2025). Reported counts and event rates are limited to participation during WHI Extension Study II (2010-2025).

Table 2.11
Self-Reported Outcomes¹ (Age-Specific Annualized Percentages²) by Age at Diagnosis

Data as of: February 19, 2023

	Age at Diagnosis							
	50-59	60-64	65-69	70-74	75-79	80-84	85-89	≥90
Number of participants³	50943	85308	113773	128256	125286	99023	61323	28231
Mean person years	4.1	3.7	4.0	4.3	4.3	4.0	3.6	3.6
Self-reported outcomes								
Cataracts ⁴	2598 (1.32%)	7920 (3.50%)	13196 (6.26%)	13231 (8.60%)	8607 (10.81%)	2886 (13.22%)	236 (12.97%)	0 (0.00%)
Gallbladder disease ⁴	1734 (0.97%)	2295 (1.07%)	2650 (1.17%)	2227 (1.10%)	1455 (1.08%)	508 (1.01%)	52 (0.97%)	0 (0.00%)
Glaucoma ⁴	1480 (0.74%)	2838 (1.15%)	3826 (1.47%)	3791 (1.66%)	2781 (1.87%)	1182 (2.18%)	149 (2.67%)	1 (16.00%)
Kidney stones ⁴	514 (0.26%)	801 (0.32%)	959 (0.36%)	917 (0.38%)	628 (0.39%)	324 (0.52%)	51 (0.76%)	0 (0.00%)
Osteoporosis ⁴	3618 (1.87%)	6255 (2.73%)	8400 (3.58%)	8552 (4.28%)	6050 (4.83%)	2300 (5.27%)	242 (5.61%)	0 (0.00%)
Rheumatoid arthritis	1315 (0.67%)	1704 (0.70%)	1907 (0.73%)	1744 (0.74%)	1304 (0.83%)	550 (0.94%)	74 (1.18%)	0 (0.00%)
Diabetes (treated)	1343 (0.67%)	2517 (0.85%)	4093 (0.99%)	5221 (1.07%)	5731 (1.22%)	4620 (1.36%)	2817 (1.55%)	1544 (1.86%)
Hypertension treated w/pills	5016 (3.19%)	8531 (4.15%)	12365 (4.86%)	13933 (5.28%)	12674 (5.80%)	7608 (5.82%)	3014 (5.22%)	959 (4.17%)
Intestinal polyps	2700 (1.38%)	5533 (2.01%)	9019 (2.46%)	10107 (2.47%)	8548 (2.27%)	4426 (1.70%)	1411 (1.02%)	319 (0.49%)
Lupus	274 (0.13%)	403 (0.13%)	508 (0.11%)	552 (0.10%)	509 (0.10%)	305 (0.08%)	151 (0.07%)	55 (0.06%)
Osteoarthritis	3887 (2.68%)	6918 (3.74%)	10037 (4.48%)	11409 (5.05%)	10614 (5.80%)	6863 (6.37%)	3110 (6.72%)	1348 (7.86%)
Dementia ^{5,6}	2 (0.15%)	97 (0.06%)	446 (0.18%)	1431 (0.41%)	3940 (1.00%)	6527 (1.99%)	6965 (3.66%)	5576 (6.72%)
Macular degeneration ⁵	2 (0.15%)	216 (0.14%)	1015 (0.41%)	2948 (0.87%)	5596 (1.48%)	7413 (2.42%)	5895 (3.46%)	3166 (4.57%)
Parkinson's disease ⁵	1 (0.07%)	38 (0.03%)	171 (0.07%)	423 (0.12%)	872 (0.22%)	934 (0.27%)	600 (0.29%)	229 (0.23%)
COPD ⁷	--	--	11 (1.57%)	295 (0.84%)	1432 (1.13%)	2812 (1.34%)	3297 (1.56%)	2636 (1.73%)

¹ Excludes participants with a prevalent condition at baseline.

² Age specific annualized percentages are calculated as the number with an event in the age interval divided by the total person years of all participants with time in the interval.

³ Number of participants with any follow-up time in the age interval.

⁴ Data not collected during WHI Extension Studies I and II (2005-2025). Reported counts and event rates are limited to participation during the original program (1993-2005).

⁵ Data only collected during WHI Extension Studies I and II (2005-2025). Reported counts and event rates are limited to participation during WHI Extension Studies I and II (2005-2025).

⁶ During Extension Study 2005-2010, women were asked to report "Moderate or severe memory problems (for example, dementia or Alzheimer's)". During Extension Study II (2010-2025), women are asked to report "Dementia or Alzheimer's"

⁷ Data only collected during WHI Extension Study II (2010-2025). Reported counts and event rates are limited to participation during WHI Extension Study II (2010-2025).

Table 3.1
Aging Indicators at Start¹ of WHI Extension Study II (2010-2025) by Age

