Women's Health Initiative

2020 Annual Progress Report

Data as of: February 28, 2020

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.

Women's Health Initiative

2020 Annual Progress Report

Data as of: February 28, 2020

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1. Overview

1.0 Background

Between 1993 and 1998, WHI investigators at 40 Clinical Centers recruited 161,808 women into the program; 68,132 were randomized into one or more arms of the clinical trial component (CT) and 93,676 were enrolled into the observational study (OS) (Figure 1). During 2004-2005, the close-out period for the original program, 115,407 women consented to five additional years of follow-up, representing 76.9% of the 150,076 participants who were alive in active follow-up at that time. At the end of the first extension period in 2010, participants were offered the opportunity to continue and 86.9% of the 107,706 eligible women agreed (n=93,567). Active follow-up of these women is permitted until they withdraw consent.

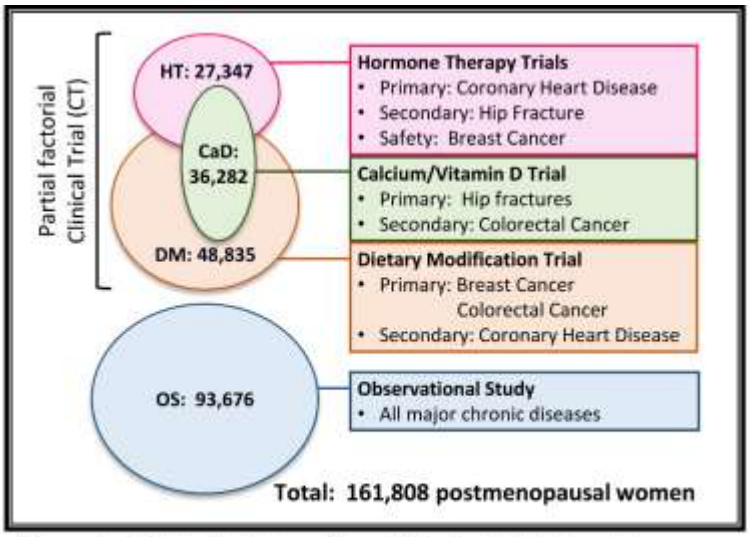


Figure 1. Original design of the WHI clinical trials and observational study, its components and outcomes.

1.1 The 2010-2020 Extension Study

The follow-up protocol for 2015-2020 is essentially unchanged from the protocol for the previous 5 years (2010-2015). All participants are contacted annually, primarily by mail, for health and selected exposure updates. For reports of designated health events, the effort to obtain documentation has been reduced to a subset. Cardiovascular events and hip fractures are documented only in the subset of participants referred to as the Medical Records Cohort (MRC), comprising all former hormone trial (HT) participants and all non-Hispanic Black/African American and Hispanic/Latina participants regardless of their previous enrollment status (Figure 2). In this subset, documentation of atrial fibrillation ended in May 2017 and of hospitalizations not tied to a designated outcome in 2018. Active outcome data collection for the remaining participants (the Self-Report Cohort or SRC) is limited to self-report with the exception of cancer, for which NCI supports documentation and coding of all incident primary cancers. In addition, several active ancillary studies augment the endpoints documentation, and passive follow-up is available through linkage to Medicare and the National Death Index.

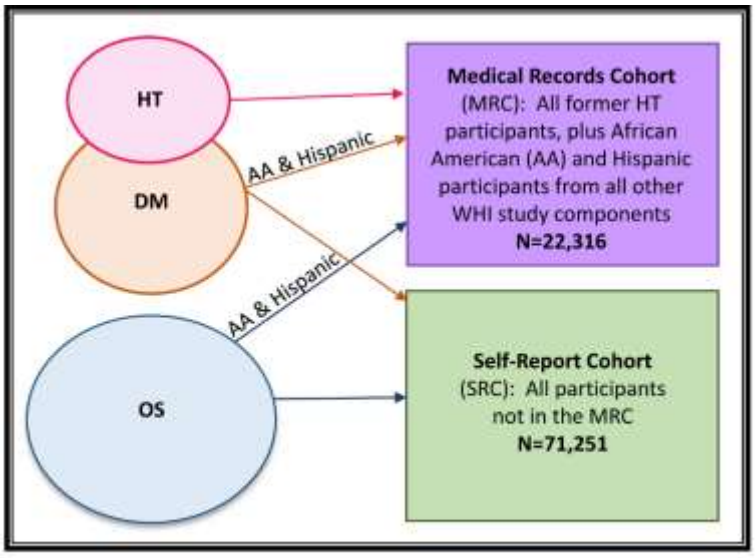


Figure 2. 2010–2020 Extension Study design reflecting differing levels of outcomes ascertainment: MRC and SRC.

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,

collect and submit medical records for all of the designated outcomes to the CCC, and participate in a range of scientific endeavors. The CCC fulfills the RC role for two former Field Centers (Seattle and LaJolla).

As of February 2020, 63,557 women remain in active follow-up (Table 1.4), 18.8% of whom are 90 or older. Table 1.5 shows how the characteristics of the currently active participants compare to those originally recruited. As the size of the cohort decreases, the infrastructure has been reconfigured to maximize efficiency. Participants are now being followed by four RCs and two remaining sites (Boston and Tucson). Participants from the Pittsburgh and Iowa sites are now followed at the Columbus RC. Similarly, Gainesville Center participants are now followed by the Wake Forest RC.

1.2 Progress on Primary Study Objectives

Follow-up rates through March 2020 have remained excellent although the last two years have shown a gradual decline. In 2018, mailing response was 81.9% after 2 mailings, with the overall response (including phone follow-up) reaching 86.8% (Tables 1.6-1.7). In 2019, the mailing response was 80.0%, reaching 80.8% overall. Participant age and health are both factors in this decline. We are pursuing other approaches, including online (RedCap) forms and linkages to administrative data, to collecting health data to assure as complete data as possible.

For the designated WHI outcomes, annualized clinical event rates based on fully adjudicated outcomes through February 2020 are presented by original study component, age and race (Sections 2-4). We present data for the MRC and SRC Supercohorts, including data for women from these subgroups from the beginning of WHI. Fully adjudicated events available through February 28, 2020 are provided for the MRC Supercohort. For the SRC Supercohort, fully adjudicated events are provided for the interval from enrollment to September 2010 or February 2020 as appropriate.

A large proportion of the cohort is deceased: 26.6% of Extension Study 2010-2020 participants have died as of February 28, 2020 (Table 2.1), up from 22.5% last March and 18.8% the year prior. Cardiovascular disease is the most common cause of death, with an annualized rate of 0.66% (Table 2.5).

Section 5 provides a current summary of the agreement rates between self-reported events and the centrally adjudicated events among MRC participants. In general, 50% to 70% of self-reported cardiovascular outcomes are confirmed as the reported diagnosis (Table 5.1). Often, however, a related diagnosis is found. For example, of the confirmed clinical myocardial infarctions, only 52% were based on a self-report of that condition, and the remainder were discovered when investigating a self-report of a different outcome (Table 5.3). Similarly, fewer than half of confirmed heart failure cases were found based on a self-report of that condition (Table 5.2). In contrast, the vast majority of self-reported cancer types are confirmed.

The WHI Long Life Study (LLS) consisted of an in-person visit with 7,875 women in the MRC (details in Section 6), during which a blood sample and physical frailty measures were collected. LLS participants were preferentially sampled based on availability of GWAS data, CVD biomarkers and older ages. Of the participants who were in the LLS, 70.9% (n=5576) continue to be actively followed (Table 6.2). Verified and self-reported outcomes occurring after the LLS visit are presented by age at LLS study visit (Table 6.3) and race (Table 6.4). So far, 1027 LLS participants have had verified cardiovascular outcomes, 608 have had a verified cancer, and 1,828 have died after the LLS visit. The most frequent self-reported outcomes after the visit are: macular degeneration (N=1067), dementia (N=1046), osteoarthritis (N=819) and COPD (N=738).

Falls have become an outcome of interest as a significant cause of morbidity in older women. The number of women reporting 1 or more falls has increased over the course of the 2010-2020 Extension Study (Table 7.1). Looking at age-specific reports of falls, there is an increase over time in every decade of life from the 60s to the 80s-90s, with the strongest increase in the oldest age group (Figure 7.1). Falls increased over time in every racial group, though were the most commonly reported over time by non-Hispanic white women (Figure 7.2).

1.3 Engaging Investigators to Enhance Scientific Output

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. These efforts have yielded several new initiatives.

Section 8 addresses manuscripts published in the last year. A full listing and status of all proposed ancillary studies and manuscripts is available on the WHI website (www.whi.org). In total, 3,602 manuscript proposals have been approved and 1,979 manuscripts published or in press (Table 8.1), including 120 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*, *American Journal of Human Genetics*, *The Lancet*, and *Nature Communications*. 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 cohort serves as the backbone for ancillary studies large and small. The COcoa Supplement and Multivitamin Outcomes Study (COSMOS) trial (PIs: JoAnn Manson and Howard Sesso) and the WHI Strong and Healthy (WHISH) trial (PIs: Marcia Stefanick, Charles Kooperberg, Andrea LaCroix) both successfully launched in 2015. COSMOS randomized 4,611 WHI participants (among a total of 21,444 trial participants, men and women) and WHISH randomized nearly 50,000 WHI participants. In addition, five ancillary studies to these trials are ongoing (COSMOS – Mind, COSMOS – Web, COSMOS – Eye, and WHISH 2 Prevent Heart Failure, and WHISHStar). The WHI Sleep HyPoxia and End Results (WHISPER) study completed recruitment in early 2020, recruiting more than 5,500 WHI participants. COSMOS, WHISH, and the WHISH 2 Prevent Heart Failure are all funding adjudication of WHI outcomes among SRC participants in their studies, augmenting the outcomes data available for future analyses.

Over the past year, in preparing for a potential renewal to the WHI contract that would include a second Long Life Study visit, 7 investigators have proposed studies that would leverage these visits, and/or the data biospecimens collected.

Genetic data are available in dbGaP for over 30,000 WHI participants using a number of approaches (genome-wide association studies, exome sequencing, typing of ancestry informative markers, metabochip typing), that can be linked to CVD biomarker data, providing an opportunity for outside investigators to use these resources independent of the WHI program. Whole genome sequencing for more than 11,000 WHI participants through the TOPMed program has been completed, and those data will be broadly available through dbGaP.

1.4 Future Directions

The May 2019 WHI Investigator Meeting was held in Bethesda, MD, with Dr. David Goff as the keynote speaker. Dr. Goff presented the strategic priorities of the NHLBI. The WHI program is well-positioned to address many of these areas. The Big Goals of NHLBI are to:

- Address social determinants of cardiovascular health (CVH) and health inequities
- Enhance resilience
- Promote CVH and prevent CVD across the lifespan
- Eliminate hypertension-related CVD
- Reduce the burden of heart failure
- Prevent vascular dementia

The Steering Committee appointed a Data Collection Task Force, chaired by Andrea LaCroix and Marian Limacher. The DCTF refined our routine surveys to better position WHI to address both the goals of NHLBI and the scientific issues that can be well studied in our aging cohort. The CCC began mailing out the first of two forms that will be sent out in alternating years, collecting a broad array of data items relevant to older women's health and well-being.

We are also working towards more efficient and comprehensive data collection using administrative data to augment adjudication of self-reported outcomes. We engaged with the NAACCR oversight body for the US cancer registries, participating in their pilot study to determine feasibility of efficiently linking our cohort to the registries for eventual cancer verifications. These approaches may increase the array of outcomes that can be studied in our cohort without increasing participant burden.

In late 2019, the NHLBI issued a Request for Proposals for a new contract period for the Clinical Coordinating Center and the 4 Regional Centers. If funded, these contracts would fund continued active follow-up (with an option for a repeated Long Life Study visit) for up to 7 additional years. Though the WHI continues to be a rich resource for scientific discovery across the spectrum of disease and conditions that affect aging women, the continued follow-up of this cohort will allow investigators to expand the bounds of the areas in which we can contribute to a strong and rigorous body of science.

Table 1.1
WHI Centers and Principal Investigators

Clinical Coordinating Center

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

Field Centers

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

Associated Centers

Principal Investigator	Institution	Location
Marian Limacher, MD	University of Florida	Gainesville, FL (FC closed Apr 2019)
JoAnn Manson, MD DrPH	Brigham and Women's Hospital	Boston, MA
Cynthia Thomson, PhD RD	University of Arizona	Tucson, AZ
Jennifer Robinson, MD MPH	University of Iowa	Iowa City/ Bettendorf, IA (FC closed Feb 2020)

Current WHI Committee Chairs

Investigator	Institution	Committee
Marian Neuhouser, PhD	Fred Hutchinson Cancer Research Center	Ancillary Studies (ASC)
Marian Limacher, MD	University of Florida	Outcomes Adjudications (OAC)
Charles Kooperberg, PhD	Fred Hutchinson Cancer Research Center	Performance Monitoring (PMC)
Cynthia Thomson, PhD RD	University of Arizona	Publications and Presentations (P&P)
Linda Van Horn, PhD RD	Northwestern University	Publications and Presentations (P&P)
Rebecca Jackson, MD	Ohio State University	Scientific Resources Working Group
Sally Shumaker, PhD	Wake Forest University	Steering Committee (SC)

Table 1.2
Consent Status by Study Component and Arm

Data as of: February 28, 2020

	Enrolled in WHI	Eligible for extension 2005-2010[1]	Consented N	Consented %
WHI Enrollment				
Hormone Therapy	27347	25194	20433	81.1
With Uterus	16608	15408	12788	83.0
E+P	8506	7878	6545	83.1
Placebo	8102	7530	6243	82.9
Without Uterus	10739	9786	7645	78.1
E-alone	5310	4851	3778	77.9
Placebo	5429	4935	3867	78.4
Dietary Modification	48835	45560	37858	83.1
Intervention	19541	18207	14769	81.1
Comparison	29294	27353	23089	84.4
Calcium and Vitamin D	36282	34447	29862	86.7
Active	18176	17280	15025	87.0
Placebo	18106	17167	14837	86.4
Clinical Trial Total	68132	63332	52176	82.4
Observational Study	93676	86744	63231	72.9
Total	161808	150076	115407	76.9

	Enrolled in extension 2005-2010	Eligible for extension 2010-2020[1]	Consented N	Consented %
WHI Enrollment				
Hormone Therapy	20433	18794	15584	82.9
With Uterus	12788	11789	9891	83.9
E+P	6545	6048	5047	83.4
Placebo	6243	5741	4844	84.4
Without Uterus	7645	7005	5693	81.3
E-alone	3778	3479	2834	81.5
Placebo	3867	3526	2859	81.1
Dietary Modification	37858	35594	30690	86.2
Intervention	14769	13922	12014	86.3
Comparison	23089	21672	18676	86.2
Calcium and Vitamin D	29862	27975	24231	86.6
Active	15025	14083	12242	86.9
Placebo	14837	13892	11989	86.3
Clinical Trial Total	52176	48697	41499	85.2
Observational Study	63231	59009	52068	88.2
Total	115407	107706	93567	86.9

[1] Eligibility defined as alive at the beginning of consent and willing to be contacted.

Table 1.3
Consent Status by Age at Enrollment and Race/Ethnicity

Data as of: February 28, 2020

	Clinical Trial				Observational Study			
	Enrolled in WHI	Eligible for extension 2005-2010[1]	Consented N	Consented %	Enrolled in WHI	Eligible for extension 2005-2010[1]	Consented N	Consented %
WHI Enrollment								
Total	68132	63332	52176	82.4	93676	86744	63231	72.9
Age								
50-54	9188	8754	7237	82.7	12381	11969	8996	76.9
55-59	14661	13940	11724	84.1	17329	16565	12732	74.2
60-69	31389	29290	24528	83.7	41200	38502	28582	65.6
70-79	12894	11348	8687	76.6	22766	19708	12921	72.9
Race/Ethnicity								
American Indian/ Alaskan Native	292	260	185	71.2	421	372	217	58.3
Asian/Pacific Islander	1519	1414	1105	78.1	2671	2444	1291	52.8
Non-Hispanic Black/ African American	6983	6423	4769	74.2	7635	6868	3585	52.2
Hispanic/Latina	2875	2686	1791	66.7	3609	3333	1598	47.9
Non-Hispanic White	55525	51682	43680	84.5	78016	72504	55767	76.9
Unknown	938	867	646	74.5	1324	1223	773	63.2

	Clinical Trial				Observational Study			
	Enrolled in extension 2005-2010	Eligible for extension 2010-2020[1]	Consented N	Consented %	Enrolled in extension 2005-2010	Eligible for extension 2010-2020[1]	Consented N	Consented %
WHI Enrollment								
Total	52176	48697	41499	85.2	63231	59009	52068	88.2
Age								
50-54	7237	7068	6249	88.4	8996	8802	8225	93.4
55-59	11724	11329	10055	88.8	12732	12400	11481	92.6
60-69	24528	22940	19642	85.6	28582	26820	23716	88.4
70-79	8687	7360	5553	75.4	12921	10987	8646	78.7
Race/Ethnicity								
American Indian/ Alaskan Native	185	174	147	84.5	217	204	171	83.8
Asian/Pacific Islander	1105	1050	845	80.5	1291	1224	1035	84.6
Non-Hispanic Black/ African American	4769	4459	3420	76.7	3585	3358	2716	80.9
Hispanic/Latina	1791	1701	1226	72.1	1598	1527	1246	81.6
Non-Hispanic White	43680	40704	35363	86.9	55767	51969	46296	89.1
Unknown	646	609	498	81.8	773	727	604	83.1

[1] Eligibility defined as alive at the beginning of consent and willing to be contacted.