Data as of: February 19, 2023

	Age on September 30, 2010											
	Total		<65		65-69		70-79		80-89		≥90	
	(N = 93,567)		(N = 1,014)		(N = 15,267)		(N = 46,380)		(N = 28,699)		(N = 2,207)	
	N	%	N	%	N	%	N	%	N	%	N	%
Never completed Form 151/155	14	<0.1	1	0.1	2	<0.1	6	<0.1	5	<0.1	0	0.0
Age on 9/30/2010, mean (SD)	76.3	(6.6)	63.7	0.6	67.4	1.3	74.5	2.8	83.4	2.6	91.1	1.2
Years from 9/30/2010, mean (SD)	-0.0	(0.5)	-0.0	(0.5)	-0.0	(0.5)	-0.0	(0.5)	-0.0	(0.5)	-0.1	(0.6)
Perceived Health Status												
Excellent	11076	12.2	201	20.2	2769	18.4	5907	13.1	2062	7.5	137	6.6
Very good	37970	41.8	439	44.1	7037	46.9	19886	44.0	9953	36.1	655	31.4
Good	32645	35.9	270	27.1	4315	28.7	15608	34.5	11570	42.0	882	42.2
Fair	8340	9.2	74	7.4	817	5.4	3527	7.8	3554	12.9	368	17.6
Poor	850	0.9	11	1.1	79	0.5	310	0.7	404	1.5	46	2.2
Activities of Daily Living Dependencies												
No limitations	80279	88.3	940	95.4	14266	95.9	41523	92.0	22363	80.4	1187	56.1
Eating	434	0.5	1	0.1	29	0.2	153	0.3	209	0.8	42	2.0
Transferring	922	1.0	5	0.5	52	0.4	304	0.7	468	1.7	93	4.4
Dressing	1558	1.7	3	0.3	98	0.7	504	1.1	794	2.9	159	7.6
Bathing	2563	2.8	5	0.5	124	0.8	740	1.6	1389	5.0	305	14.6
Taking Medication	2733	3.0	4	0.4	117	0.8	722	1.6	1569	5.7	321	15.3
Grocery Shopping	8571	9.5	32	3.3	430	2.9	2752	6.1	4527	16.4	830	40.0
Independence												
Supportive services availability	11464	13.2	49	5.0	880	6.0	4230	9.7	5511	21.3	794	41.9
Supportive services use	4084	36.7	9	18.8	102	12.0	889	21.7	2543	47.5	541	70.4
Need for nursing care	2154	2.3	6	0.6	130	0.9	754	1.6	1102	3.9	162	7.6
Use of walking aid ²	11897	13.1	41	4.1	618	4.1	3872	8.5	6355	23.0	1011	49.7
Lives alone ³	31579	41.4	240	27.2	4016	30.0	14858	37.7	11682	54.7	783	61.7
Falls⁴												
None	58943	64.1	690	68.7	10390	68.7	30145	65.8	16590	59.4	1128	54.5
One	19182	20.9	182	18.1	2770	18.3	9306	20.3	6463	23.1	461	22.3
Two	8850	9.6	90	9.0	1327	8.8	4159	9.1	3002	10.8	272	13.1
Three or more	4928	5.4	43	4.3	628	4.2	2184	4.8	1863	6.7	210	10.1
Aging Indicators, mean (SD)⁵												
Perceived Health Status	63.8	(21.4)	68.7	(22.5)	69.3	(20.7)	65.2	(20.9)	58.8	(21.3)	55.6	(22.2)
Quality of Life	79.4	(16.2)	81.8	(15.1)	82.6	(14.9)	80.6	(15.6)	76.1	(17.0)	72.2	(18.9)
Activities of Daily Living ⁶	98.1	(8.1)	99.6	(2.6)	99.4	(4.8)	98.8	(6.2)	96.6	(10.5)	90.6	(16.7)
Physical Functioning (RAND-36)	72.3	(25.9)	83.7	(21.9)	82.5	(20.9)	75.4	(24.0)	62.6	(27.1)	47.4	(28.4)

¹ Based on Form 151 (99.9%) or Form 155 (0.1%) most proximal to 9/30/2010; unless otherwise indicated.

² Cane, crutches, walker, or wheelchair.

³ Collected on Form 155 only.

⁴ Falls data were collected on Form 33.

⁵ Aging indicators summarized as continuous variables. Perceived health status, quality of life and ADL were rescaled; 0 (worst) to 100 (best).

⁶ Includes eating, transferring, dressing, bathing, taking medication and grocery shopping.

Table 3.2
Aging Indicators Approximately 11 Years Later¹ (September 30, 2021) by Age

Data as of: February 19, 2023

	Age on September 30, 2010											
	Total		<65		65-69		70-79		80-89		≥90	
	(N = 93,567)		(N = 1,014)		(N = 15,267)		(N = 46,380)		(N = 28,699)		(N = 2,207)	
	N	%	N	%	N	%	N	%	N	%	N	%
Completed Form 151/151AB	41971	44.9	751	74.1	11020	72.2	24338	52.5	5781	20.1	81	3.7
Never completed Form 151/151AB	17800	19.0	171	16.9	2607	17.1	9928	21.4	4950	17.2	144	6.5
Deceased before 9/30/2021	33796	36.1	92	9.1	1640	10.7	12114	26.1	17968	62.6	1982	89.8
Age completed form, mean (SD)	84.7	(5.3)	75.3	(0.7)	78.9	(1.4)	85.5	(2.8)	93.8	(2.3)	102.1	(1.2)
Years from 9/30/2010, mean (SD)	11.5	(0.3)	11.5	(0.3)	11.5	(0.3)	11.5	(0.3)	11.5	(0.3)	11.5	(0.3)
Perceived Health Status²												
Excellent	878	6.6	29	13.5	285	8.7	472	6.3	92	4.1	0	0.0
Very good	4619	35.0	91	42.3	1400	42.6	2565	34.5	554	24.9	9	25.0
Good	5517	41.8	72	33.5	1242	37.8	3194	42.9	994	44.6	15	41.7
Fair	1856	14.1	23	10.7	322	9.8	1051	14.1	452	20.3	8	22.2
Poor	339	2.6	0	0.0	36	1.1	163	2.2	136	6.1	4	11.1
Activities of Daily Living Dependencies												
No Limitations	29814	72.9	676	91.8	9497	87.5	17463	73.6	2162	39.0	16	20.5
Eating	853	2.1	2	0.3	76	0.7	418	1.8	345	6.3	12	15.4
Transferring	1494	3.7	4	0.5	143	1.3	719	3.1	608	11.1	20	27.0
Dressing	2220	5.5	5	0.7	200	1.8	1084	4.6	901	16.4	30	38.5
Bathing	3477	8.6	6	0.8	285	2.6	1740	7.4	1409	26.0	37	48.7
Taking Medication	3571	8.8	13	1.8	283	2.6	1855	7.9	1384	25.3	36	47.4
Grocery Shopping	9725	24.0	48	6.5	1076	10.0	5444	23.2	3099	57.3	58	74.4
Independence												
Supportive services availability ²	3564	28.2	27	12.9	416	13.1	1950	27.3	1147	55.0	24	72.7
Supportive services use ²	2115	61.6	4	14.8	120	30.4	1080	57.6	892	79.9	19	79.2
Need for nursing care ²	737	5.4	4	1.8	67	2.0	407	5.3	253	11.0	6	17.1
Use of walking aid ³	12302	31.2	70	9.6	1407	13.2	7310	32.0	3453	66.3	62	83.8
Lives alone ⁴	18155	47.4	227	32.5	3858	37.6	10959	49.4	3070	61.0	41	58.6
Falls⁵												
None	31323	61.1	588	68.8	8218	65.7	18096	61.2	4343	53.1	78	51.3
One	10975	21.4	145	17.0	2479	19.8	6384	21.6	1934	23.6	33	21.7
Two	5075	9.9	77	9.0	1104	8.8	2905	9.8	969	11.8	20	13.2
Three or more	3916	7.6	45	5.3	715	5.7	2198	7.4	937	11.5	21	13.8
Aging Indicators, Mean (SD)⁶												
Perceived Health Status ²	57.3	(22.0)	64.7	(21.4)	62.0	(20.7)	57.2	(21.6)	50.2	(23.2)	45.1	(23.8)
Quality of Life	75.3	(17.5)	80.7	(14.6)	78.9	(15.4)	75.2	(17.2)	68.6	(20.4)	63.5	(23.1)
Activities of Daily Living ⁷	93.9	(15.8)	98.8	(6.3)	97.9	(9.1)	94.6	(14.5)	82.6	(24.4)	65.4	(31.8)
Physical Functioning (RAND-36)	57.9	(29.6)	75.0	(23.9)	69.9	(25.6)	56.6	(28.5)	35.3	(28.1)	22.1	(27.0)

¹ Based on Form 151 (32.5%), 151A (67.2%) or 151B (0.3%) most proximal and subsequent to 9/30/2021; unless otherwise indicated. Due to the form ascertainment schedule, an 11-year snapshot was used as data was incomplete for 12 years.

² Collected on Form 151 and F151B only, missing if most proximal form was Form 151A.

³ Cane, crutches, walker, or wheelchair. Collected on Form 151 and F151A only.

⁴ Collected on Form 151B only; augmented with Form 151B data that occurred mean (SD) = 0.8 (0.3) years prior to 9/30/2021 (n=38,263).