Table 1.4
Counts of Participants with Active[1] Participation by Current Age[2], Race/Ethnicity and Cohort

Data as of: February 28, 2020

	Clinical Trial (N=28,411)		Observational Study (N=35,146)		MRC Cohort[3] (N=14,739)		SRC Cohort[4] (N=48,818)		Total (N=63,557)	
	N	%	N	%	N	%	N	%	N	%
Age on 2/28/2020										
<75	562	2.0	1128	3.2	509	3.5	1181	2.4	1690	2.7
75-79	6612	23.3	8468	24.1	3649	24.8	11435	23.4	15084	23.7
80-84	9090	32.0	10418	29.6	4489	30.5	15019	30.8	19508	30.7
85-89	7056	24.8	8290	23.6	3432	23.3	11914	24.4	15346	24.1
90-94	4006	14.1	5221	14.9	2081	14.1	7146	14.6	9227	14.5
95+	1081	3.8	1621	4.6	579	3.9	2123	4.3	2702	4.3
Race/Ethnicity										
American Indian/ Alaskan Native	102	0.4	117	0.3	36	0.2	183	0.4	219	0.3
Asian/Pacific Islander	653	2.3	774	2.2	169	1.1	1258	2.6	1427	2.2
Non-Hispanic Black/ African American	2354	8.3	1858	5.3	4212	28.6	0	0.0	4212	6.6
Hispanic/Latina	911	3.2	921	2.6	1832	12.4	0	0.0	1832	2.9
Non-Hispanic White	24014	84.6	31088	88.5	8357	56.7	46772	95.8	55129	86.7
Unknown	350	1.2	388	1.1	133	0.9	605	1.2	738	1.2

Current Age[2] Distribution by Race/Ethnicity for Active[1] WHI Extension Study 2010-2020 Participants

Data as of: February 28, 2020

	Total (N = 63,557)		American Indian/ Alaskan Native (N = 219)		Asian/Pacific Islander (N = 1,427)		Non-Hispanic Black/African American (N = 4,212)		Hispanic/ Latina (N = 1,832)		Non-Hispanic White (N = 55,129)		Unknown (N = 738)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Age on 2/28/2020														
<75	1690	2.7	11	5.0	70	4.9	223	5.3	119	6.5	1243	2.3	24	3.3
75-79	15084	23.7	70	32.0	403	28.2	1213	28.8	589	32.2	12634	22.9	175	23.7
80-84	19508	30.7	68	31.1	392	27.5	1314	31.2	564	30.8	16966	30.8	204	27.6
85-89	15346	24.1	39	17.8	317	22.2	912	21.7	343	18.7	13552	24.6	183	24.8
90-94	9227	14.5	24	11.0	179	12.5	434	10.3	183	10.0	8288	15.0	119	16.1
95+	2702	4.3	7	3.2	66	4.6	116	2.8	34	1.9	2446	4.4	33	4.5

[1] Active participation is defined as current (Form 33 within the last 15 months) or recent (Form 33 between 15 and 24 months ago) follow-up.
[2] Age on February 28, 2020
[3] The MRC Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.
[4] The SRC Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

Table 1.5
Composition of WHI Cohort Over Time

Data as of: February 28, 2020

	Enrolled in WHI (N=161,808)		**Active[1] Participation at End of Extension 1 (9/30/2010)** (N=104,888)		**Active[1] Participation as of 2/28/2020** (N=63,557)	
	N	**%**	**N**	**%**	**N**	**%**
Age[2]						
50-54	21569	13.3				
55-59	31990	19.8				
60-64	37210	23.0	1137	1.1		
65-69	35379	21.9	16490	15.7		
70-74	24906	15.4	25588	24.4	1690	2.7
75-79	10754	6.6	25353	24.2	15084	23.7
80-84			21808	20.8	19508	30.7
85-89			11636	11.1	15346	24.1
90-94			2839	2.7	9227	14.5
95+			38	<0.1	2702	4.3
Race/Ethnicity						
White	133541	82.5	90470	86.3	55129	86.7
Black/African American	14618	9.0	7485	7.1	4212	6.6
Hispanic/Latina	6484	4.0	3069	2.9	1832	2.9
American Indian/Alaska Native	713	0.4	366	0.3	219	0.3
Asian/Pacific Islander	4190	2.6	2216	2.1	1427	2.2
Unknown	2262	1.4	1282	1.2	738	1.2
Education[3]						
0-8 years	2665	1.7	869	0.8	357	0.6
Some high school	5979	3.7	2818	2.7	1203	1.9
High school diploma/GED	27624	17.2	16760	16.1	9030	14.3
School after high school	60909	37.9	38435	36.9	22373	35.4
College degree or higher	63415	39.5	45297	43.5	30169	47.8
Income[3]						
< $10,000	6937	4.6	2870	2.9	1119	1.9
$10,000 – $19,999	18499	12.3	9543	9.6	4140	6.9
$20,000 – $34,999	36665	24.3	22385	22.6	11825	19.6
$35,000 – $49,999	30912	20.5	21008	21.2	12685	21.0
$50,000 – $74,999	29948	19.8	21611	21.8	14478	24.0
$75,000 +	27973	18.5	21564	21.8	16102	26.7
Study Component						
Clinical Trial	68132	42.1	47325	45.1	28411	44.7
Observational Study	93676	57.9	57563	54.9	35146	55.3

[1] Active participation is defined as current (Form 33 within the last 15 months) or recent (Form 33 between 15 and 24 months ago) follow-up.
[2] Age at WHI Enrollment, End of Extension 1 (9/30/2010), and on 2/28/2020.
[3] Education and income reported at baseline.

Table 1.6
Response Rates to CCC Annual Mailings, Extension Study 2010-2020
Year 2018 by Cohort and Regional Center
Data as of: February 28, 2020

	1st Mailing Period				2nd Mailing Period					
		Sent	Response		Past 2nd			Response		Cumulative
Cohort	Form[1]	Mail 1	N	%	mailing period	Sent Mail 2		N	%	Response
Total	33	68030	49804	73.2	68030	15717	23.1	5910	37.6	81.9
	151	68024	49390	72.6	68024	16133	23.7	6175	38.3	81.7
	158	2503	1952	78.0	2503	0	0.0	0	0.0	78.0
	159	62503	45314	72.5	62503	14974	24.0	5828	38.9	81.8
Medical Record	33	15598	10424	66.8	15598	4369	28.0	1453	33.3	76.1
Cohort[2]	151	15596	10365	66.5	15596	4427	28.4	1493	33.7	76.0
	158	585	432	73.8	585	0	0.0	0	0.0	73.8
	159	14325	9466	66.1	14325	4151	29.0	1423	34.3	76.0
Self Report	33	52432	39380	75.1	52432	11348	21.6	4457	39.3	83.6
Cohort[3]	151	52428	39025	74.4	52428	11706	22.3	4682	40.0	83.4
	158	1918	1520	79.2	1918	0	0.0	0	0.0	79.2
	159	48178	35848	74.4	48178	10823	22.5	4405	40.7	83.6
Regional Center[4]										
Boston	33	7364	5272	71.6	7364	1785	24.2	729	40.8	81.5
	151	7362	5204	70.7	7362	1849	25.1	763	41.3	81.1
	158	544	438	80.5	544	0	0.0	0	0.0	80.5
	159	6765	4805	71.0	6765	1712	25.3	693	40.5	81.3
Buffalo	33	10896	7681	70.5	10896	2900	26.6	1181	40.7	81.3
	151	10895	7622	70.0	10895	2960	27.2	1219	41.2	81.1
	158	804	643	80.0	804	0	0.0	0	0.0	80.0
	159	10021	6999	69.8	10021	2753	27.5	1154	41.9	81.4
Columbus	33	8822	6587	74.7	8822	1823	20.7	692	38.0	82.5
	151	8821	6536	74.1	8821	1877	21.3	728	38.8	82.3
	158	13	12	92.3	13	0	0.0	0	0.0	92.3
	159	8160	6023	73.8	8160	1745	21.4	665	38.1	82.0
Gainesville	33	6163	4243	68.8	6163	1657	26.9	508	30.7	77.1
	151	6163	4219	68.5	6163	1681	27.3	519	30.9	76.9
	158	570	405	71.1	570	0	0.0	0	0.0	71.1
	159	5570	3794	68.1	5570	1554	27.9	506	32.6	77.2
Iowa	33	6474	5025	77.6	6474	1219	18.8	521	42.7	85.7
	151	6474	4989	77.1	6474	1258	19.4	544	43.2	85.5
	158	13	11	84.6	13	0	0.0	0	0.0	84.6
	159	5930	4561	76.9	5930	1165	19.6	516	44.3	85.6
Seattle	33	3118	2354	75.5	3118	660	21.2	247	37.4	83.4
	151	3118	2332	74.8	3118	687	22.0	260	37.8	83.1
	158	14	11	78.6	14	0	0.0	0	0.0	78.6
	159	2836	2125	74.9	2836	624	22.0	242	38.8	83.5
Stanford	33	11488	8957	78.0	11488	2158	18.8	880	40.8	85.6
	151	11488	8889	77.4	11488	2221	19.3	932	42.0	85.5
	158	28	26	92.9	28	0	0.0	0	0.0	92.9
	159	10713	8243	76.9	10713	2105	19.6	919	43.7	85.5

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 158 = Supplemental Questionnaire 2018; Form 159 = Supplemental Questionnaire 2019. Form 158 was collected on a small number of participants in 2018 rather than 2017. Only a single mailing was done for these participants.
[2] The MRC Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.
[3] The SRC Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.
[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 1.6 (continued)
Response Rates to CCC Annual Mailings, Extension Study 2010-2020
Year 2018 by Cohort and Regional Center

Data as of: February 28, 2020

	1st Mailing Period				2nd Mailing Period					
		Sent	Response		Past 2nd			Response		Cumulative
Regional Center[1]	Form[2]	Mail 1	N	%	mailing period	Sent Mail 2		N	%	Response
Tucson	33	4481	3103	69.2	4481	1251	27.9	410	32.8	78.4
	151	4481	3076	68.6	4481	1275	28.5	422	33.1	78.1
	158	4	3	75.0	4	0	0.0	0	0.0	75.0
	159	4106	2802	68.2	4106	1188	28.9	406	34.2	78.1
Wake Forest	33	7053	4996	70.8	7053	1772	25.1	582	32.8	79.1
	151	7053	4951	70.2	7053	1818	25.8	616	33.9	78.9
	158	507	399	78.7	507	0	0.0	0	0.0	78.7
	159	6480	4554	70.3	6480	1690	26.1	581	34.4	79.2

[1] 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).
[2] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 158 = Supplemental Questionnaire 2018; Form 159 = Supplemental Questionnaire 2019. Form 158 was collected on a small number of participants in 2018 rather than 2017. Only a single mailing was done for these participants.

Table 1.6 (continued)
Response Rates to CCC Annual Mailings, Extension Study 2010-2020
Year 2019 by Cohort and Regional Center

Data as of: February 28, 2020

	1st Mailing Period				2nd Mailing Period					
		Sent	Response		Past 2nd			Response		Cumulative
Cohort	Form[1]	Mail 1	N	%	mailing period	Sent Mail 2		N	%	Response
Total	33	63483	46823	73.8	63072	13118	20.7	3992	30.4	80.0
	151	63147	46382	73.5	63072	12172	19.3	4139	34.0	80.0
	159	5148	3632	70.6	5148	1286	25.0	446	34.7	79.2
Medical Record	33	14445	9731	67.4	14317	3644	25.2	960	26.3	74.0
Cohort[2]	151	14326	9685	67.6	14312	3346	23.4	969	29.0	74.4
	159	1189	793	66.7	1189	335	28.2	96	28.7	74.8
Self Report	33	49038	37092	75.6	48755	9474	19.3	3032	32.0	81.8
Cohort[3]	151	48821	36697	75.2	48760	8826	18.1	3170	35.9	81.7
	159	3959	2839	71.7	3959	951	24.0	350	36.8	80.6
Regional Center[4]										
Boston	33	6904	5052	73.2	6888	1436	20.8	439	30.6	79.5
	151	6896	5013	72.7	6896	1347	19.5	459	34.1	79.4
	159	572	391	68.4	572	145	25.3	59	40.7	78.7
Buffalo	33	10155	7415	73.0	10125	2193	21.6	672	30.6	79.6
	151	10134	7371	72.7	10133	2045	20.2	689	33.7	79.5
	159	808	581	71.9	808	186	2.03	64	34.4	79.8
Columbus	33	10311	7609	73.8	10246	2155	20.9	657	30.5	80.2
	151	10278	7535	73.3	10235	2043	19.9	695	34.0	80.1
	159	848	603	71.1	848	206	24.3	83	40.3	80.9
Gainesville	33	2311	1613	69.8	2311	625	27.0	182	29.1	77.7
	151	2311	1608	69.6	2311	632	27.3	178	28.2	77.3
	159	546	366	67.0	546	158	28.9	43	27.2	74.9
Iowa	33	6019	4661	77.4	5968	1133	18.8	393	34.7	84.0
	151	5993	4620	77.1	5972	1078	18.0	405	37.6	83.8
	159	507	370	73.0	507	121	23.9	45	37.2	81.9
Seattle	33	2924	2238	76.5	2897	526	18.0	168	31.9	82.3
	151	2900	2214	76.3	2894	496	17.1	178	35.9	82.5
	159	262	192	73.3	262	56	21.4	20	35.7	80.9
Stanford	33	10814	8348	77.2	10733	1891	17.5	650	34.4	83.2
	151	10725	8241	76.8	10725	1648	15.4	660	40.0	83.0
	159	733	538	73.4	733	158	21.6	61	38.6	81.7

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 158 = Supplemental Questionnaire 2018; Form 159 = Supplemental Questionnaire 2019. Form 158 was collected on a small number of participants in 2018 rather than 2017. Only a single mailing was done for these participants.
[2] The MRC Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.
[3] The SRC Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.
[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 1.6 (continued)
Response Rates to CCC Annual Mailings, Extension Study 2010-2020
Year 2019 by Cohort and Regional Center

Data as of: February 28, 2020

	1st Mailing Period				2nd Mailing Period					
		Sent	Response		Past 2nd			Response		Cumulative
Regional Center[1]	Form[2]	Mail 1	N	%	mailing period	Sent Mail 2		N	%	Response
Tucson	33	4118	2936	71.3	4068	960	23.3	248	25.8	77.3
	151	4066	2900	71.3	4066	844	20.8	257	30.5	77.6
	159	352	238	67.6	352	109	31.0	36	33.0	77.8
Wake Forest	33	9927	6951	70.0	9836	2199	22.2	583	26.5	75.9
	151	9844	6880	69.9	9840	2039	20.7	618	30.3	76.2
	159	520	353	67.9	520	147	28.3	35	23.8	74.6

[1] 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).
[2] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 158 = Supplemental Questionnaire 2018; Form 159 = Supplemental Questionnaire 2019. Form 158 was collected on a small number of participants in 2018 rather than 2017. Only a single mailing was done for these participants.