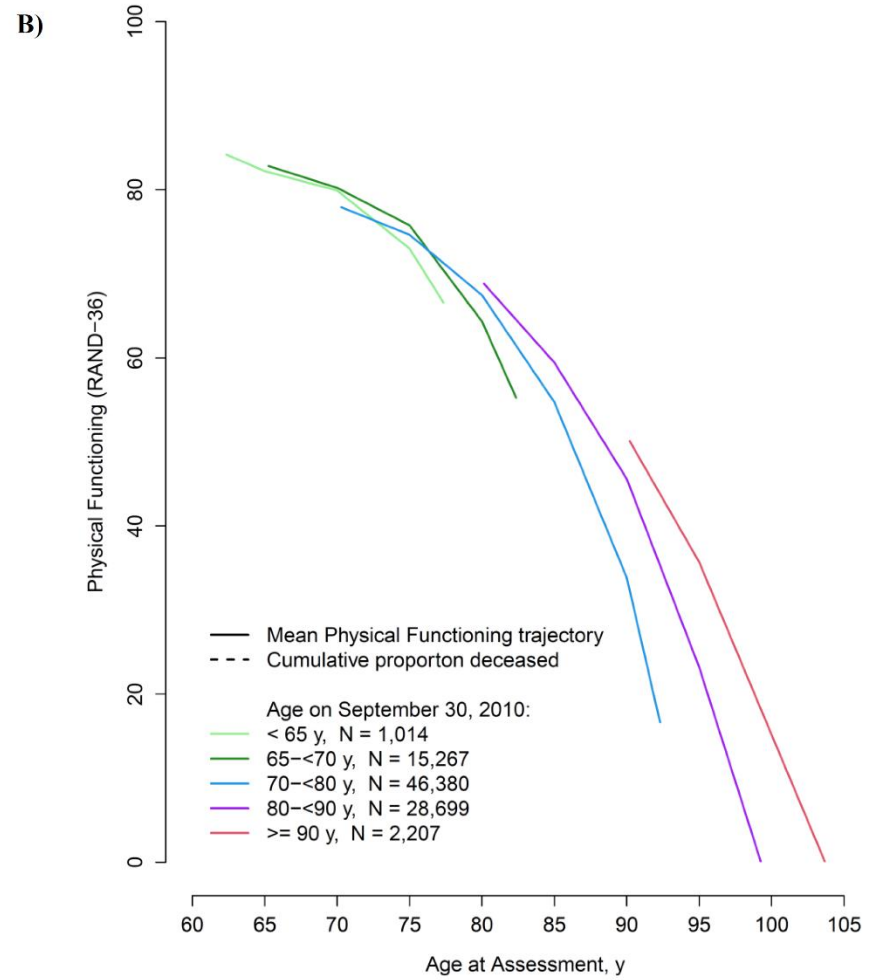
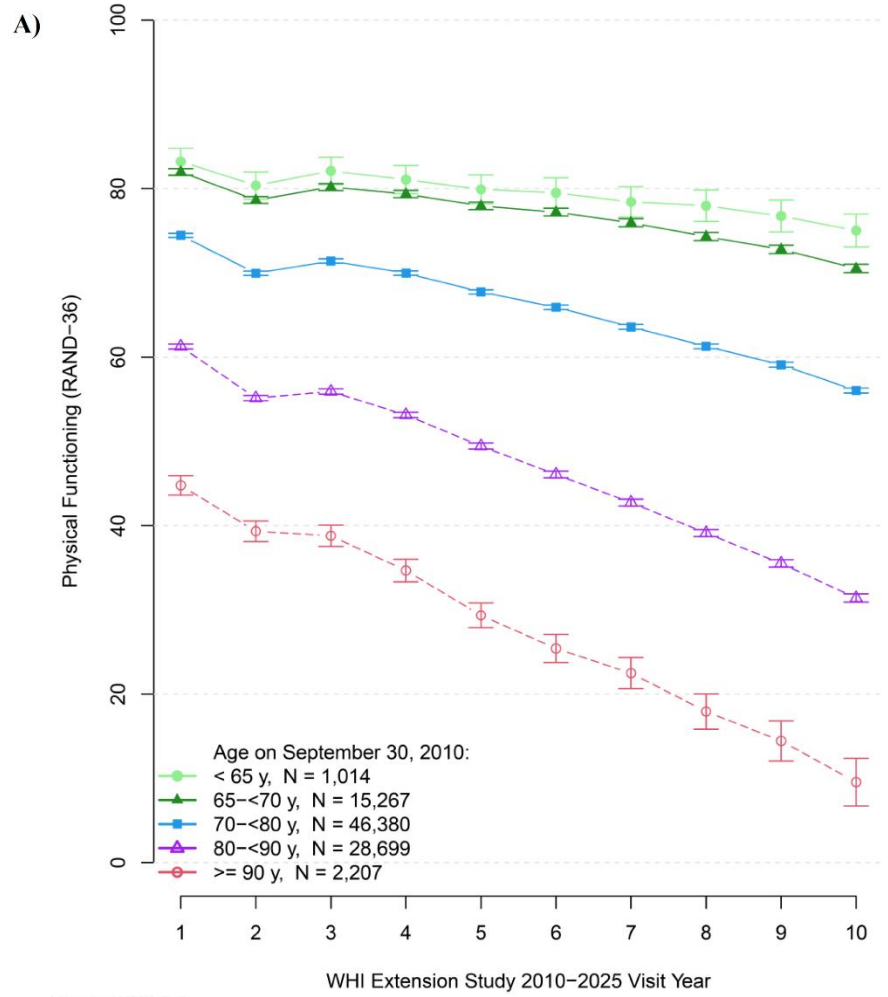
⁵ Falls data were collected on Form 33.

⁶ Aging indicators summarized as continuous variables. Perceived health status, quality of life and ADL were rescaled; 0 (worst) to 100 (best).

⁷ Includes eating, transferring, dressing, bathing, taking medication and grocery shopping.

Figure 3.1
Mean Physical Functioning by Visit Year (panel A) and by Age at Assessment (panel B) During WHI Extension Study II (2010-2025)