Table 1.7
Response Rates to Regional Center Follow-up and Cumulative Response Extension Study 2010-2020, Year 2018 by Cohort and Regional Center
Data as of: February 28, 2020

Cohort	Form[1]	Eligible for RC Follow-up N	Respondents N	Respondents %	Total Estimated Response Rate %
Total	33	16637	9766	58.7	86.8
	151	17069	3392	19.9	78.2
	158	601	1	0.2	76.5
	159	15713	520	3.3	74.5
Medical Record Cohort[2]	33	5145	3268	63.5	84.4
	151	5286	1196	22.6	72.8
	158	167	1	0.6	72.3
	159	4895	205	4.2	67.3
Self Report Cohort[3]	33	11492	6498	56.5	87.6
	151	11783	2196	18.6	79.9
	158	434	0	0	77.8
	159	10818	315	2.9	76.8
Regional Center[4]					
Boston	33	1829	1054	57.6	86.8
	151	1894	14	0.7	73.6
	158	112	0	0	79.6
	159	1734	1	0.1	73.6
Buffalo	33	2846	1728	60.7	87.7
	151	2923	1232	42.1	83.4
	158	181	1	0.6	78.2
	159	2708	473	17.5	77.6
Columbus	33	1883	1068	56.7	86.3
	151	1936	5	0.3	75.2
	158	1	0	0	92.3
	159	1826	4	0.2	74.8
Gainesville	33	1859	1075	57.8	84.6
	151	1900	427	22.5	75.0
	158	181	0	0	69.1
	159	1726	6	0.3	69.2
Iowa	33	1061	398	37.5	84.3
	151	1099	6	0.5	78.5
	158	2	0	0	84.6
	159	1001	2	0.2	78.5
Seattle	33	819	536	65.4	88.3
	151	850	116	13.6	76.2
	158	3	0	0	78.6
	159	760	0	0	73.6
Stanford	33	2520	1751	69.5	90.6
	151	2562	844	32.9	83.4
	158	2	0	0	92.9
	159	2393	1	0	76.8

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 158 = Supplemental Questionnaire 2018; Form 159 = Supplemental Questionnaire 2019.
[2] The MRC Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.
[3] The SRC Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.
[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 1.7 (continued)
Response Rates to Regional Center Follow-up and Cumulative Response Extension Study 2010-2020, Year 2018 by Cohort and Regional Center

Data as of: February 28, 2020

Regional Center[1]	Form[2]	Eligible for RC Follow-up N	Respondents N	Respondents %	Total Estimated Response Rate %
Tucson	33	1201	590	49.1	83.8
	151	1238	179	14.5	75.1
	158	2	0	0	60.0
	159	1141	0	0	71.6
Wake Forest	33	1976	1188	60.1	85.6
	151	2011	519	25.8	77.0
	158	115	0	0	77.6
	159	1851	3	0.2	70.7

[1] 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).
[2] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 158 = Supplemental Questionnaire 2018; Form 159 = Supplemental Questionnaire 2019. Form 158 was collected on a small number of participants in 2018 rather than 2017. Only a single mailing was done for these participants.

Table 1.7 (continued)
Response Rates to Regional Center Follow-up and Cumulative Response Extension Study 2010-2020, Year 2019 by Cohort and Regional Center

Data as of: February 28, 2020

Cohort	Form[1]	Eligible for RC Follow-up N	Respondents N	Respondents %	Total Estimated Response Rate %
Total	33	17063	7020	41.1	80.8
	151	17816	1943	10.9	73.4
	159	1485	42	2.8	70.5
Medical Record Cohort[2]	33	5233	2275	43.5	76.1
	151	5452	702	12.9	66.7
	159	430	16	3.7	64.8
Self Report Cohort[3]	33	11830	4745	40.1	82.3
	151	12364	1241	10	75.4
	159	1055	26	2.5	72.4
Regional Center[4]					
Boston	33	1848	731	39.6	80.6
	151	1953	10	0.5	70.9
	159	156	1	0.6	70.6
Buffalo	33	2870	1342	46.8	82.2
	151	2999	944	31.5	78.4
	159	256	38	14.8	74.1
Columbus	33	2610	990	37.9	80.5
	151	2695	4	0.1	71.7
	159	219	1	0.5	72.5
Gainesville	33	694	448	64.6	85.8
	151	729	152	20.9	74.1
	159	178	1	0.6	66.6
Iowa	33	1127	302	26.8	80.2
	151	1173	8	0.7	75.4
	159	104	0	0.0	74.5
Seattle	33	797	393	49.3	84.2
	151	834	69	8.3	74.2
	159	82	0	0.0	68.6
Stanford	33	2661	1066	40.1	82.6
	151	2761	202	7.3	75.0
	159	205	1	0.5	71.0

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 158 = Supplemental Questionnaire 2017; Form 159 = Supplemental Questionnaire 2018. Form 158 was collected on a small number of participants in 2018 rather than 2017. Only a single mailing was done for these participants.

[2] The MRC Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.

[3] The SRC Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

[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 1.7 (continued)
Response Rates to Regional Center Follow-up and Cumulative Response Extension Study 2010-2020, Year 2019 by Cohort and Regional Center

Data as of: February 28, 2020

Regional Center[1]	Form[2]	Eligible for RC Follow-up N	Respondents N	Respondents %	Total Estimated Response Rate %
Tucson	33	1245	411	33	77.4
	151	1297	47	3.6	69.1
	159	101	0	0.0	68.5
Wake Forest	33	3211	1337	41.6	77.5
	151	3375	507	15	70.0
	159	184	0	0.0	64.2

[1] 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).
[2] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 158 = Supplemental Questionnaire 2018; Form 159 = Supplemental Questionnaire 2019. Form 158 was collected on a small number of participants in 2018 rather than 2017. Only a single mailing was done for these participants.

Table 2.1
Participation and Vital Status: WHI Participants by Extension Study Participation and Cohort

Data as of: February 28, 2020

WHI Extension Study 2010-2020 Participants

	MRC Cohort[1] (N = 22,316)		SRC Cohort[2] (N = 71,251)		Total Participants (N = 93,567)	
	N	**%**	**N**	**%**	**N**	**%**
Vital Status/Participation						
Deceased	5901	26.4	19011	26.7	24912	26.6
Alive: Current Participation[3]	14106	63.2	47425	66.6	61531	65.8
Alive: Recent Participation[4]	633	2.8	1393	2.0	2026	2.2
Stopped Follow-Up[5]	874	3.9	2073	2.9	2947	3.1
Lost to Follow-Up[6]	802	3.6	1349	1.9	2151	2.3

Data as of: February 28, 2020; Status as of September 30, 2010

WHI Extension Study 2005-2010 Participants

	MRC Super Cohort[7] (N = 29,368)		SRC Super Cohort[8] (N = 86,039)		Total Participants (N = 115,407)	
	N	**%**	**N**	**%**	**N**	**%**
Vital Status/Participation						
Deceased	2360	8.0	6211	7.2	8571	7.4
Alive: Current Participation[3]	25884	88.1	78194	90.9	104078	90.2
Alive: Recent Participation[4]	321	1.1	489	0.6	810	0.7
Alive: Past/Unknown Participation[9]	32	0.1	39	<0.1	71	0.1
Stopped Follow-Up[5]	459	1.6	794	0.9	1253	1.1
Lost to Follow-Up[6]	312	1.1	312	0.4	624	0.5

Data as of: February 28, 2020; Status as of April 8, 2005

WHI Participants

	MRC Super Cohort[7] (N = 44,174)		SRC Super Cohort[8] (N = 117,634)		Total Participants (N = 161,808)	
	N	**%**	**N**	**%**	**N**	**%**
Vital Status/Participation						
Deceased	2820	6.4	7232	6.1	10052	6.2
Alive: Current Participation[10]	38165	86.4	105585	89.8	143750	88.8
Alive: Recent Participation[11]	342	0.8	419	0.4	761	0.5
Alive: Past/Unknown Participation[12]	21	<0.1	41	<0.1	62	<0.1
Stopped Follow-Up[5]	1699	3.8	2757	2.3	4456	2.8
Lost to Follow-Up[6]	1127	2.6	1600	1.4	2727	1.7

[1] The MRC Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.

[2] The SRC Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

[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] Participants not in any of the above categories.

[7] The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS.

[8] The SRC Super Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.

[9] Participants without a Form 33 within the last 24 months, who have been located (as indicated on Form 23) within the last 6 months.

[10] CT participants who have filled in a Form 33 within the last 9 months; and OS participants who have filled in a Form 33 within the last 15 months.

[11] CT participants who last filled in a Form 33 between 9 and 18 months ago; and OS participants who last filled in a Form 33 between 15 and 24 months ago.

[12] CT participants without a Form 33 within the last 18 months, who have been located (as indicated on Form 23) within the last 6 months; and OS participants without a Form 33 within the last 24 months, who have been located (as indicated on Form 23) within the last 6 months.

Table 2.2
Proxy Follow-up Status[1]:
WHI Extension Study 2010-2020 Participants by Cohort, Current Age[2], and Race/Ethnicity

Data as of: February 28, 2020

	Total		Current Age[2] 69-79		80-84		85-89		≥90	
	N	%	N	%	N	%	N	%	N	%
MRC Cohort[3]	(N = 13845)		(N = 3264)		(N = 4489)		(N = 3432)		(N = 2660)	
Proxy follow-up	685	4.9	25	0.8	107	2.4	198	5.8	355	13.3
SRC Cohort[4]	(N = 45966)		(N = 9764)		(N =15019)		(N = 11914)		(N = 9269)	
Proxy follow-up	2154	4.7	68	0.7	318	2.1	636	5.3	1132	12.2
Total	(N = 59811)		(N = 13028)		(N =19508)		(N = 15346)		(N = 11929)	
Proxy follow-up	2839	4.7	93	0.7	425	2.2	834	5.4	1487	12.5

	Race/Ethnicity: American Indian/ Alaskan Native		Asian/Pacific Islander		Non-Hispanic Black/African American		Hispanic/ Latina		Non-Hispanic White		Unknown	
	N	%	N	%	N	%	N	%	N	%	N	%
MRC Cohort[3]	(N = 36)		(N = 169)		(N = 4212)		(N = 1832)		(N = 8357)		(N = 133)	
Proxy follow-up	2	5.6	9	5.3	170	4.0	58	3.2	450	5.4	9	6.8
SRC Cohort[4]	(N = 183)		(N = 1258)		N/A		N/A		(N = 46772)		(N = 605)	
Proxy follow-up	8	4.4	57	4.5					2083	4.5	31	5.1
Total	(N = 219)		(N = 1427)		(N = 4212)		(N = 1832)		(N = 55129)		(N = 738)	
Proxy follow-up	10	4.6	66	4.6	170	4.0	58	3.2	2533	4.6	40	5.4

[1] For participants alive as of February 28, 2020 and with current, recent or past/unknown participation.
[2] Age on February 28, 2020.
[3] The MRC Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.
[4] The SRC Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

Table 2.3
Participation and Vital Status: CT and OS Participants

Data as of: February 28, 2020
WHI Extension Study 2010-2020 Participants

	CT Participants (N = 41,499)		OS Participants (N = 52,068)	
	N	**%**	**N**	**%**
Vital Status/Participation				
Deceased	10749	25.9	14163	27.2
Alive: Current Participation[1]	27422	66.1	34109	65.5
Alive: Recent Participation[2]	989	2.4	1037	2.0
Stopped Follow-Up[3]	1341	3.2	1606	3.1
Lost to Follow-Up[4]	998	2.4	1153	2.2

Data as of: February 28, 2020; Status as of September 30, 2010
WHI Extension Study 2005-2010 Participants

	CT Participants (N = 52,176)		OS Participants (N = 63,231)	
	N	**%**	**N**	**%**
Vital Status/Participation				
Deceased	3812	7.3	4759	7.5
Alive: Current Participation[1]	46883	89.9	57195	90.5
Alive: Recent Participation[2]	442	0.8	368	0.6
Alive: Past/Unknown Participation[5]	37	0.1	34	0.1
Stopped Follow-Up[3]	649	1.2	604	1.0
Lost to Follow-Up[4]	353	0.7	271	0.4

Data as of: February 28, 2020; Status as of April 8, 2005
WHI Participants

	CT Participants (N = 68,132)		OS Participants (N =93,676)	
	N	**%**	**N**	**%**
Vital Status/Participation				
Deceased	3701	5.4	6351	6.8
Alive: Current Participation[6]	61160	89.8	82590	88.2
Alive: Recent Participation[7]	339	0.5	422	0.5
Alive: Past/Unknown Participation[8]	10	<0.1	52	0.1
Stopped Follow-Up[3]	2194	3.2	2262	2.4
Lost to Follow-Up[4]	728	1.1	1999	2.1

[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.
[5] Participants without a Form 33 within the last 24 months, who have been located (as indicated on Form 23) within the last 6 months.
[6] CT participants who have filled in a Form 33 within the last 9 months; OS participants who have filled in a Form 33 within the last 15 months.
[7] CT participants who last filled in a Form 33 between 9 and 18 months ago; OS participants who last filled in a Form 33 between 15 and 24 months ago.
[8] CT participants without a Form 33 within the last 18 months, who have been located (as indicated on Form 23) within the last 6 months; OS participants without a Form 33 within the last 24 months, who have been located (as indicated on Form 23) within the last 6 months.

Table 2.4
Cause of Death[1] (Annualized Percentages): MRC and SRC Super Cohort Participants
Data as of: February 28, 2020; Events through February 28, 2020

	MRC Super Cohort[2]		SRC Super Cohort[3]	
Number of participants	44174		117634	
Mean follow-up (months)	232.7		234.5	
Total death	17862	(2.09%)	48206	(2.10%)
Adjudicated death	17524	(2.05%)	45665	(1.99%)
Centrally adjudicated death	8627	(1.01%)	7417	(0.32%)
Locally adjudicated death	679	(0.08%)	4681	(0.20%)
Identified by NDI search	8218	(0.96%)	33567	(1.46%)
Not yet adjudicated	328	(0.04%)	0	(0.00%)
Form 120 death[4]	10	(<0.01%)	2541	(0.11%)
Cardiovascular				
Atherosclerotic cardiac	2599	(0.30%)	5784	(0.25%)
Definite CHD deaths after 10/99	993	(0.12%)	1873	(0.08%)
Possible CHD deaths after 10/99	1606	(0.19%)	3874	(0.17%)
Cerebrovascular	1448	(0.17%)	3496	(0.15%)
Pulmonary embolism	104	(0.01%)	204	(0.01%)
Other cardiovascular	1849	(0.22%)	5110	(0.22%)
Unknown cardiovascular	30	(<0.01%)	99	(<0.01%)
Total cardiovascular deaths	6030	(0.70%)	14693	(0.64%)
Cancer				
Breast cancer	455	(0.05%)	1457	(0.06%)
Ovarian cancer	222	(0.03%)	822	(0.04%)
Endometrial cancer	53	(0.01%)	216	(0.01%)
Colorectal cancer	396	(0.05%)	934	(0.04%)
Uterus cancer	53	(0.01%)	127	(0.01%)
Lung cancer	1091	(0.13%)	2544	(0.11%)
Pancreas cancer	405	(0.05%)	1076	(0.05%)
Lymphoma (NHL only)	186	(0.02%)	614	(0.03%)
Leukemia	175	(0.02%)	561	(0.02%)
Melanoma	48	(0.01%)	153	(0.01%)
Brain cancer	85	(0.01%)	335	(0.01%)
Multiple myeloma	161	(0.02%)	341	(0.01%)
Other cancer	834	(0.10%)	2253	(0.10%)
Unknown cancer site	173	(0.02%)	540	(0.02%)
Total cancer deaths	4337	(0.51%)	11973	(0.52%)
Accident/injury				
Homicide	17	(<0.01%)	19	(<0.01%)
Accident	412	(0.05%)	1176	(0.05%)
Suicide	18	(<0.01%)	63	(<0.01%)
Other injury	10	(<0.01%)	35	(<0.01%)
Total accident/injury deaths	457	(0.05%)	1293	(0.06%)
Other				
Alzheimer's disease	1032	(0.12%)	3221	(0.14%)
COPD	700	(0.08%)	1904	(0.08%)
Pneumonia	471	(0.05%)	1153	(0.05%)
Pulmonary fibrosis	186	(0.02%)	472	(0.02%)
Renal failure	410	(0.05%)	668	(0.03%)
Sepsis	499	(0.06%)	1000	(0.04%)
Dementia, other than Alzheimer’s	1125	(0.13%)	3216	(0.14%)
Amyotrophic lateral sclerosis	49	(0.01%)	225	(0.01%)
Parkinson's	196	(0.02%)	684	(0.03%)
Hepatic cirrhosis	102	(0.01%)	207	(0.01%)
Other known cause	1819	(0.21%)	5367	(0.23%)
Unknown cause	121	(0.01%)	2130	(0.09%)
Total other cause deaths	6710	(0.78%)	20247	(0.88%)

[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 from the CT and OS.
[3] The SRC Super Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.
[4] Includes SRC Cohort participants and discovered deaths among non-Extension Study 2010-2020 participants that occurred during Extension Study 2010-2020.