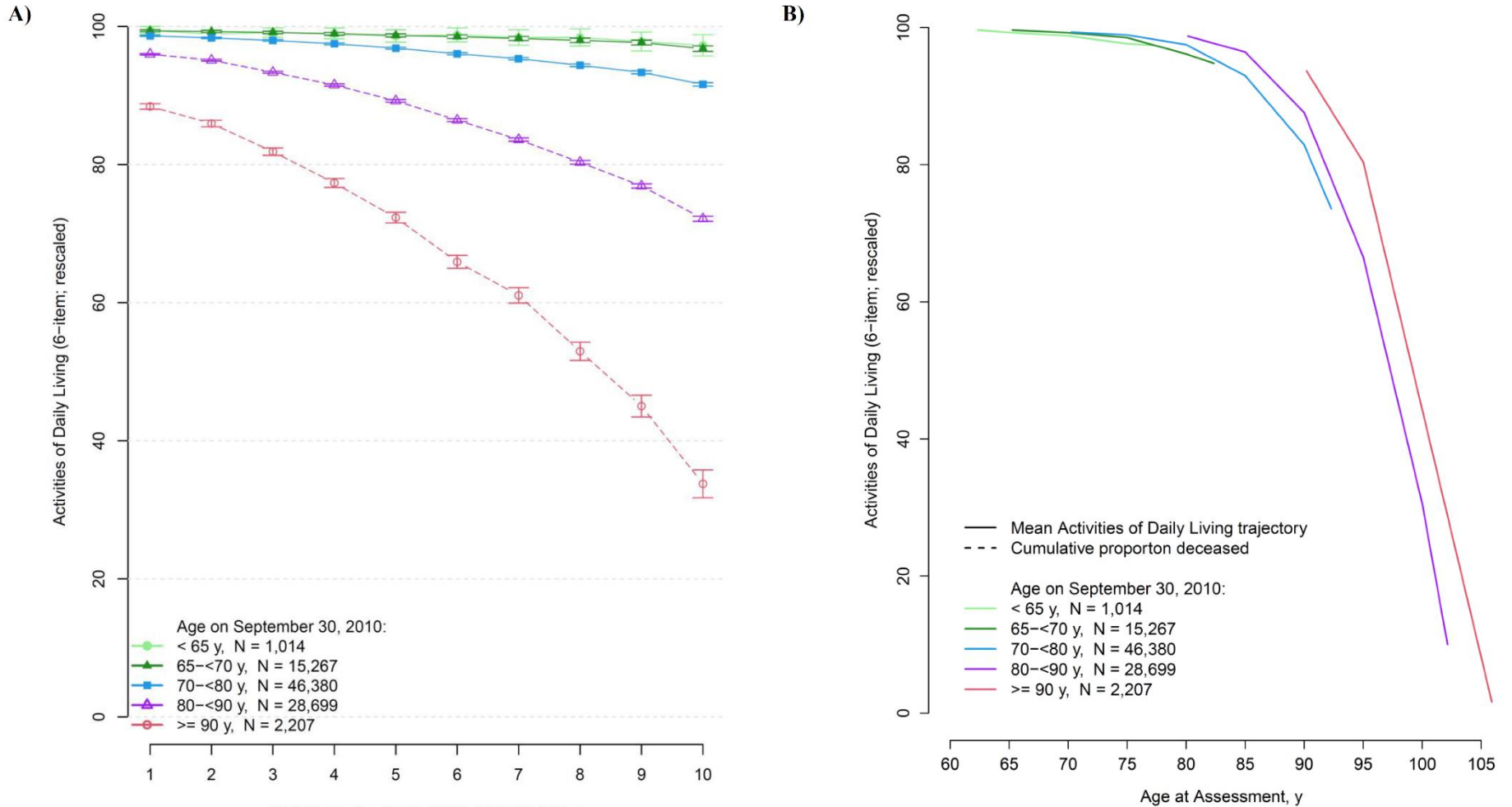
Data as of: February 19, 2023



Number At Visit	WHI Extension Study 2010-2025 Visit Year									
< 65 y	884	885	868	887	852	797	779	774	755	701
65-70 y	13678	13528	13442	13309	12792	11975	11788	11640	11289	10473
70-80 y	40379	39576	38519	37387	34970	31397	29852	28951	27091	24205
80-90 y	22933	21538	19931	18294	15756	12814	11288	10041	8653	6886
>= 90 y	1525	1270	1141	926	740	499	388	287	221	148

Figure 3.2
Mean Activities of Daily Living by Visit Year (panel A) and by Age at Assessment (panel B) During WHI Extension Study II (2010-2025)

Data as of: February 19, 2023



Number At Visit	1	2	3	4	5	6	7	8	9	10
< 65 y	905	895	902	908	897	856	826	829	808	752
65- < 70 y	14104	13718	13924	13822	13562	12892	12696	12434	12123	11227
70- < 80 y	42475	40610	40920	39839	38221	35436	33415	32005	30276	26822
80- < 90 y	24956	22424	21914	20367	18014	15348	13247	11648	9930	7778
>= 90 y	1709	1331	1271	1045	830	591	433	335	249	170

Table 4.1
Participant Characteristics for Long Life Study (LLS) Participants¹ by Race/Ethnicity

Data as of: March 6, 2021

	Race/Ethnicity									
	Total ²		Hispanic/ Latina		Non-Hispanic Black/African American		Non-Hispanic White		More than one Race	
	N	Mean (SD) or %	N	Mean (SD) or %	N	Mean (SD) or %	N	Mean (SD) or %	N	Mean (SD) or %
Total LLS Participants	7875		1277		2483		3978		110	
Blood draw completed	7475	94.9	1238	96.9	2284	92.0	3827	96.2	101	91.8
Age at visit, years	7875	79.2 (6.8)	1277	75.4 (6.1)	2483	75.9 (6.0)	3978	82.5 (5.8)	110	77.8 (6.3)
63-69	724	9.2	236	18.5	379	15.3	97	2.4	9	8.2
70-79	3050	38.7	717	56.1	1433	57.7	829	20.8	60	54.5
80-89	3689	46.8	305	23.9	620	25.0	2717	68.3	35	31.8
≥90	412	5.2	19	1.5	51	2.1	335	8.4	6	5.5
Education										
0-8 years	112	1.4	71	5.6	24	1.0	17	0.4	0	0.0
Some high school	286	3.7	76	6.0	112	4.6	96	2.4	1	0.9
High school diploma/GED	1288	16.5	199	15.7	280	11.4	794	20.0	10	9.1
School after high school	3041	38.9	543	42.9	915	37.2	1530	38.6	46	41.8
College degree or higher	3099	39.6	377	29.8	1130	45.9	1525	38.5	53	48.2
Body-mass Index (BMI), kg/m ²	7775	28.2 (5.9)	1265	28.0 (5.6)	2448	29.9 (6.2)	3928	27.3 (5.5)	107	28.3 (6.7)
Underweight (< 18.5)	112	1.4	13	1.0	23	0.9	72	1.8	3	2.8
Normal (18.5 - 24.9)	2378	30.6	415	32.8	513	21.0	1410	35.9	31	29.0
Overweight (25.0 - 29.9)	2799	36.0	467	36.9	868	35.5	1419	36.1	39	36.4
Obesity I (30.0 - 34.9)	1505	19.4	233	18.4	577	23.6	664	16.9	22	20.6
Obesity II (35.0 - 39.9)	633	8.1	88	7.0	300	12.3	240	6.1	4	3.7
Extreme Obesity III (≥ 40)	348	4.5	49	3.9	167	6.8	123	3.1	8	7.5

¹ Long Life Study participants are a subset of the Medical Records Cohort (MRC) which includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants (identified from race/ethnicity collected on Form 2 at baseline) from the CT and OS. However, race/ethnicity is presented using the imputed Form 41 data and following the WHI Race/Ethnicity Task Force guidelines.

² Separate columns for American Indian/Alaska Native (n=4), Asian or Native Hawaiian/Other Pacific Islander (n=1) and Other/Not Reported (n=22) race/ethnicities are not displayed due to small numbers, however these participants are included in the Total column.

Table 4.1 (continued)
Participant Characteristics for Long Life Study (LLS) Participants¹ by Race/Ethnicity

Data as of: March 6, 2021

	Race/Ethnicity									
	Total ²		Hispanic/ Latina		Non-Hispanic Black/African American		Non-Hispanic White		More than one Race	
	N	Mean (SD) or %	N	Mean (SD) or %	N	Mean (SD) or %	N	Mean (SD) or %	N	Mean (SD) or %
Systolic blood pressure, mmHg	7864	125.9 (14.6)	1276	123.8 (13.7)	2478	127.1 (14.4)	3973	125.7 (14.8)	110	127.1 (16.8)
<=120	2962	37.7	566	44.4	851	34.3	1499	37.7	36	32.7
120 - 140	3796	48.3	564	44.2	1246	50.3	1918	48.3	56	50.9
>140	1106	14.1	146	11.4	381	15.4	556	14.0	18	16.4
Diastolic blood pressure, mmHg	7862	72.6 (8.9)	1275	72.2 (8.2)	2479	74.0 (8.8)	3971	71.8 (9.1)	110	73.3 (9.4)
<80	6073	77.2	1037	81.3	1807	72.9	3125	78.7	83	75.5
80-89	1535	19.5	209	16.4	567	22.9	730	18.4	24	21.8
≥90	254	3.2	29	2.3	105	4.2	116	2.9	3	2.7
Grip strength, kg	7274	17.8 (7.0)	1154	18.0 (6.3)	2329	20.0 (7.3)	3662	16.4 (6.7)	102	19.0 (7.2)
Repeated chair stands,	6949	0.35 (0.13)	1182	0.37 (0.1)	2178	0.34 (0.1)	3468	0.35 (0.1)	98	0.34 (0.1)
Walking pace, m/sec	6911	0.65 (0.29)	1124	0.73 (0.3)	2164	0.62 (0.3)	3502	0.65 (0.3)	97	0.60 (0.3)
Look AHEAD SPPB ³	7022	1.3 (0.5)	1147	1.4 (0.5)	2238	1.4 (0.5)	3517	1.2 (0.5)	97	1.2 (0.5)
EPESE SPPB ⁴	7102	7.9 (2.7)	1159	8.7 (2.6)	2260	7.8 (2.6)	3560	7.8 (2.8)	99	7.4 (2.7)

¹ Long Life Study participants are a subset of the Medical Records Cohort (MRC) which includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants (identified from race/ethnicity collected on Form 2 at baseline) from the CT and OS. However, race/ethnicity is presented using the imputed Form 41 data and following the WHI Race/Ethnicity Task Force guidelines.

² Separate columns for American Indian/Alaska Native (n=4), Asian or Native Hawaiian/Other Pacific Islander (n=1) and Other/Not Reported (n=22) race/ethnicities are not displayed due to small numbers, however these participants are included in the Total column.

³ The Look AHEAD Short Physical Performance Battery (SPPB) ranges from 0 to 3, with higher scores indicating better physical performance.

⁴ The Established Populations for the Epidemiologic Studies of the Eldery (EPESE) Short Physical Performance Battery (SPPB) ranges from 0 to 12, with higher scores indicating better physical performance.

Table 4.2
Current Participation and Vital Status for Long Life Study (LLS) Participants

Data as of: February 19, 2023

Vital Status/Participation	LLS Participants (N=7,875)	
	N	%
Deceased	3138	39.8
Alive: Current Participation ¹	4046	51.4
Alive: Recent Participation ²	233	3.0
Stopped Follow-Up ³	205	2.6
Lost to Follow-Up ⁴	253	3.2

¹ Participants who have filled in a Form 33 within the last 15 months.

² Participants who last filled in a Form 33 between 15 and 24 months ago.

³ Participants with codes 5 (no follow-up) or 8 (absolutely no follow-up) on Form 7 or 9.

⁴ Participants not in any of the above categories.

Table 4.3
Verified Outcomes¹ (Annualized Percentages) After Long Life Study (LLS) Visit
by Race/Ethnicity² for LLS Participants