Table 2.5
Cause of Death[1] (Annualized Percentages): CT and OS Participants
Data as of: February 28, 2020; Events through February 28, 2020

	CT	OS	Total
Number of participants	68132	93676	161808
Mean follow-up (months)	238.9	230.5	234.0
Total death	26565 (1.96%)	39503 (2.20%)	66068 (2.09%)
Adjudicated death	25504 (1.88%)	37685 (2.09%)	63189 (2.00%)
Centrally adjudicated death	10911 (0.80%)	5133 (0.29%)	16044 (0.51%)
Locally adjudicated death (final)	1 (<0.01%)	5359 (0.30%)	5360 (0.17%)
Identified by NDI search	14592 (1.08%)	27193 (1.51%)	41785 (1.32%)
Not yet adjudicated	277 (0.02%)	51 (<0.01%)	328 (0.01%)
Form 120 death[2]	784 (0.06%)	1767 (0.10%)	2551 (0.08%)
Cardiovascular			
Atherosclerotic cardiac	3479 (0.26%)	4904 (0.27%)	8383 (0.27%)
Definite CHD deaths after 10/99	1325 (0.10%)	1541 (0.09%)	2866 (0.09%)
Possible CHD deaths after 10/99	2143 (0.16%)	3337 (0.19%)	5480 (0.17%)
Cerebrovascular	1994 (0.15%)	2950 (0.16%)	4944 (0.16%)
Pulmonary embolism	148 (0.01%)	160 (0.01%)	308 (0.01%)
Other cardiovascular	2774 (0.20%)	4185 (0.23%)	6959 (0.22%)
Unknown cardiovascular	28 (<0.01%)	101 (0.01%)	129 (<0.01%)
Total cardiovascular deaths	8423 (0.62%)	12300 (0.68%)	20723 (0.66%)
Cancer			
Breast cancer	614 (0.05%)	1298 (0.07%)	1912 (0.06%)
Ovarian cancer	404 (0.03%)	640 (0.04%)	1044 (0.03%)
Endometrial cancer	115 (0.01%)	154 (0.01%)	269 (0.01%)
Colorectal cancer	569 (0.04%)	761 (0.04%)	1330 (0.04%)
Uterus cancer	79 (0.01%)	101 (0.01%)	180 (0.01%)
Lung cancer	1578 (0.12%)	2057 (0.11%)	3635 (0.12%)
Pancreas cancer	630 (0.05%)	851 (0.05%)	1481 (0.05%)
Lymphoma (NHL only)	318 (0.02%)	482 (0.03%)	800 (0.03%)
Leukemia	312 (0.02%)	424 (0.02%)	736 (0.02%)
Melanoma	89 (0.01%)	112 (0.01%)	201 (0.01%)
Brain cancer	184 (0.01%)	236 (0.01%)	420 (0.01%)
Multiple myeloma	220 (0.02%)	282 (0.02%)	502 (0.02%)
Other cancer	1297 (0.10%)	1790 (0.10%)	3087 (0.10%)
Unknown cancer site	288 (0.02%)	425 (0.02%)	713 (0.02%)
Total cancer deaths	6697 (0.49%)	9613 (0.53%)	16310 (0.52%)
Accident/injury			
Homicide	15 (<0.01%)	21 (<0.01%)	36 (<0.01%)
Accident	652 (0.05%)	936 (0.05%)	1588 (0.05%)
Suicide	27 (<0.01%)	54 (<0.01%)	81 (<0.01%)
Other injury	15 (<0.01%)	30 (<0.01%)	45 (<0.01%)
Total accident/injury deaths	709 (0.05%)	1041 (0.06%)	1750 (0.06%)
Other			
Alzheimer's disease	1615 (0.12%)	2638 (0.15%)	4253 (0.13%)
COPD	1090 (0.08%)	1514 (0.08%)	2604 (0.08%)
Pneumonia	674 (0.05%)	950 (0.05%)	1624 (0.05%)
Pulmonary fibrosis	296 (0.02%)	362 (0.02%)	658 (0.02%)
Renal failure	452 (0.03%)	626 (0.03%)	1078 (0.03%)
Sepsis	644 (0.05%)	855 (0.05%)	1499 (0.05%)
Dementia, other than Alzheimer’s	1704 (0.13%)	2637 (0.15%)	4341 (0.14%)
Amyotrophic lateral sclerosis	106 (0.01%)	168 (0.01%)	274 (0.01%)
Parkinson's	339 (0.02%)	541 (0.03%)	880 (0.03%)
Hepatic cirrhosis	138 (0.01%)	171 (0.01%)	309 (0.01%)
Other known cause	2686 (0.20%)	4500 (0.25%)	7186 (0.23%)
Unknown cause	715 (0.05%)	1536 (0.09%)	2251 (0.07%)
Total other cause deaths	10459 (0.77%)	16498 (0.92%)	26957 (0.85%)

[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] Includes SRC Cohort participants and discovered deaths among non-Extension Study 2010-2020 participants that occurred during Extension Study 2010-2020.

Table 2.6

Cause of Death *Excluding Discovered Deaths Among Non-Extension Study Participants* (Annualized Percentages): CT and OS Participants

Data as of: February 28, 2020; Events through February 28, 2020

	CT		OS		Total	
Number of participants	68132		93676		161808	
Mean follow-up (months)	202.7		187.9		194.1	
Death	18262	(1.59%)	25273	(1.72%)	43535	(1.66%)
Adjudicated death	17210	(1.50%)	23467	(1.60%)	40677	(1.55%)
Centrally adjudicated death	10835	(0.94%)	5052	(0.34%)	15887	(0.61%)
Locally adjudicated death (final)	1	(<0.01%)	5283	(0.36%)	5284	(0.20%)
Identified by NDI search	6374	(0.55%)	13132	(0.90%)	19506	(0.75%)
Not yet adjudicated	277	(0.02%)	51	(<0.01%)	328	(0.01%)
Form 120 death[1]	775	(0.07%)	1755	(0.12%)	2530	(0.10%)
Cardiovascular						
Atherosclerotic cardiac	2432	(0.21%)	3034	(0.21%)	5466	(0.21%)
Definite CHD deaths after 10/99	1122	(0.10%)	1242	(0.08%)	2364	(0.09%)
Possible CHD deaths after 10/99	1299	(0.11%)	1766	(0.12%)	3065	(0.12%)
Cerebrovascular	1380	(0.12%)	1878	(0.13%)	3258	(0.12%)
Pulmonary embolism	126	(0.01%)	134	(0.01%)	260	(0.01%)
Other cardiovascular	1786	(0.16%)	2595	(0.18%)	4381	(0.17%)
Unknown cardiovascular	26	(<0.01%)	100	(0.01%)	126	(<0.01%)
Total cardiovascular deaths	5750	(0.50%)	7741	(0.53%)	13491	(0.52%)
Cancer						
Breast cancer	462	(0.04%)	1000	(0.07%)	1462	(0.06%)
Ovarian cancer	329	(0.03%)	510	(0.03%)	839	(0.03%)
Endometrial cancer	97	(0.01%)	122	(0.01%)	219	(0.01%)
Colorectal cancer	448	(0.04%)	577	(0.04%)	1025	(0.04%)
Uterus cancer	58	(0.01%)	68	(<0.01%)	126	(<0.01%)
Lung cancer	1253	(0.11%)	1570	(0.11%)	2823	(0.11%)
Pancreas cancer	512	(0.04%)	631	(0.04%)	1143	(0.04%)
Lymphoma (NHL only)	256	(0.02%)	368	(0.03%)	624	(0.02%)
Leukemia	256	(0.02%)	326	(0.02%)	582	(0.02%)
Melanoma	76	(0.01%)	95	(0.01%)	171	(0.01%)
Brain cancer	156	(0.01%)	179	(0.01%)	335	(0.01%)
Multiple myeloma	176	(0.02%)	224	(0.02%)	400	(0.02%)
Other cancer	1025	(0.09%)	1391	(0.09%)	2416	(0.09%)
Unknown cancer site	215	(0.02%)	304	(0.02%)	519	(0.02%)
Total cancer deaths	5319	(0.46%)	7365	(0.50%)	12684	(0.48%)
Accident/injury						
Homicide	15	(<0.01%)	18	(<0.01%)	33	(<0.01%)
Accident	466	(0.04%)	598	(0.04%)	1064	(0.04%)
Suicide	26	(<0.01%)	45	(<0.01%)	71	(<0.01%)
Other injury	15	(<0.01%)	28	(<0.01%)	43	(<0.01%)
Total accident/injury deaths	522	(0.05%)	689	(0.05%)	1211	(0.05%)
Other						
Alzheimer's disease	745	(0.06%)	1039	(0.07%)	1784	(0.07%)
COPD	736	(0.06%)	944	(0.06%)	1680	(0.06%)
Pneumonia	506	(0.04%)	599	(0.04%)	1105	(0.04%)
Pulmonary fibrosis	231	(0.02%)	266	(0.02%)	497	(0.02%)
Renal failure	307	(0.03%)	377	(0.03%)	684	(0.03%)
Sepsis	455	(0.04%)	531	(0.04%)	986	(0.04%)
Dementia, other than Alzheimer’s	781	(0.07%)	983	(0.07%)	1764	(0.07%)
Amyotrophic lateral sclerosis	88	(0.01%)	124	(0.01%)	212	(0.01%)
Parkinson's	178	(0.02%)	270	(0.02%)	448	(0.02%)
Hepatic cirrhosis	106	(0.01%)	118	(0.01%)	224	(0.01%)
Other known cause	1573	(0.14%)	2706	(0.18%)	4279	(0.16%)
Unknown cause	688	(0.06%)	1470	(0.10%)	2158	(0.08%)
Total other cause deaths	6394	(0.56%)	9427	(0.64%)	15821	(0.60%)

[1] Includes SRC Cohort participants.

Table 3.1
Verified Outcomes (Annualized Percentages) by Age at Enrollment for MRC Super Cohort Participants[1]

Data as of: February 28, 2020; Events through February 28, 2020

		Age at Enrollment			
Outcomes	**Total**	**50-54**	**55-59**	**60-69**	**70-79**
Number randomized	44174	6788	9352	19418	8616
Mean follow-up (months)	181.7	195.1	195.7	182.8	153.6
Cardiovascular					
CHD[2]	3709 (0.55%)	253 (0.23%)	467 (0.31%)	1766 (0.60%)	1223 (1.11%)
CHD death[3]	1676 (0.25%)	73 (0.06%)	154 (0.10%)	742 (0.25%)	707 (0.64%)
Clinical MI	2502 (0.37%)	193 (0.17%)	358 (0.23%)	1233 (0.42%)	718 (0.65%)
Angina[4]	1625 (0.47%)	114 (0.20%)	226 (0.30%)	785 (0.52%)	500 (0.76%)
CABG/PTCA	3069 (0.46%)	252 (0.23%)	519 (0.34%)	1573 (0.53%)	725 (0.66%)
Carotid artery disease	525 (0.08%)	26 (0.02%)	82 (0.05%)	286 (0.10%)	131 (0.12%)
Congestive heart failure, WHI[4]	1246 (0.36%)	84 (0.15%)	145 (0.19%)	531 (0.35%)	486 (0.74%)
Heart failure, UNC[5]	3130 (0.47%)	198 (0.18%)	364 (0.24%)	1489 (0.51%)	1079 (0.99%)
Stroke	3008 (0.45%)	200 (0.18%)	374 (0.25%)	1471 (0.50%)	963 (0.87%)
PVD	697 (0.10%)	46 (0.04%)	113 (0.07%)	358 (0.12%)	180 (0.16%)
DVT	1341 (0.20%)	123 (0.11%)	243 (0.16%)	642 (0.22%)	333 (0.30%)
Pulmonary embolism	1091 (0.16%)	114 (0.10%)	204 (0.13%)	516 (0.17%)	257 (0.23%)
DVT/PE	1953 (0.29%)	183 (0.17%)	359 (0.24%)	940 (0.32%)	471 (0.43%)
Coronary disease[6]	7714 (1.15%)	586 (0.53%)	1092 (0.72%)	3671 (1.24%)	2365 (2.15%)
Aortic aneurysm[7]	73 (0.04%)	4 (0.01%)	11 (0.03%)	46 (0.06%)	12 (0.06%)
Valvular heart disease[7]	506 (0.30%)	32 (0.10%)	76 (0.18%)	285 (0.38%)	113 (0.58%)
Total cardiovascular disease[8]	10778 (1.61%)	788 (0.71%)	1530 (1.00%)	5144 (1.74%)	3316 (3.01%)
Cancer					
Breast cancer	2988 (0.45%)	460 (0.42%)	684 (0.45%)	1348 (0.46%)	496 (0.45%)
Invasive breast cancer	2457 (0.37%)	359 (0.33%)	560 (0.37%)	1101 (0.37%)	437 (0.40%)
In-situ breast cancer	588 (0.09%)	108 (0.10%)	135 (0.09%)	278 (0.09%)	67 (0.06%)
Ovarian cancer	280 (0.04%)	27 (0.02%)	59 (0.04%)	142 (0.05%)	52 (0.05%)
Endometrial cancer[9]	336 (0.09%)	54 (0.09%)	89 (0.10%)	142 (0.08%)	51 (0.08%)
Colorectal cancer	957 (0.14%)	89 (0.08%)	153 (0.10%)	468 (0.16%)	247 (0.22%)
Other cancer[10]	4271 (0.64%)	412 (0.37%)	782 (0.51%)	2097 (0.71%)	980 (0.89%)
Total cancer	8172 (1.22%)	969 (0.88%)	1650 (1.08%)	3861 (1.31%)	1692 (1.53%)
Fractures					
Hip fracture	1630 (0.24%)	56 (0.05%)	152 (0.10%)	736 (0.25%)	686 (0.62%)
Deaths					
Cardiovascular deaths	3787 (0.57%)	155 (0.14%)	354 (0.23%)	1669 (0.56%)	1609 (1.46%)
Cancer deaths	3198 (0.48%)	261 (0.24%)	498 (0.33%)	1580 (0.53%)	859 (0.78%)
Other known cause	3674 (0.55%)	182 (0.16%)	380 (0.25%)	1742 (0.59%)	1370 (1.24%)
Unknown cause	94 (0.01%)	6 (0.01%)	13 (0.01%)	51 (0.02%)	24 (0.02%)
Not yet adjudicated	328 (0.05%)	25 (0.02%)	58 (0.04%)	175 (0.06%)	70 (0.06%)
Total death[11]	17862 (2.09%)	978 (0.66%)	2081 (1.06%)	8252 (2.20%)	6551 (4.72%)

[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS.
[2] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Studies 2005-2020.
[3] "CHD death" includes definite and possible CHD death.
[4] Angina and CHF are not verified outcomes in the WHI Extension Studies 2005-2020. Reported statistics represent experience during the original program.
[5] Definite or possible decompensated heart failure adjudicated by UNC.
[6] "Coronary disease" includes clinical MI, evolving Q-wave MI, possible evolving Q-wave MI, CHD death, angina, congestive heart failure, UNC heart failure, and CABG/PTCA; Q-wave MI, angina, and congestive heart failure are not collected in the WHI Extension Studies 2005-2020.
[7] Aortic aneurysm and valvular heart disease are new adjudicated outcomes during the WHI Extension Study 2010-2020.
[8] Total CVD does not include aortic aneurysm or valvular heart disease.
[9] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[10] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.
[11] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

Table 3.2
Verified Outcomes (Annualized Percentages) by Race/Ethnicity for MRC Super Cohort Participants[1]