Data as of: February 19, 2023

	Total	Race/Ethnicity			
		Hispanic/ Latina	Non-Hispanic Black/African American	Non-Hispanic White	More than one Race
Number enrolled	7875	1277	2483	3978	110
Mean person years post LLS study visit	8.0	8.7	8.4	7.5	7.8
Cardiovascular outcomes					
CHD ³	648 (1.05%)	67 (0.61%)	150 (0.73%)	419 (1.43%)	11 (1.31%)
CHD death ⁴	402 (0.64%)	37 (0.33%)	88 (0.42%)	269 (0.90%)	8 (0.93%)
Clinical MI	313 (0.52%)	35 (0.33%)	71 (0.35%)	203 (0.72%)	3 (0.37%)
CABG/PTCA	250 (0.41%)	31 (0.28%)	64 (0.31%)	152 (0.52%)	2 (0.24%)
Carotid artery disease	28 (0.04%)	1 (0.01%)	9 (0.04%)	18 (0.06%)	0 (0.00%)
Heart failure, UNC ⁵	707 (1.16%)	58 (0.53%)	161 (0.79%)	479 (1.66%)	8 (0.95%)
Stroke	594 (0.99%)	73 (0.67%)	153 (0.77%)	354 (1.24%)	11 (1.38%)
PAD	74 (0.12%)	7 (0.06%)	27 (0.13%)	39 (0.13%)	1 (0.12%)
DVT	219 (0.36%)	21 (0.19%)	82 (0.41%)	114 (0.40%)	2 (0.24%)
Pulmonary embolism	177 (0.29%)	15 (0.14%)	70 (0.35%)	87 (0.30%)	5 (0.59%)
DVT/PE	326 (0.53%)	31 (0.28%)	129 (0.64%)	161 (0.55%)	5 (0.59%)
Aortic aneurysm	21 (0.03%)	2 (0.02%)	8 (0.04%)	11 (0.04%)	0 (0.00%)
Valvular heart disease	205 (0.33%)	26 (0.24%)	26 (0.13%)	150 (0.51%)	3 (0.36%)
Total cardiovascular disease⁶	2258 (3.92%)	228 (2.17%)	580 (3.02%)	1417 (5.26%)	28 (3.53%)
Cancers					
Breast cancer	256 (0.44%)	43 (0.41%)	102 (0.53%)	108 (0.39%)	2 (0.25%)
Invasive breast cancer	223 (0.38%)	38 (0.36%)	84 (0.43%)	98 (0.35%)	2 (0.25%)
In situ breast cancer	33 (0.05%)	5 (0.05%)	18 (0.09%)	10 (0.03%)	0 (0.00%)
Ovarian cancer	30 (0.05%)	4 (0.04%)	7 (0.03%)	19 (0.06%)	0 (0.00%)
Endometrial cancer ⁷	20 (0.06%)	3 (0.05%)	5 (0.06%)	12 (0.07%)	0 (0.00%)
Colorectal cancer	96 (0.15%)	8 (0.07%)	24 (0.12%)	63 (0.21%)	1 (0.12%)
Other cancer	603 (0.98%)	73 (0.67%)	183 (0.90%)	329 (1.12%)	15 (1.84%)
Total cancer	970 (1.61%)	126 (1.18%)	313 (1.57%)	512 (1.79%)	15 (1.84%)
Fractures					
Hip Fracture	386 (0.64%)	30 (0.28%)	27 (0.13%)	326 (1.16%)	3 (0.36%)
Deaths					
Cardiovascular deaths	1148 (1.82%)	94 (0.85%)	247 (1.19%)	790 (2.63%)	16 (1.86%)
Cancer deaths	516 (0.82%)	60 (0.54%)	162 (0.78%)	283 (0.94%)	10 (1.16%)
Other known cause	280 (0.44%)	33 (0.30%)	60 (0.29%)	179 (0.60%)	6 (0.70%)
Unknown cause	20 (0.03%)	2 (0.02%)	5 (0.02%)	13 (0.04%)	0 (0.00%)
Not yet adjudicated	185 (0.29%)	26 (0.23%)	43 (0.21%)	109 (0.36%)	5 (0.58%)
Total death	3138 (4.98%)	301 (2.71%)	709 (3.41%)	2068 (6.89%)	52 (6.05%)

¹ Excludes participants with a prevalent condition at LLS exam.

² Long Life Study participants were selected from MRC participants which includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants (identified from race/ethnicity collected on Form 2 at baseline) from the CT and OS. However, race/ethnicity is presented using the imputed Form 41 data and following the WHI Race/Ethnicity Task Force guidelines. Outcome counts for American Indian/Alaska Native (n=4), Asian or Native Hawaiian/Other Pacific Islander (n=1) and Other/Not Reported (n=22) race/ethnicities are not displayed due to small numbers.

³ CHD includes clinical MI and CHD death.

⁴ CHD death includes definite and possible CHD death.

⁵ Definite or possible decompensated heart failure adjudicated by UNC

⁶ Total CVD does not include aortic aneurysm or valvular heart disease.

⁷ Only women without a hysterectomy prior to the LLS exam are used to compute the annual rates of endometrial cancer.

Table 4.4

Verified Outcomes¹ (Annualized Percentages) After Long Life Study (LLS) Visit by Age at Visit for LLS Participants

Data as of: February 19, 2023

	Age at Long Life Study Visit			
	63-69	70-79	80-89	≥90
Number enrolled	723	3052	3688	412
Mean person years post LLS study visit	9.1	8.8	7.4	5.8
Cardiovascular outcomes				
CHD ²	26 (0.40%)	144 (0.54%)	420 (1.58%)	58 (2.46%)
CHD death ³	13 (0.20%)	70 (0.26%)	270 (0.99%)	49 (2.04%)
Clinical MI	15 (0.23%)	85 (0.33%)	193 (0.76%)	20 (0.91%)
CABG/PTCA	17 (0.26%)	106 (0.40%)	122 (0.46%)	5 (0.21%)
Carotid artery disease	1 (0.02%)	10 (0.04%)	16 (0.06%)	1 (0.04%)
Heart failure, UNC ⁴	17 (0.26%)	154 (0.59%)	474 (1.81%)	62 (2.70%)
Stroke	25 (0.39%)	159 (0.61%)	363 (1.41%)	47 (2.09%)
PAD	1 (0.02%)	23 (0.09%)	46 (0.17%)	4 (0.17%)
DVT	14 (0.22%)	79 (0.30%)	116 (0.44%)	10 (0.44%)
Pulmonary embolism	10 (0.15%)	65 (0.25%)	93 (0.35%)	9 (0.39%)
DVT/PE	20 (0.31%)	122 (0.47%)	168 (0.63%)	16 (0.69%)
Aortic aneurysm	2 (0.03%)	6 (0.02%)	12 (0.04%)	1 (0.04%)
Valvular heart disease	5 (0.08%)	58 (0.22%)	124 (0.46%)	18 (0.77%)
Total cardiovascular disease⁵	88 (1.40%)	603 (2.43%)	1370 (5.62%)	197 (9.09%)
Cancers				
Breast cancer	30 (0.48%)	137 (0.56%)	85 (0.33%)	4 (0.17%)
Invasive breast cancer	23 (0.37%)	119 (0.48%)	77 (0.30%)	4 (0.17%)
In situ breast cancer	7 (0.11%)	18 (0.07%)	8 (0.03%)	0 (0.00%)
Ovarian cancer	1 (0.02%)	13 (0.05%)	14 (0.05%)	2 (0.08%)
Endometrial cancer ⁶	0 (0.00%)	10 (0.07%)	10 (0.06%)	0 (0.00%)
Colorectal cancer	3 (0.05%)	26 (0.10%)	65 (0.24%)	2 (0.08%)
Other cancer ⁷	43 (0.67%)	235 (0.90%)	304 (1.14%)	21 (0.89%)
Total cancer	76 (1.21%)	404 (1.59%)	461 (1.77%)	29 (1.24%)
Fractures				
Hip fracture	8 (0.12%)	55 (0.21%)	283 (1.11%)	40 (1.91%)
Deaths				
Cardiovascular deaths	24 (0.36%)	188 (0.70%)	781 (2.86%)	155 (6.47%)
Cancer deaths	23 (0.35%)	173 (0.65%)	299 (1.10%)	21 (0.88%)
Other known cause	10 (0.15%)	50 (0.19%)	182 (0.67%)	38 (1.59%)
Unknown cause	2 (0.03%)	3 (0.01%)	12 (0.04%)	3 (0.13%)
Not yet adjudicated	4 (0.06%)	52 (0.19%)	121 (0.44%)	8 (0.33%)
Total death	83 (1.26%)	651 (2.43%)	2069 (7.59%)	335 (13.98%)