Data as of: February 28, 2020; Events through February 28, 2020

	Race/Ethnicity					
Outcomes	**American Indian/ Alaskan Native**	**Asian/Pacific Islander**	**Non-Hispanic Black/African American**	**Hispanic/ Latina**	**Non-Hispanic White**	**Unknown**
Number randomized	130	527	14618	6484	22030	385
Mean follow-up (months)	172.5	175.5	166.7	157.4	199.0	182.7
Cardiovascular						
CHD[2]	11 (0.59%)	32 (0.42%)	1055 (0.52%)	246 (0.29%)	2331 (0.64%)	34 (0.58%)
CHD death[3]	7 (0.37%)	13 (0.17%)	561 (0.28%)	92 (0.11%)	991 (0.27%)	12 (0.20%)
Clinical MI	6 (0.32%)	25 (0.32%)	634 (0.31%)	182 (0.21%)	1629 (0.45%)	26 (0.44%)
Angina[4]	7 (0.69%)	14 (0.34%)	548 (0.48%)	160 (0.33%)	884 (0.49%)	12 (0.40%)
CABG/PTCA	10 (0.54%)	23 (0.30%)	765 (0.38%)	277 (0.33%)	1964 (0.54%)	30 (0.51%)
Carotid artery disease	1 (0.05%)	4 (0.05%)	99 (0.05%)	23 (0.03%)	395 (0.11%)	3 (0.05%)
Congestive heart failure, WHI[4]	3 (0.30%)	9 (0.22%)	477 (0.42%)	91 (0.19%)	655 (0.36%)	11 (0.37%)
Heart failure, UNC[5]	11 (0.59%)	24 (0.31%)	848 (0.42%)	170 (0.20%)	2052 (0.57%)	25 (0.43%)
Stroke	13 (0.70%)	25 (0.32%)	910 (0.45%)	217 (0.26%)	1814 (0.50%)	29 (0.49%)
PVD	3 (0.16%)	9 (0.12%)	250 (0.12%)	30 (0.04%)	401 (0.11%)	4 (0.07%)
DVT	5 (0.27%)	4 (0.05%)	381 (0.19%)	74 (0.09%)	870 (0.24%)	7 (0.12%)
Pulmonary embolism	4 (0.21%)	2 (0.03%)	338 (0.17%)	43 (0.05%)	692 (0.19%)	12 (0.20%)
DVT/PE	8 (0.43%)	4 (0.05%)	587 (0.29%)	101 (0.12%)	1238 (0.34%)	15 (0.26%)
Coronary disease[6]	25 (1.34%)	64 (0.83%)	2273 (1.12%)	591 (0.69%)	4695 (1.28%)	66 (1.13%)
Aortic aneurysm[7]	0 (0.00%)	2 (0.11%)	20 (0.04%)	4 (0.02%)	47 (0.05%)	0 (0.00%)
Valvular heart disease[7]	1 (0.22%)	4 (0.22%)	71 (0.15%)	41 (0.21%)	384 (0.39%)	5 (0.33%)
Total cardiovascular disease[8]	34 (1.82%)	91 (1.18%)	3227 (1.59%)	819 (0.96%)	6519 (1.78%)	88 (1.50%)
Cancer						
Breast cancer	8 (0.43%)	36 (0.47%)	954 (0.47%)	314 (0.37%)	1652 (0.45%)	24 (0.41%)
Invasive breast cancer	7 (0.37%)	28 (0.36%)	772 (0.38%)	257 (0.30%)	1372 (0.38%)	21 (0.36%)
In situ breast cancer	1 (0.05%)	9 (0.12%)	204 (0.10%)	64 (0.08%)	305 (0.08%)	5 (0.09%)
Ovarian cancer	1 (0.05%)	3 (0.04%)	77 (0.04%)	37 (0.04%)	157 (0.04%)	5 (0.09%)
Endometrial cancer[9]	1 (0.13%)	2 (0.04%)	91 (0.10%)	29 (0.06%)	211 (0.09%)	2 (0.05%)
Colorectal cancer	1 (0.05%)	19 (0.25%)	299 (0.15%)	79 (0.09%)	550 (0.15%)	9 (0.15%)
Other cancer[10]	13 (0.70%)	51 (0.66%)	1083 (0.53%)	358 (0.42%)	2726 (0.75%)	40 (0.68%)
Total cancer	23 (1.23%)	103 (1.34%)	2322 (1.14%)	763 (0.90%)	4885 (1.34%)	76 (1.30%)
Fractures						
Hip fracture	7 (0.37%)	12 (0.16%)	148 (0.07%)	75 (0.09%)	1375 (0.38%)	13 (0.22%)
Deaths						
Cardiovascular deaths	13 (0.70%)	24 (0.31%)	1172 (0.58%)	224 (0.26%)	2329 (0.64%)	25 (0.43%)
Cancer deaths	10 (0.54%)	39 (0.51%)	944 (0.46%)	292 (0.34%)	1885 (0.52%)	28 (0.48%)
Other known cause	15 (0.80%)	32 (0.42%)	888 (0.44%)	273 (0.32%)	2438 (0.67%)	28 (0.48%)
Unknown cause	0 (0.00%)	3 (0.04%)	27 (0.01%)	14 (0.02%)	46 (0.01%)	4 (0.07%)
Not yet adjudicated	1 (0.05%)	2 (0.03%)	87 (0.04%)	23 (0.03%)	212 (0.06%)	3 (0.05%)
Total death[11]	54 (2.16%)	187 (1.81%)	5723 (2.04%)	1761 (1.35%)	9986 (2.35%)	151 (2.03%)

[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS.
[2] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Studies 2005-2020.
[3] "CHD death" includes definite and possible CHD death.
[4] Angina and CHF are not verified outcomes in the WHI Extension Studies 2005-2020. Reported statistics represent experience during the original program.
[5] Definite or possible decompensated heart failure adjudicated by UNC.
[6] "Coronary disease" includes clinical MI, evolving Q-wave MI, possible evolving Q-wave MI, CHD death, angina, congestive heart failure, UNC heart failure, and CABG/PTCA; Q-wave MI, angina and congestive heart failure are not collected in the WHI Extension Studies 2005-2020.
[7] Aortic aneurysm and valvular heart disease are new adjudicated outcomes during the WHI Extension Study 2010-2020.
[8] Total CVD does not include aortic aneurysm or valvular heart disease.
[9] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[10] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.
[11] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

Table 3.3
Verified Outcomes (Annualized Percentages)[1] by Age at Diagnosis for MRC Super Cohort Participants[2]

Data as of: February 28, 2020; Events between January 1, 2000 and December 31, 2018

	Age at Diagnosis							
Outcomes	**50-59**	**60-64**	**65-69**	**70-74**	**75-79**	**80-84**	**85-89**	**90-103**
Number of participants[3]	8898	18159	24974	29135	28047	20315	10966	4245
Mean follow-up (months)	32.0	39.0	44.4	46.9	46.2	44.6	40.5	36.7
Cancer								
Breast cancer	95 (0.40%)	269 (0.46%)	427 (0.46%)	609 (0.54%)	518 (0.48%)	347 (0.46%)	127 (0.34%)	35 (0.27%)
Invasive breast cancer	73 (0.31%)	211 (0.36%)	315 (0.34%)	509 (0.45%)	434 (0.40%)	303 (0.40%)	121 (0.33%)	35 (0.27%)
In situ breast cancer	22 (0.09%)	62 (0.11%)	114 (0.12%)	115 (0.10%)	99 (0.09%)	57 (0.08%)	10 (0.03%)	1 (0.01%)
Ovarian cancer	5 (0.02%)	15 (0.03%)	43 (0.05%)	52 (0.05%)	50 (0.05%)	45 (0.06%)	14 (0.04%)	8 (0.06%)
Endometrial cancer[4]	3 (0.01%)	33 (0.06%)	69 (0.07%)	75 (0.07%)	50 (0.05%)	34 (0.05%)	16 (0.04%)	4 (0.03%)
Colorectal cancer	10 (0.04%)	57 (0.10%)	117 (0.13%)	157 (0.14%)	170 (0.16%)	113 (0.15%)	75 (0.20%)	40 (0.31%)
Leukemia	1 (<0.01%)	13 (0.02%)	25 (0.03%)	54 (0.05%)	42 (0.04%)	56 (0.07%)	30 (0.08%)	16 (0.12%)
Lung cancer	18 (0.08%)	67 (0.11%)	123 (0.13%)	221 (0.19%)	254 (0.24%)	190 (0.25%)	93 (0.25%)	40 (0.31%)
Non-Hodgkin's lymphoma	3 (0.01%)	14 (0.02%)	43 (0.05%)	80 (0.07%)	80 (0.07%)	75 (0.10%)	44 (0.12%)	17 (0.13%)
Melanoma of the skin	10 (0.04%)	30 (0.05%)	43 (0.05%)	65 (0.06%)	80 (0.07%)	53 (0.07%)	42 (0.11%)	12 (0.09%)
Pancreas cancer	5 (0.02%)	10 (0.02%)	35 (0.04%)	57 (0.05%)	71 (0.07%)	61 (0.08%)	44 (0.12%)	16 (0.12%)
Total cancer	167 (0.70%)	595 (1.01%)	1058 (1.14%)	1542 (1.36%)	1503 (1.39%)	1104 (1.46%)	540 (1.46%)	201 (1.55%)
Cardiovascular								
CHD[5]	35 (0.15%)	132 (0.22%)	330 (0.36%)	517 (0.45%)	681 (0.63%)	681 (0.90%)	504 (1.36%)	309 (2.38%)
Clinical MI	25 (0.11%)	98 (0.17%)	249 (0.27%)	398 (0.35%)	488 (0.45%)	454 (0.60%)	277 (0.75%)	118 (0.91%)
CABG/PTCA	48 (0.20%)	180 (0.31%)	418 (0.45%)	581 (0.51%)	634 (0.59%)	461 (0.61%)	168 (0.45%)	32 (0.25%)
Stroke	26 (0.11%)	101 (0.17%)	214 (0.23%)	414 (0.36%)	571 (0.53%)	642 (0.85%)	418 (1.13%)	222 (1.71%)
Total cardiovascular[6]	157 (0.66%)	497 (0.84%)	1046 (1.13%)	1576 (1.39%)	1943 (1.80%)	1802 (2.39%)	1106 (2.99%)	625 (4.81%)
Deaths								
Total death[7]	88 (0.37%)	372 (0.63%)	907 (0.98%)	1759 (1.55%)	2889 (2.68%)	3739 (4.96%)	3766 (10.18%)	3131 (24.10%)

[1] Annualized percentages 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] The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS.
[3] Number of participants with any follow-up time in the age interval.
[4] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[5] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the OS or in in the WHI Extension Study 2005-2010.
[6] Total cardiovascular disease includes CHD, angina, CABG/PTCA, carotid artery disease, WHI CHF, UNC HF, stroke, PVD and CVD death. Angina and WHI CHF are not verified outcomes in the WHI Extension Studies 2005-2020.
[7] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

Table 3.4
Verified Outcomes (Annualized Percentages) by Age at Enrollment for SRC Super Cohort Participants[1]
Data as of: February 28, 2020; Events through September 30, 2010 and February 28, 2020

	Total	Age at Enrollment 50-54	55-59	60-69	70-79
Outcomes through Extension Study 2005-2010					
Number randomized	117634	14781	22638	53171	27044
Mean follow-up (months)	142.7	154.9	151.9	142.9	128.1
Cardiovascular[2]					
CHD[3]	5434 (0.39%)	201 (0.11%)	489 (0.17%)	2362 (0.37%)	2382 (0.83%)
CHD death[4]	1891 (0.14%)	49 (0.03%)	104 (0.04%)	693 (0.11%)	1045 (0.36%)
Clinical MI	4044 (0.29%)	159 (0.08%)	398 (0.14%)	1834 (0.29%)	1653 (0.57%)
Angina[5]	3623 (0.38%)	139 (0.11%)	423 (0.22%)	1749 (0.41%)	1312 (0.63%)
CABG/PTCA	6113 (0.44%)	241 (0.13%)	711 (0.25%)	3161 (0.50%)	2000 (0.69%)
Carotid artery disease	1111 (0.08%)	48 (0.03%)	117 (0.04%)	520 (0.08%)	426 (0.15%)
Congestive heart failure, WHI[5]	2797 (0.29%)	78 (0.06%)	201 (0.11%)	1096 (0.26%)	1422 (0.68%)
Stroke	4255 (0.30%)	124 (0.06%)	319 (0.11%)	1856 (0.29%)	1956 (0.68%)
PVD	984 (0.07%)	24 (0.01%)	88 (0.03%)	460 (0.07%)	412 (0.14%)
Coronary disease[6]	11771 (0.84%)	455 (0.24%)	1244 (0.43%)	5456 (0.86%)	4616 (1.60%)
Total cardiovascular disease	16773 (1.20%)	626 (0.33%)	1662 (0.58%)	7667 (1.21%)	6818 (2.36%)
Fractures[2]					
Hip fracture	2955 (0.21%)	63 (0.03%)	186 (0.06%)	1108 (0.18%)	1598 (0.55%)
Outcomes through Extension Study 2010-2020					
Number randomized	117634	14781	22638	53171	27044
Mean follow-up (months)	198.8	229.4	223.6	200.4	158.1
Cancer					
Breast cancer	10660 (0.55%)	1427 (0.50%)	2294 (0.54%)	4947 (0.56%)	1992 (0.56%)
Invasive breast cancer	8951 (0.46%)	1150 (0.41%)	1920 (0.46%)	4170 (0.47%)	1711 (0.48%)
In situ breast cancer	1878 (0.10%)	307 (0.11%)	409 (0.10%)	857 (0.10%)	305 (0.09%)
Ovarian cancer	1025 (0.05%)	126 (0.04%)	197 (0.05%)	488 (0.05%)	214 (0.06%)
Endometrial cancer[7]	1516 (0.13%)	173 (0.10%)	343 (0.13%)	700 (0.14%)	300 (0.15%)
Colorectal cancer	2460 (0.13%)	145 (0.05%)	332 (0.08%)	1217 (0.14%)	766 (0.21%)
Other cancer[8]	13793 (0.71%)	1345 (0.48%)	2394 (0.57%)	6753 (0.76%)	3301 (0.93%)
Total cancer	26842 (1.38%)	2947 (1.04%)	5071 (1.20%)	12769 (1.44%)	6055 (1.70%)
Deaths					
Cardiovascular deaths	9704 (0.50%)	202 (0.07%)	593 (0.14%)	4004 (0.45%)	4905 (1.38%)
Cancer deaths	9486 (0.49%)	611 (0.22%)	1315 (0.31%)	4679 (0.53%)	2881 (0.81%)
Other known cause	11200 (0.57%)	343 (0.12%)	938 (0.22%)	5167 (0.58%)	4752 (1.33%)
Unknown cause	2064 (0.11%)	97 (0.03%)	212 (0.05%)	1136 (0.13%)	619 (0.17%)
Total death[9]	48206 (2.10%)	1700 (0.52%)	4110 (0.84%)	21499 (2.06%)	20897 (4.80%)

[1] The SRC Super Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.
[2] Cardiovascular diseases and hip fracture are not adjudicated for SRC Super Cohort participants during the WHI Extension Study 2010-2020. Reported statistics represent experience during the original program and the Extension Study 2005-2010.
[3] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Study 2005-2010.
[4] "CHD death" includes definite and possible CHD death.
[5] Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program.
[6] "Coronary disease" includes clinical MI, evolving Q-wave MI, possible evolving Q-wave MI, CHD death, angina, congestive heart failure, and CABG/PTCA; Q-wave MI, angina, and congestive heart failure were not collected in the WHI Extension Study 2005-2010.
[7] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[8] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.
[9] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

Table 3.5
Verified Outcomes (Annualized Percentages) by Race/Ethnicity for SRC Super Cohort Participants[1]
Data as of: February 28, 2020; Events through September 30, 2010 and February 28, 2020

	Race/Ethnicity			
	American Indian/ Alaskan Native	**Asian/Pacific Islander**	**White**	**Unknown**
Outcomes through Extension Study 2005-2010				
Number randomized	583	3663	111511	1877
Mean follow-up (months)	125.1	127.8	143.5	131.0
Cardiovascular[2]				
CHD[3]	26 (0.43%)	87 (0.22%)	5240 (0.39%)	81 (0.40%)
CHD death[4]	13 (0.21%)	30 (0.08%)	1813 (0.14%)	35 (0.17%)
Clinical MI	16 (0.26%)	66 (0.17%)	3906 (0.29%)	56 (0.27%)
Angina[5]	23 (0.52%)	56 (0.20%)	3492 (0.39%)	52 (0.36%)
CABG/PTCA	30 (0.49%)	77 (0.20%)	5922 (0.44%)	84 (0.41%)
Carotid artery disease	7 (0.12%)	10 (0.03%)	1074 (0.08%)	20 (0.10%)
Congestive heart failure, WHI[5]	18 (0.41%)	30 (0.11%)	2702 (0.30%)	47 (0.32%)
Stroke	17 (0.28%)	101 (0.26%)	4061 (0.30%)	76 (0.37%)
PVD	6 (0.10%)	8 (0.02%)	951 (0.07%)	19 (0.09%)
Coronary disease[6]	67 (1.10%)	178 (0.46%)	11356 (0.85%)	170 (0.83%)
Total cardiovascular disease	89 (1.46%)	291 (0.75%)	16129 (1.21%)	264 (1.29%)
Fractures[2]				
Hip fracture	7 (0.12%)	29 (0.07%)	2892 (0.22%)	27 (0.13%)
Outcomes through Extension Study 2010-2020				
Number randomized	583	3663	111511	1877
Mean follow-up (months)	165.6	170.8	200.3	175.0
Cancer				
Breast cancer	33 (0.41%)	248 (0.48%)	10247 (0.55%)	132 (0.48%)
Invasive breast cancer	27 (0.34%)	206 (0.40%)	8610 (0.46%)	108 (0.39%)
In situ breast cancer	7 (0.09%)	45 (0.09%)	1800 (0.10%)	26 (0.10%)
Ovarian cancer	2 (0.02%)	14 (0.03%)	999 (0.05%)	10 (0.04%)
Endometrial cancer[7]	1 (0.03%)	24 (0.07%)	1466 (0.13%)	25 (0.16%)
Colorectal cancer	11 (0.14%)	45 (0.09%)	2368 (0.13%)	36 (0.13%)
Other cancer[8]	45 (0.56%)	226 (0.43%)	13340 (0.72%)	182 (0.67%)
Total cancer	87 (1.08%)	514 (0.99%)	25897 (1.39%)	344 (1.26%)
Deaths				
Cardiovascular deaths	36 (0.45%)	160 (0.31%)	9369 (0.50%)	139 (0.51%)
Cancer deaths	31 (0.39%)	174 (0.33%)	9153 (0.49%)	128 (0.47%)
Other known cause	57 (0.71%)	153 (0.29%)	10854 (0.58%)	136 (0.50%)
Unknown cause	11 (0.14%)	31 (0.06%)	1995 (0.11%)	27 (0.10%)
Total death[9]	239 (2.20%)	1088 (1.48%)	46112 (2.12%)	767 (2.13%)

[1] The SRC Super Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.
[2] Cardiovascular diseases and hip fracture are not adjudicated for SRC Super Cohort participants during the WHI Extension Study 2010-2020. Reported statistics represent experience during the original program and the Extension Study 2005-2010.
[3] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Study 2005-2010.
[4] "CHD death" includes definite and possible CHD death.
[5] Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program.
[6] "Coronary disease" includes clinical MI, evolving Q-wave MI, possible evolving Q-wave MI, CHD death, angina, congestive heart failure, and CABG/PTCA; Q-wave MI, angina and congestive heart failure were not collected in the WHI Extension Study 2005-2010.
[7] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[8] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.
[9] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

Table 3.6
Verified Primary and Other Cancers (Annualized Percentages): MRC and SRC Super Cohort Participants

Data as of: February 28, 2020; Events through February 28, 2020

	MRC Super Cohort[1]		SRC Super Cohort[2]	
Number of participants	44174		117634	
Mean follow-up (months)	181.7		198.8	
Overall cancer	8172	(1.22%)	26842	(1.38%)
Primary cancer				
Breast cancer	2988	(0.45%)	10660	(0.55%)
Invasive breast cancer	2457	(0.37%)	8951	(0.46%)
In situ breast cancer	588	(0.09%)	1878	(0.10%)
Ovarian cancer	280	(0.04%)	1025	(0.05%)
Endometrial cancer[3]	336	(0.09%)	1516	(0.13%)
Colorectal cancer	957	(0.14%)	2460	(0.13%)
Other cancer				
Accessory sinus	2	(<0.01%)	12	(<0.01%)
Adrenal gland	5	(<0.01%)	12	(<0.01%)
Anus	31	(<0.01%)	100	(0.01%)
Appendix	13	(<0.01%)	34	(<0.01%)
Base of tongue	9	(<0.01%)	26	(<0.01%)
Biliary tract, parts of (other/unspecified)	59	(0.01%)	138	(0.01%)
Bladder	258	(0.04%)	809	(0.04%)
Bones/joints/articular cartilage (limbs)	2	(<0.01%)	11	(<0.01%)
Bones/joints/articular cartilage (other)	9	(<0.01%)	21	(<0.01%)
Brain	71	(0.01%)	315	(0.02%)
Cervix	44	(0.01%)	88	(<0.01%)
Central Nervous System (excludes brain)	1	(<0.01%)	4	(<0.01%)
Connective/subcutaneous/soft tissues	44	(0.01%)	154	(0.01%)
Endocrine glands, related structures	0	(0.00%)	4	(<0.01%)
Esophagus	48	(0.01%)	140	(0.01%)
Eye and adnexa	24	(<0.01%)	59	(<0.01%)
Floor of Mouth	7	(<0.01%)	11	(<0.01%)
Gallbladder	45	(0.01%)	101	(0.01%)
Genital organs	81	(0.01%)	305	(0.02%)
Gum	7	(<0.01%)	40	(<0.01%)
Heart	4	(<0.01%)	33	(<0.01%)
Kidney	205	(0.03%)	564	(0.03%)
Larynx	21	(<0.01%)	34	(<0.01%)
Leukemia	267	(0.04%)	907	(0.05%)
Liver	101	(0.02%)	242	(0.01%)
Lung	1164	(0.17%)	3103	(0.16%)
Lymph nodes	1	(<0.01%)	2	(<0.01%)
Lymphoma, Hodgkins	24	(<0.01%)	56	(<0.01%)
Lymphoma, non-Hodgkins	393	(0.06%)	1488	(0.08%)
Melanoma of the skin	387	(0.06%)	2280	(0.12%)
Meninges	2	(<0.01%)	5	(<0.01%)
Multiple myeloma	209	(0.03%)	453	(0.02%)
Mycosis fungoides	7	(<0.01%)	20	(<0.01%)
Nasal cavity mid ear	2	(<0.01%)	18	(<0.01%)
Oral (mouth)	8	(<0.01%)	35	(<0.01%)
Other digestive cancer	12	(<0.01%)	47	(<0.01%)
Other lip	7	(<0.01%)	8	(<0.01%)
Palate	7	(<0.01%)	27	(<0.01%)

[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS.
[2] The SRC Super Cohort includes all Non- Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.
[3] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial and uterine cancer.

Table 3.6 (continued)
Verified Primary and Other Cancers (Annualized Percentages): MRC and SRC Super Cohort Participants

Data as of: February 28, 2020; Events through February 28, 2020

	MRC Super Cohort[1]		SRC Super Cohort[2]	
Number of participants	44174		117634	
Mean follow-up (months)	181.7		198.8	
Pancreas	336	(0.05%)	975	(0.05%)
Parotid gland (Stensen's duct)	15	(<0.01%)	51	(<0.01%)
Peripheral nerves and autonomic nervous	0	(0.00%)	2	(<0.01%)
Peritoneum	53	(0.01%)	175	(0.01%)
Pharynx	11	(<0.01%)	18	(<0.01%)
Pyriform sinus	0	(0.00%)	2	(<0.01%)
Renal pelvis	36	(0.01%)	95	(<0.01%)
Respiratory system, intrathoracic, other	0	(0.00%)	3	(<0.01%)
Salivary glands, major (other/unspecified)	3	(<0.01%)	15	(<0.01%)
Small intestine	41	(0.01%)	123	(0.01%)
Stomach	100	(0.01%)	216	(0.01%)
Thymus	3	(<0.01%)	10	(<0.01%)
Thyroid	105	(0.02%)	400	(0.02%)
Tongue, part of (other/unspecified)	15	(<0.01%)	75	(<0.01%)
Tonsil	2	(<0.01%)	20	(<0.01%)
Trachea	1	(<0.01%)	0	(0.00%)
Ureter	19	(<0.01%)	70	(<0.01%)
Urinary organs (other/unspecified)	11	(<0.01%)	25	(<0.01%)
Uterus, not otherwise specified[3]	33	(0.01%)	101	(0.01%)
Other/unknown site of cancer	140	(0.02%)	437	(0.02%)
Other/unknown cancers reported on death form	94	(0.01%)	371	(0.02%)

[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS.
[2] The SRC Super Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.
[3] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial and uterine cancer.

Table 3.7
Verified Outcomes (Annualized Percentages)[1] by Age at Diagnosis for CT and OS Participants

Data as of: February 28, 2020; Events Between January 1, 2000 and December 31, 2018 or January 1, 2000 and September 30, 2010

	Age at Diagnosis							
	50-59	**60-64**	**65-69**	**70-74**	**75-79**	**80-84**	**85-89**	**90-103**
Cancer and Death Outcomes Between 1/1/2000 and 12/31/2018								
Number of participants[2]	28496	62321	91040	113155	114972	85919	47918	19014
Mean follow-up (months)	30.9	39.5	45.3	47.8	46.7	45.2	40.8	36.8
Breast cancer	359 (0.49%)	1072 (0.52%)	1908 (0.56%)	2572 (0.57%)	2549 (0.57%)	1627 (0.50%)	658 (0.40%)	167 (0.29%)
Invasive breast cancer	281 (0.38%)	862 (0.42%)	1514 (0.44%)	2134 (0.47%)	2167 (0.48%)	1414 (0.44%)	615 (0.38%)	164 (0.28%)
In situ breast cancer	80 (0.11%)	222 (0.11%)	412 (0.12%)	486 (0.11%)	446 (0.10%)	258 (0.08%)	60 (0.04%)	8 (0.01%)
Ovarian cancer	26 (0.04%)	78 (0.04%)	183 (0.05%)	248 (0.05%)	228 (0.05%)	176 (0.05%)	103 (0.06%)	29 (0.05%)
Endometrial cancer[3]	32 (0.08%)	144 (0.12%)	293 (0.14%)	364 (0.14%)	336 (0.13%)	219 (0.12%)	79 (0.08%)	24 (0.07%)
Colorectal cancer	35 (0.05%)	155 (0.08%)	337 (0.10%)	541 (0.12%)	632 (0.14%)	549 (0.17%)	354 (0.22%)	144 (0.25%)
Leukemia	6 (0.01%)	48 (0.02%)	137 (0.04%)	201 (0.04%)	242 (0.05%)	219 (0.07%)	147 (0.09%)	68 (0.12%)
Lung cancer	33 (0.04%)	177 (0.09%)	402 (0.12%)	770 (0.17%)	951 (0.21%)	779 (0.24%)	402 (0.25%)	164 (0.28%)
Non-Hodgkin's lymphoma	18 (0.02%)	76 (0.04%)	198 (0.06%)	358 (0.08%)	395 (0.09%)	333 (0.10%)	220 (0.14%)	76 (0.13%)
Melanoma of the skin	49 (0.07%)	164 (0.08%)	320 (0.09%)	507 (0.11%)	590 (0.13%)	393 (0.12%)	226 (0.14%)	66 (0.11%)
Pancreas cancer	10 (0.01%)	44 (0.02%)	103 (0.03%)	193 (0.04%)	277 (0.06%)	290 (0.09%)	192 (0.12%)	77 (0.13%)
Total cancer	644 (0.88%)	2185 (1.06%)	4249 (1.24%)	6331 (1.40%)	6728 (1.50%)	5017 (1.55%)	2559 (1.57%)	874 (1.50%)
Total death[4]	221 (0.30%)	999 (0.49%)	2450 (0.71%)	5378 (1.19%)	9685 (2.16%)	13826 (4.27%)	15477 (9.51%)	13147 (22.55%)
Cardiovascular Outcomes Between 1/1/2000 and 9/30/2010								
Number of participants[2]	22435	50703	75664	80683	65949	40705	15580	2664
Mean follow-up (months)	31.1	41.6	41.9	40.6	40.8	38.3	31.0	17.6
CHD[5]	35 (0.06%)	131 (0.07%)	307 (0.12%)	396 (0.14%)	458 (0.20%)	379 (0.29%)	166 (0.41%)	28 (0.72%)
Clinical MI	25 (0.04%)	97 (0.06%)	231 (0.09%)	298 (0.11%)	326 (0.15%)	248 (0.19%)	95 (0.24%)	11 (0.28%)
CABG/PTCA	48 (0.08%)	178 (0.10%)	395 (0.15%)	479 (0.18%)	465 (0.21%)	288 (0.22%)	58 (0.14%)	0 (0.00%)
Stroke	26 (0.04%)	100 (0.06%)	191 (0.07%)	303 (0.11%)	364 (0.16%)	315 (0.24%)	124 (0.31%)	22 (0.56%)
Total cardiovascular[6]	157 (0.27%)	493 (0.28%)	980 (0.37%)	1252 (0.46%)	1342 (0.60%)	999 (0.77%)	344 (0.86%)	58 (1.48%)

[1] Annualized percentages 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 cancer.
[4] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.
[5] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the OS or in the WHI Extension Study 2005-2010.
[6] Total cardiovascular disease includes CHD, angina, CABG/PTCA, carotid artery disease, CHF, stroke, PVD and CVD death. Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010.

Table 3.8
Verified Primary and Other Cancers (Annualized Percentages): CT and OS Participants

Data as of: February 28, 2020; Events through February 28, 2020

	CT		OS		Total	
Number of participants	68132		93676		161808	
Mean follow-up (months)	202.7		187.9		194.1	
Overall cancer	15006	(1.30%)	20008	(1.36%)	35014	(1.34%)
Primary cancer						
Breast cancer	5690	(0.49%)	7958	(0.54%)	13648	(0.52%)
Invasive breast cancer	4717	(0.41%)	6691	(0.46%)	11408	(0.44%)
In situ breast cancer	1080	(0.09%)	1386	(0.09%)	2466	(0.09%)
Ovarian cancer	529	(0.05%)	776	(0.05%)	1305	(0.05%)
Endometrial cancer[1]	782	(0.12%)	1070	(0.12%)	1852	(0.12%)
Colorectal cancer	1566	(0.14%)	1851	(0.13%)	3417	(0.13%)
Other cancer						
Accessory sinus	5	(<0.01%)	9	(<0.01%)	14	(<0.01%)
Adrenal gland	7	(<0.01%)	10	(<0.01%)	17	(<0.01%)
Anus	56	(<0.01%)	75	(0.01%)	131	(0.01%)
Appendix	23	(<0.01%)	24	(<0.01%)	47	(<0.01%)
Base of tongue	17	(<0.01%)	18	(<0.01%)	35	(<0.01%)
Biliary tract, parts of (other/unspecified)	99	(0.01%)	98	(0.01%)	197	(0.01%)
Bladder	491	(0.04%)	576	(0.04%)	1067	(0.04%)
Bones/joints/articular cartilage (limbs)	6	(<0.01%)	7	(<0.01%)	13	(<0.01%)
Bones/joints/articular cartilage (other)	15	(<0.01%)	15	(<0.01%)	30	(<0.01%)
Brain	172	(0.01%)	214	(0.01%)	386	(0.01%)
Cervix	65	(0.01%)	67	(<0.01%)	132	(0.01%)
Central Nervous System (excludes brain)	1	(<0.01%)	4	(<0.01%)	5	(<0.01%)
Connective/subcutaneous/soft tissues	91	(0.01%)	107	(0.01%)	198	(0.01%)
Endocrine glands, related structures	1	(<0.01%)	3	(<0.01%)	4	(<0.01%)
Esophagus	87	(0.01%)	101	(0.01%)	188	(0.01%)
Eye and adnexa	48	(<0.01%)	35	(<0.01%)	83	(<0.01%)
Floor of mouth	10	(<0.01%)	8	(<0.01%)	18	(<0.01%)
Gallbladder	83	(0.01%)	63	(<0.01%)	146	(0.01%)
Genital organs	159	(0.01%)	227	(0.02%)	386	(0.01%)
Gum	21	(<0.01%)	26	(<0.01%)	47	(<0.01%)
Heart	9	(<0.01%)	28	(<0.01%)	37	(<0.01%)
Kidney	364	(0.03%)	405	(0.03%)	769	(0.03%)
Larynx	28	(<0.01%)	27	(<0.01%)	55	(<0.01%)
Leukemia	515	(0.04%)	659	(0.04%)	1174	(0.04%)
Liver	145	(0.01%)	198	(0.01%)	343	(0.01%)
Lung	1837	(0.16%)	2430	(0.17%)	4267	(0.16%)
Lymph nodes	2	(<0.01%)	1	(<0.01%)	3	(<0.01%)
Lymphoma, Hodgkins	30	(<0.01%)	50	(<0.01%)	80	(<0.01%)
Lymphoma, non-Hodgkins	784	(0.07%)	1097	(0.07%)	1881	(0.07%)
Melanoma of the skin	1145	(0.10%)	1522	(0.10%)	2667	(0.10%)
Meninges	3	(<0.01%)	4	(<0.01%)	7	(<0.01%)
Multiple myeloma	294	(0.03%)	368	(0.03%)	662	(0.03%)
Mycosis fungoides	10	(<0.01%)	17	(<0.01%)	27	(<0.01%)
Nasal cavity mid ear	7	(<0.01%)	13	(<0.01%)	20	(<0.01%)
Oral (mouth)	22	(<0.01%)	21	(<0.01%)	43	(<0.01%)
Other digestive cancer	29	(<0.01%)	30	(<0.01%)	59	(<0.01%)
Other lip	7	(<0.01%)	8	(<0.01%)	15	(<0.01%)
Palate	13	(<0.01%)	21	(<0.01%)	34	(<0.01%)