¹ Excludes participants with a prevalent condition at LLS exam.² CHD includes clinical MI and CHD death.³ CHD death includes definite and possible CHD death.⁴ Definite or possible decompensated heart failure adjudicated by UNC.⁵ Total CVD does not include aortic aneurysm or valvular heart disease.⁶ Only women without a hysterectomy prior to the LLS exam are used to compute the annual rates of endometrial cancer.⁷ Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.

Table 4.5
Self-Reported Outcomes¹ (Annualized Percentages) After Long Life Study (LLS) Visit
by Race/Ethnicity² for LLS Participants

Data as of: February 19, 2023

	Total	Race/Ethnicity			
		Hispanic/ Latina	Non-Hispanic Black/African American	Non-Hispanic White	More than one Race
Number enrolled	7875	1277	2483	3978	110
Mean person years post LLS study visit	8.0	8.7	8.4	7.5	7.8
Self-reported outcomes					
Diabetes (treated)	842 (1.79%)	137 (1.70%)	280 (2.01%)	408 (1.68%)	13 (2.25%)
Pills for hypertension	708 (4.71%)	163 (4.76%)	155 (5.11%)	377 (4.51%)	10 (6.85%)
Intestinal polyps	550 (1.44%)	134 (1.99%)	223 (1.88%)	188 (1.00%)	5 (0.93%)
Lupus	37 (0.06%)	8 (0.07%)	12 (0.06%)	17 (0.06%)	0 (0.00%)
Osteoarthritis	1041 (7.15%)	165 (6.64%)	347 (7.51%)	515 (7.12%)	9 (5.44%)
Dementia	1792 (3.14%)	257 (2.55%)	431 (2.25%)	1073 (4.00%)	24 (3.15%)
Macular degeneration	1359 (2.63%)	209 (2.20%)	322 (1.76%)	805 (3.52%)	17 (2.27%)
Parkinson's disease	129 (0.21%)	25 (0.23%)	34 (0.17%)	68 (0.23%)	2 (0.24%)
COPD	880 (1.55%)	127 (1.25%)	282 (1.51%)	462 (1.71%)	9 (1.12%)

¹ Excludes participants with a prevalent condition at LLS exam.

² Long Life Study participants were selected from MRC participants which includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants (identified from race/ethnicity collected on Form 2 at baseline) from the CT and OS. However, race/ethnicity is presented using the imputed Form 41 data and following the WHI Race/Ethnicity Task Force guidelines. Outcome counts for American Indian/Alaska Native (n=4), Asian or Native Hawaiian/Other Pacific Islander (n=1) and Other/Not Reported (n=22) race/ethnicities are not displayed due to small numbers.

Table 4.6
Self-Reported Outcomes¹ (Annualized Percentages) After Long Life Study (LLS) Visit
by Age at Visit for LLS Participants

Data as of: February 19, 2023

	Age at Long Life Study Visit			
	63-69	70-79	80-89	≥90
Number enrolled	723	3052	3688	412
Mean person years post LLS study visit	9.1	8.8	7.4	5.8
Self-reported outcomes				
Diabetes (treated)	77 (1.62%)	374 (1.97%)	362 (1.70%)	29 (1.45%)
Pills for hypertension	86 (4.69%)	303 (4.66%)	294 (4.74%)	25 (4.99%)
Intestinal polyps	114 (2.91%)	300 (1.91%)	132 (0.78%)	4 (0.25%)
Lupus	4 (0.06%)	19 (0.07%)	13 (0.05%)	1 (0.04%)
Osteoarthritis	122 (6.38%)	470 (7.12%)	407 (7.29%)	42 (8.81%)
Dementia	67 (1.06%)	526 (2.11%)	1066 (4.48%)	133 (6.57%)
Macular degeneration	70 (1.15%)	464 (1.99%)	749 (3.61%)	76 (5.18%)
Parkinson's disease	8 (0.12%)	54 (0.20%)	63 (0.24%)	4 (0.17%)
COPD	79 (1.31%)	334 (1.38%)	439 (1.80%)	28 (1.26%)

¹ Excludes participants with a prevalent condition at LLS exam.