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

Table 3.8 (continued)
Verified Primary and Other Cancers (Annualized Percentages): MRC and SRC Super Cohort Participants

Data as of: February 28, 2020; Events through February 28, 2020

	CT		OS		Total	
Number of participants	68132		93676		161808	
Mean follow-up (months)	202.7		187.9		194.1	
Pancreas	584	(0.05%)	727	(0.05%)	1311	(0.05%)
Parotid gland (Stensen's duct)	27	(<0.01%)	39	(<0.01%)	66	(<0.01%)
Peripheral nerves and autonomic nervous	1	(<0.01%)	1	(<0.01%)	2	(<0.01%)
Peritoneum	93	(0.01%)	135	(0.01%)	228	(0.01%)
Pharynx	13	(<0.01%)	16	(<0.01%)	29	(<0.01%)
Pyriform sinus	0	(0.00%)	2	(<0.01%)	2	(<0.01%)
Renal pelvis	60	(0.01%)	71	(<0.01%)	131	(0.01%)
Respiratory system, intrathoracic, other	1	(<0.01%)	2	(<0.01%)	3	(<0.01%)
Salivary glands, major (other/unspecified)	5	(<0.01%)	13	(<0.01%)	18	(<0.01%)
Small intestine	56	(<0.01%)	108	(0.01%)	164	(0.01%)
Stomach	133	(0.01%)	183	(0.01%)	316	(0.01%)
Thymus	7	(<0.01%)	6	(<0.01%)	13	(<0.01%)
Thyroid	216	(0.02%)	289	(0.02%)	505	(0.02%)
Tongue, part of (other/unspecified)	43	(<0.01%)	47	(<0.01%)	90	(<0.01%)
Tonsil	9	(<0.01%)	13	(<0.01%)	22	(<0.01%)
Trachea	0	(0.00%)	1	(<0.01%)	1	(<0.01%)
Ureter	44	(<0.01%)	45	(<0.01%)	89	(<0.01%)
Urinary organs (other/unspecified)	16	(<0.01%)	20	(<0.01%)	36	(<0.01%)
Uterus, not otherwise specified[1]	60	(0.01%)	74	(0.01%)	134	(0.01%)
Other/unknown site of cancer	256	(0.02%)	321	(0.02%)	577	(0.02%)
Other/unknown cancers reported on death form	156	(0.01%)	309	(0.02%)	465	(0.02%)

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

Table 3.9
Verified Primary and Other Cancers (Annualized Percentages) by Race/Ethnicity for CT and OS Participants
Data as of: February 28, 2020; Events through February 28, 2020

	Race/Ethnicity											
	American Indian/Alaskan Native		Asian/Pacific Islander		Non-Hispanic Black/African American		Hispanic/ Latina		Non-Hispanic White		Unknown	
Number of participants	713		4190		14618		6484		133541		2262	
Mean follow-up (months)	166.9		171.4		166.7		157.4		200.1		176.3	
Overall cancer	110	(1.11%)	617	(1.03%)	2322	(1.14%)	763	(0.90%)	30782	(1.38%)	420	(1.26%)
Primary cancer												
Breast cancer	41	(0.41%)	284	(0.47%)	954	(0.47%)	314	(0.37%)	11899	(0.53%)	156	(0.47%)
Invasive breast cancer	34	(0.34%)	234	(0.39%)	772	(0.38%)	257	(0.30%)	9982	(0.45%)	129	(0.39%)
In situ breast cancer	8	(0.08%)	54	(0.09%)	204	(0.10%)	64	(0.08%)	2105	(0.09%)	31	(0.09%)
Ovarian cancer	3	(0.03%)	17	(0.03%)	77	(0.04%)	37	(0.04%)	1156	(0.05%)	15	(0.05%)
Endometrial cancer[1]	2	(0.04%)	26	(0.07%)	91	(0.10%)	29	(0.06%)	1677	(0.12%)	27	(0.14%)
Colorectal cancer	12	(0.12%)	64	(0.11%)	299	(0.15%)	79	(0.09%)	2918	(0.13%)	45	(0.14%)
Other cancer												
Accessory sinus	0	(0.00%)	0	(0.00%)	1	(<0.01%)	0	(0.00%)	13	(<0.01%)	0	(0.00%)
Adrenal gland	0	(0.00%)	0	(0.00%)	2	(<0.01%)	1	(<0.01%)	14	(<0.01%)	0	(0.00%)
Anus	1	(0.01%)	2	(<0.01%)	9	(<0.01%)	6	(0.01%)	112	(0.01%)	1	(<0.01%)
Appendix	0	(0.00%)	0	(0.00%)	4	(<0.01%)	3	(<0.01%)	39	(<0.01%)	1	(<0.01%)
Base of Tongue	0	(0.00%)	0	(0.00%)	0	(0.00%)	1	(<0.01%)	34	(<0.01%)	0	(0.00%)
Biliary tract, parts of (other/unspecified)	2	(0.02%)	2	(<0.01%)	14	(0.01%)	12	(0.01%)	165	(0.01%)	2	(0.01%)
Bladder	2	(0.02%)	10	(0.02%)	59	(0.03%)	14	(0.02%)	974	(0.04%)	8	(0.02%)
Bones/joints/articular cartilage (limbs)	0	(0.00%)	1	(<0.01%)	0	(0.00%)	0	(0.00%)	11	(<0.01%)	1	(<0.01%)
Bones/joints/articular cartilage (other)	0	(0.00%)	0	(0.00%)	2	(<0.01%)	1	(<0.01%)	26	(<0.01%)	1	(<0.01%)
Brain	1	(0.01%)	4	(0.01%)	14	(0.01%)	5	(0.01%)	359	(0.02%)	3	(0.01%)
Cervix	0	(0.00%)	2	(<0.01%)	20	(0.01%)	5	(0.01%)	102	(<0.01%)	3	(0.01%)
Central Nervous System (excludes brain)	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	5	(<0.01%)	0	(0.00%)
Connective/subcutaneous/soft tissues	0	(0.00%)	5	(0.01%)	9	(<0.01%)	4	(<0.01%)	179	(0.01%)	1	(<0.01%)
Endocrine glands, related structures	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	4	(<0.01%)	0	(0.00%)
Esophagus	1	(0.01%)	0	(0.00%)	9	(<0.01%)	2	(<0.01%)	173	(0.01%)	3	(0.01%)
Eye and adnexa	0	(0.00%)	0	(0.00%)	0	(0.00%)	3	(<0.01%)	79	(<0.01%)	1	(<0.01%)
Floor of mouth	0	(0.00%)	1	(<0.01%)	2	(<0.01%)	0	(0.00%)	14	(<0.01%)	1	(<0.01%)
Gallbladder	0	(0.00%)	1	(<0.01%)	12	(0.01%)	8	(0.01%)	125	(0.01%)	0	(0.00%)
Genital organs	1	(0.01%)	4	(0.01%)	17	(0.01%)	16	(0.02%)	344	(0.02%)	4	(0.01%)
Gum	0	(0.00%)	1	(<0.01%)	2	(<0.01%)	1	(<0.01%)	43	(<0.01%)	0	(0.00%)
Heart	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	37	(<0.01%)	0	(0.00%)
Kidney	7	(0.07%)	15	(0.03%)	59	(0.03%)	21	(0.02%)	656	(0.03%)	11	(0.03%)

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

Table 3.9 (continued)
Verified Primary and Other Cancers (Annualized Percentages) by Race/Ethnicity: CT and OS Participants

Data as of: February 28, 2020; Events through February 28, 2020

	Race/Ethnicity											
	American Indian/Alaskan Native		Asian/Pacific Islander		Non-Hispanic Black/African American		Hispanic/ Latina		Non-Hispanic White		Unknown	
Number of participants	713		4190		14618		6484		133541		2262	
Mean follow-up (months)	166.9		171.4		166.7		157.4		200.1		176.3	
Larynx	0	(0.00%)	0	(0.00%)	6	(<0.01%)	0	(0.00%)	49	(<0.01%)	0	(0.00%)
Leukemia	0	(0.00%)	18	(0.03%)	68	(0.03%)	16	(0.02%)	1062	(0.05%)	10	(0.03%)
Liver	3	(0.03%)	16	(0.03%)	28	(0.01%)	20	(0.02%)	269	(0.01%)	7	(0.02%)
Lung	16	(0.16%)	62	(0.10%)	290	(0.14%)	63	(0.07%)	3772	(0.17%)	64	(0.19%)
Lymph nodes	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	3	(<0.01%)	0	(0.00%)
Lymphoma, Hodgkins	0	(0.00%)	1	(<0.01%)	4	(<0.01%)	6	(0.01%)	68	(<0.01%)	1	(<0.01%)
Lymphoma, non-Hodgkins	5	(0.05%)	35	(0.06%)	71	(0.03%)	50	(0.06%)	1695	(0.08%)	25	(0.08%)
Melanoma of the skin	4	(0.04%)	7	(0.01%)	8	(<0.01%)	16	(0.02%)	2612	(0.12%)	20	(0.06%)
Meninges	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	6	(<0.01%)	1	(<0.01%)
Multiple myeloma	3	(0.03%)	1	(<0.01%)	90	(0.04%)	21	(0.02%)	540	(0.02%)	7	(0.02%)
Mycosis fungoides	0	(0.00%)	0	(0.00%)	3	(<0.01%)	0	(0.00%)	24	(<0.01%)	0	(0.00%)
Nasal cavity mid ear	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	20	(<0.01%)	0	(0.00%)
Oral (mouth)	0	(0.00%)	0	(0.00%)	3	(<0.01%)	1	(<0.01%)	39	(<0.01%)	0	(0.00%)
Other digestive cancer	0	(0.00%)	0	(0.00%)	4	(<0.01%)	0	(0.00%)	55	(<0.01%)	0	(0.00%)
Other lip	0	(0.00%)	0	(0.00%)	1	(<0.01%)	0	(0.00%)	14	(<0.01%)	0	(0.00%)
Palate	0	(0.00%)	1	(<0.01%)	1	(<0.01%)	0	(0.00%)	32	(<0.01%)	0	(0.00%)
Pancreas	4	(0.04%)	38	(0.06%)	108	(0.05%)	33	(0.04%)	1110	(0.05%)	18	(0.05%)
Parotid gland (Stensen's duct)	0	(0.00%)	2	(<0.01%)	8	(<0.01%)	1	(<0.01%)	55	(<0.01%)	0	(0.00%)
Peripheral nerves and autonomic nervous system	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	2	(<0.01%)	0	(0.00%)
Peritoneum	1	(0.01%)	3	(0.01%)	14	(0.01%)	7	(0.01%)	200	(0.01%)	3	(0.01%)
Pharynx	0	(0.00%)	0	(0.00%)	3	(<0.01%)	0	(0.00%)	26	(<0.01%)	0	(0.00%)
Pyriform sinus	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	2	(<0.01%)	0	(0.00%)
Renal Pelvis	1	(0.01%)	2	(<0.01%)	9	(<0.01%)	1	(<0.01%)	116	(0.01%)	2	(0.01%)
Respiratory system, intrathoracic, other	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	3	(<0.01%)	0	(0.00%)
Salivary glands, major (other/ unspecified)	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	18	(<0.01%)	0	(0.00%)
Small intestine	1	(0.01%)	3	(0.01%)	13	(0.01%)	6	(0.01%)	140	(0.01%)	1	(<0.01%)
Stomach	1	(0.01%)	17	(0.03%)	44	(0.02%)	8	(0.01%)	241	(0.01%)	5	(0.02%)
Thymus	0	(0.00%)	1	(<0.01%)	0	(0.00%)	0	(0.00%)	12	(<0.01%)	0	(0.00%)
Thyroid	2	(0.02%)	10	(0.02%)	35	(0.02%)	10	(0.01%)	441	(0.02%)	7	(0.02%)
Tongue, part of (other/unspecified)	0	(0.00%)	2	(<0.01%)	2	(<0.01%)	0	(0.00%)	84	(<0.01%)	2	(0.01%)

Table 3.9 (continued)
Verified Primary and Other Cancers (Annualized Percentages) by Race/Ethnicity: CT and OS Participants

Data as of: February 28, 2020; Events through February 28, 2020

	Race/Ethnicity					
	American Indian/Alaskan Native	Asian/Pacific Islander	Non-Hispanic Black/African American	Hispanic/ Latina	Non-Hispanic White	Unknown
Number of participants	713	4190	14618	6484	133541	2262
Mean follow-up (months)	166.9	171.4	166.7	157.4	200.1	176.3
Tonsil	1 (0.01%)	0 (0.00%)	1 (<0.01%)	0 (0.00%)	20 (<0.01%)	0 (0.00%)
Trachea	0 (0.00%)	0 (0.00%)	1 (<0.01%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Ureter	1 (0.01%)	3 (0.01%)	1 (<0.01%)	1 (<0.01%)	82 (<0.01%)	1 (<0.01%)
Urinary organs (other/unspecified)	1 (0.01%)	1 (<0.01%)	4 (<0.01%)	1 (<0.01%)	29 (<0.01%)	0 (0.00%)
Uterus, not otherwise specified[1]	0 (0.00%)	3 (0.01%)	15 (0.02%)	4 (0.01%)	108 (0.01%)	4 (0.02%)
Other/unknown site of cancer	2 (0.02%)	10 (0.02%)	39 (0.02%)	13 (0.02%)	505 (0.02%)	8 (0.02%)
Other/unknown cancers reported on death form	3 (0.03%)	8 (0.01%)	39 (0.02%)	12 (0.01%)	395 (0.02%)	8 (0.02%)

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

Table 4.1
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for MRC Super Cohort Participants[1] Who Did Not Report a Prevalent Condition at Baseline

Data as of: February 28, 2020; Events through February 28, 2020

Outcome	Total	Age at Enrollment 50-54	55-59	60-69	70-79
Number of participants	44174	6788	9352	19418	8616
Mean follow-up (months)	181.5	194.8	195.5	182.6	153.3
Angina (hospitalized)[2]	3482 (0.55%)	436 (0.41%)	653 (0.45%)	1680 (0.60%)	713 (0.71%)
Diabetes (treated)	7955 (1.27%)	1405 (1.33%)	1819 (1.27%)	3598 (1.30%)	1133 (1.10%)
Hysterectomy	1902 (0.50%)	303 (0.51%)	480 (0.52%)	852 (0.50%)	267 (0.43%)
Osteoarthritis[3]	13811 (3.31%)	2393 (2.91%)	3221 (3.09%)	6031 (3.45%)	2166 (3.88%)
Intestinal polyps	10745 (1.73%)	1790 (1.69%)	2556 (1.77%)	4871 (1.78%)	1528 (1.57%)
Lupus	811 (0.12%)	132 (0.12%)	181 (0.12%)	370 (0.13%)	128 (0.12%)
Hypertension treated w/pills	16540 (3.65%)	2722 (3.21%)	3701 (3.37%)	7230 (3.77%)	2887 (4.35%)
COPD[4]	2633 (0.81%)	370 (0.67%)	627 (0.85%)	1307 (0.93%)	329 (0.65%)
Macular degeneration[5]	5099 (1.06%)	444 (0.54%)	891 (0.80%)	2563 (1.21%)	1201 (1.61%)
Dementia[5]	4644 (0.97%)	271 (0.33%)	587 (0.53%)	2364 (1.12%)	1422 (1.91%)
Parkinson's disease[5]	618 (0.13%)	61 (0.07%)	127 (0.11%)	320 (0.15%)	110 (0.15%)

Outcomes	Race/Ethnicity American Indian/Alaskan Native	Asian/Pacific Islander	Non-Hispanic Black/African American	Hispanic/ Latina	Non-Hispanic White	Unknown
Number of participants	130	527	14618	6484	22030	385
Mean follow-up (months)	172.5	175.5	166.2	157.0	199.0	182.6
Angina (hospitalized)[2]	16 (0.93%)	23 (0.32%)	1065 (0.57%)	352 (0.43%)	1989 (0.57%)	37 (0.66%)
Diabetes (treated)	25 (1.50%)	95 (1.31%)	2943 (1.62%)	1150 (1.44%)	3663 (1.04%)	79 (1.45%)
Hysterectomy	4 (0.53%)	12 (0.22%)	445 (0.49%)	284 (0.60%)	1140 (0.48%)	17 (0.46%)
Osteoarthritis[3]	48 (3.75%)	181 (3.26%)	4112 (3.42%)	2067 (3.65%)	7273 (3.17%)	130 (3.38%)
Intestinal polyps	33 (1.90%)	111 (1.61%)	3575 (1.91%)	1328 (1.66%)	5612 (1.65%)	86 (1.61%)
Lupus	3 (0.16%)	6 (0.08%)	294 (0.15%)	131 (0.16%)	372 (0.10%)	5 (0.09%)
Hypertension treated w/pills	58 (4.29%)	192 (3.53%)	4437 (4.30%)	2372 (3.67%)	9343 (3.41%)	138 (3.39%)
COPD[4]	10 (1.20%)	16 (0.40%)	667 (0.62%)	245 (0.49%)	1673 (1.05%)	22 (0.80%)
Macular degeneration[5]	15 (1.07%)	44 (0.83%)	941 (0.60%)	523 (0.74%)	3533 (1.46%)	43 (1.03%)
Dementia[5]	12 (0.85%)	45 (0.85%)	1125 (0.72%)	463 (0.66%)	2967 (1.23%)	32 (0.77%)
Parkinson's disease[5]	2 (0.14%)	8 (0.15%)	152 (0.10%)	65 (0.09%)	386 (0.16%)	5 (0.12%)

[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS.
[2] During WHI Extension Study 2005-2010, the outcome was angina with hospitalization for a heart condition that may or may not have been related to the angina.
[3] This outcome has not been self-reported on all versions of Form 33 during WHI follow-up. The annualized percentages are corrected for the different amounts of follow-up.
[4] Data only collected during the WHI Extension Study 2010-2020.
[5] Data only collected during the WHI Extension Studies 2005-2020.

Table 4.2
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for SRC Super Cohort Participants[1] Who Did Not Report a Prevalent Condition at Baseline

Data as of: February 28, 2020; Events through February 28, 2020

		Age at Enrollment			
Outcome	**Total**	**50-54**	**55-59**	**60-69**	**70-79**
Number of participants	117634	14781	22638	53171	27044
Mean follow-up (months)	198.6	229.2	223.4	200.2	157.8
DVT	4361 (0.23%)	392 (0.14%)	723 (0.18%)	2160 (0.25%)	1086 (0.32%)
Pulmonary embolism[2]	2699 (0.14%)	255 (0.09%)	489 (0.12%)	1365 (0.16%)	590 (0.17%)
Angina (hospitalized)[3]	9051 (0.49%)	815 (0.29%)	1547 (0.38%)	4557 (0.54%)	2132 (0.65%)
Diabetes (treated)	16923 (0.89%)	2348 (0.84%)	3591 (0.87%)	7987 (0.93%)	2997 (0.87%)
Hysterectomy	6961 (0.60%)	1099 (0.63%)	1702 (0.63%)	3165 (0.61%)	995 (0.50%)
Osteoarthritis[4]	38251 (3.30%)	5934 (2.88%)	8707 (3.10%)	17126 (3.43%)	6484 (3.79%)
Intestinal polyps	30337 (1.71%)	4747 (1.75%)	7113 (1.79%)	13721 (1.71%)	4756 (1.54%)
Lupus	1946 (0.10%)	252 (0.09%)	406 (0.10%)	900 (0.10%)	388 (0.11%)
Hypertension treated w/pills	45553 (3.14%)	5855 (2.43%)	9350 (2.75%)	21053 (3.29%)	9295 (4.02%)
COPD[5]	7700 (0.88%)	935 (0.76%)	1643 (0.90%)	4049 (1.03%)	1073 (0.68%)
Macular degeneration[6]	17873 (1.31%)	1335 (0.68%)	2725 (0.94%)	9207 (1.49%)	4606 (1.89%)
Dementia[6]	13129 (0.96%)	563 (0.29%)	1479 (0.51%)	6874 (1.11%)	4213 (1.73%)
Parkinson's disease[6]	2281 (0.17%)	168 (0.09%)	414 (0.14%)	1272 (0.21%)	427 (0.18%)

	Race/Ethnicity			
Outcomes	**American Indian/ Alaskan Native**	**Asian/Pacific Islander**	**Non-Hispanic White**	**Unknown**
Number of participants	583	3663	111511	1877
Mean follow-up (months)	165.2	170.1	200.1	174.6
DVT	11 (0.15%)	40 (0.08%)	4251 (0.24%)	59 (0.22%)
Pulmonary embolism[2]	10 (0.13%)	21 (0.04%)	2642 (0.14%)	26 (0.10%)
Angina (hospitalized)[3]	46 (0.63%)	139 (0.28%)	8737 (0.49%)	129 (0.49%)
Diabetes (treated)	109 (1.51%)	569 (1.15%)	15942 (0.88%)	303 (1.16%)
Hysterectomy	18 (0.47%)	123 (0.36%)	6729 (0.61%)	91 (0.56%)
Osteoarthritis[4]	152 (3.41%)	1186 (3.18%)	36313 (3.31%)	600 (3.55%)
Intestinal polyps	126 (1.72%)	775 (1.65%)	29001 (1.71%)	435 (1.76%)
Lupus	16 (0.20%)	41 (0.08%)	1856 (0.10%)	33 (0.12%)
Hypertension treated w/pills	190 (3.61%)	1212 (3.30%)	43470 (3.13%)	681 (3.50%)
COPD[5]	35 (0.83%)	108 (0.38%)	7463 (0.90%)	94 (0.68%)
Macular degeneration[6]	55 (0.84%)	272 (0.63%)	17346 (1.34%)	200 (0.96%)
Dementia[6]	51 (0.78%)	238 (0.56%)	12651 (0.98%)	189 (0.90%)
Parkinson's disease[6]	7 (0.11%)	41 (0.10%)	2195 (0.17%)	38 (0.18%)

[1] The SRC Super Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.
[2] During the main WHI Study and the WHI Extension Study 2005-2010, pulmonary embolism includes only inpatient self-reports. During WHI Extension Study 2010-2020, pulmonary embolism includes both inpatient and outpatient self-reports.
[3] During WHI Extension Study 2005-2010, the outcome was angina with hospitalization for a heart condition that may or may not have been related to the angina.
[4] This outcome has not been self-reported on all versions of Form 33 during WHI follow-up. The annualized percentages are corrected for the different amounts of follow-up.
[5] Data only collected during the WHI Extension Study 2010-2020.
[6] Data only collected during the WHI Extension Studies 2005-2020.

Table 4.3
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for CT Participants Who Did Not Report a Prevalent Condition at Baseline

Data as of: February 28, 2020; Events through February 28, 2020

Outcome	Total	Age at Enrollment 50-54	55-59	60-69	70-79
Number randomized	68132	9188	14661	31389	12894
Mean follow-up (months)	202.7	224.6	220.6	203.1	165.9
Hospitalizations					
Ever	51881 (4.51%)	5868 (3.41%)	10315 (3.83%)	24866 (4.68%)	10832 (6.08%)
Two or more	39733 (3.45%)	4045 (2.35%)	7539 (2.80%)	19499 (3.67%)	8650 (4.85%)
Other					
DVT	2946 (0.26%)	255 (0.15%)	555 (0.21%)	1457 (0.28%)	679 (0.39%)
Pulmonary embolism[1]	1768 (0.15%)	171 (0.10%)	344 (0.13%)	902 (0.17%)	351 (0.20%)
Angina (hospitalized)[2]	5879 (0.53%)	599 (0.35%)	1099 (0.42%)	2985 (0.59%)	1196 (0.73%)
Diabetes (treated)	11975 (1.08%)	1843 (1.10%)	2742 (1.05%)	5649 (1.11%)	1741 (1.02%)
Gallbladder disease[3,4]	5248 (1.15%)	746 (1.07%)	1195 (1.15%)	2463 (1.21%)	844 (1.05%)
Hysterectomy	3766 (0.55%)	579 (0.58%)	976 (0.58%)	1738 (0.56%)	473 (0.47%)
Glaucoma[4]	7565 (1.78%)	744 (1.19%)	1457 (1.53%)	3662 (1.92%)	1702 (2.24%)
Osteoporosis[4]	14697 (3.53%)	1451 (2.32%)	2635 (2.80%)	7142 (3.83%)	3469 (4.72%)
Osteoarthritis[5]	23689 (3.30%)	3824 (2.95%)	5779 (3.10%)	10704 (3.44%)	3382 (3.79%)
Rheumatoid arthritis[4]	4010 (0.76%)	538 (0.70%)	866 (0.74%)	1822 (0.77%)	784 (0.84%)
Intestinal polyps	18478 (1.73%)	2910 (1.75%)	4577 (1.79%)	8564 (1.75%)	2427 (1.54%)
Lupus	1165 (0.10%)	158 (0.09%)	277 (0.10%)	549 (0.10%)	181 (0.10%)
Kidney stones[4,5]	1877 (0.50%)	241 (0.46%)	379 (0.47%)	898 (0.53%)	359 (0.51%)
Cataracts[4,5]	21571 (6.44%)	1468 (2.79%)	3731 (4.62%)	11650 (7.63%)	4722 (9.66%)
Hypertension treated w/pills	27685 (3.34%)	3883 (2.77%)	6291 (3.03%)	12883 (3.50%)	4628 (4.14%)
COPD[6]	4729 (0.93%)	573 (0.76%)	1099 (0.93%)	2500 (1.08%)	557 (0.73%)
Macular degeneration[7]	10045 (1.30%)	755 (0.65%)	1730 (0.95%)	5306 (1.50%)	2254 (1.98%)
Dementia[7]	7959 (1.03%)	392 (0.34%)	995 (0.55%)	4235 (1.20%)	2337 (2.05%)
Parkinson's disease[7]	1203 (0.16%)	96 (0.08%)	263 (0.15%)	658 (0.19%)	186 (0.16%)

[1] During the main WHI Study and the WHI Extension Study 2005-2010, pulmonary embolism includes only inpatient self-reports. During WHI Extension Study 2010-2020, pulmonary embolism includes both inpatient and outpatient self-reports.
[2] During WHI Extension Study 2005-2010, the outcome was angina with hospitalization for a heart condition that may or may not have been related to the angina.
[3] "Gallbladder disease" includes self-reports of both hospitalized and non-hospitalized events.
[4] Data not collected for the WHI Extension Studies 2005-2020.
[5] These outcomes have not been self-reported on all versions of Form 33 during WHI follow-up. The annualized percentages are corrected for the different amounts of follow-up.
[6] Data only collected during the WHI Extension Study 2010-2020.
[7] Data only collected during the WHI Extension Studies 2005-2020.

Table 4.3 (continued)
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for CT Participants Who Did Not Report a Prevalent Condition at Baseline

Data as of: February 28, 2020; Events through February 28, 2020

	Race/Ethnicity					
Outcomes	**American Indian/ Alaskan Native**	**Asian/Pacific Islander**	**Non-Hispanic Black /African American**	**Hispanic/ Latina**	**Non-Hispanic White**	**Unknown**
Number randomized	292	1519	6983	2875	55525	938
Mean follow-up (months)	180.3	193.9	184.1	171.1	207.3	186.5
Hospitalizations						
Ever	206 (4.70%)	909 (3.70%)	4922 (4.60%)	1684 (4.09%)	43490 (4.53%)	670 (4.59%)
Two or more	159 (3.62%)	574 (2.34%)	3552 (3.32%)	1089 (2.65%)	33881 (3.53%)	478 (3.28%)
Other						
DVT	10 (0.24%)	22 (0.09%)	309 (0.30%)	67 (0.17%)	2509 (0.27%)	29 (0.20%)
Pulmonary embolism[1]	7 (0.16%)	9 (0.04%)	170 (0.16%)	26 (0.06%)	1538 (0.16%)	18 (0.12%)
Angina (hospitalized)[2]	26 (0.65%)	64 (0.27%)	600 (0.60%)	187 (0.47%)	4921 (0.53%)	81 (0.58%)
Diabetes (treated)	53 (1.32%)	309 (1.33%)	1614 (1.68%)	601 (1.55%)	9217 (0.99%)	181 (1.31%)
Gallbladder disease[3,4]	22 (1.31%)	86 (0.81%)	420 (0.85%)	243 (1.45%)	4403 (1.18%)	74 (1.20%)
Hysterectomy	9 (0.47%)	53 (0.33%)	262 (0.56%)	133 (0.57%)	3273 (0.56%)	36 (0.42%)
Glaucoma[4]	40 (2.23%)	153 (1.68%)	1005 (2.38%)	338 (1.91%)	5930 (1.70%)	99 (1.80%)
Osteoporosis[4]	66 (3.67%)	389 (4.32%)	909 (2.08%)	639 (3.75%)	12485 (3.67%)	209 (3.82%)
Osteoarthritis[5]	101 (3.75%)	553 (3.08%)	2171 (3.34%)	1015 (3.59%)	19516 (3.29%)	333 (3.58%)
Rheumatoid arthritis[4]	32 (1.55%)	74 (0.66%)	682 (1.33%)	357 (1.70%)	2788 (0.65%)	77 (1.13%)
Intestinal polyps	82 (2.02%)	379 (1.69%)	1930 (1.93%)	650 (1.66%)	15193 (1.70%)	244 (1.82%)
Lupus	8 (0.18%)	19 (0.08%)	148 (0.14%)	57 (0.14%)	917 (0.10%)	16 (0.11%)
Kidney stones[4,5]	15 (0.98%)	47 (0.58%)	190 (0.50%)	100 (0.64%)	1501 (0.49%)	24 (0.48%)
Cataracts[4,5]	92 (6.45%)	428 (5.88%)	2002 (5.76%)	828 (5.57%)	17928 (6.59%)	293 (6.55%)
Hypertension treated w/pills	107 (3.63%)	576 (3.39%)	2305 (4.20%)	1162 (3.74%)	23194 (3.26%)	341 (3.39%)
COPD[6]	22 (1.09%)	55 (0.46%)	359 (0.70%)	129 (0.59%)	4107 (0.99%)	57 (0.81%)
Macular degeneration[7]	35 (1.08%)	138 (0.80%)	513 (0.69%)	252 (0.84%)	9010 (1.42%)	97 (0.93%)
Dementia[7]	28 (0.86%)	127 (0.74%)	643 (0.87%)	250 (0.84%)	6825 (1.08%)	86 (0.82%)
Parkinson's disease[7]	3 (0.09%)	24 (0.14%)	70 (0.09%)	33 (0.11%)	1056 (0.17%)	17 (0.16%)

[1] During the main WHI Study and the WHI Extension Study 2005-2010, pulmonary embolism includes only inpatient self-reports. During WHI Extension Study 2010-2020, pulmonary embolism includes both inpatient and outpatient self-reports.
[2] During WHI Extension Study 2005-2010, the outcome was angina with hospitalization for a heart condition that may or may not have been related to the angina.
[3] "Gallbladder disease" includes self-reports of both hospitalized and non-hospitalized events.
[4] Data not collected for the WHI Extension Studies 2005-2020.
[5] These outcomes have not been self-reported on all versions of Form 33 during WHI follow-up. The annualized percentages are corrected for the different amounts of follow-up.
[6] Data only collected during the WHI Extension Study 2010-2020.
[7] Data only collected during the WHI Extension Studies 2005-2020.

Table 4.4
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for OS Participants Who Did Not Report a Prevalent Condition at Baseline

Data as of: February 28, 2020; Events through February 28, 2020

Outcome	Total	Age at Enrollment 50-54	55-59	60-69	70-79
Number enrolled	93676	12381	17329	41200	22766
Mean follow-up (months)	187.5	213.8	210.7	189.7	151.5
Hospitalizations					
Ever	67039 (4.58%)	7312 (3.32%)	11466 (3.77%)	30569 (4.69%)	17692 (6.16%)
Two or more	49483 (3.38%)	4933 (2.24%)	8114 (2.67%)	23126 (3.55%)	13310 (4.63%)
Other					
DVT	3148 (0.22%)	304 (0.14%)	504 (0.17%)	1513 (0.24%)	827 (0.30%)
Pulmonary embolism[1]	1931 (0.13%)	204 (0.09%)	347 (0.11%)	937 (0.15%)	443 (0.16%)
Angina (hospitalized)[2]	6654 (0.48%)	652 (0.30%)	1101 (0.37%)	3252 (0.53%)	1649 (0.62%)
Diabetes (treated)	12903 (0.91%)	1910 (0.88%)	2668 (0.90%)	5936 (0.94%)	2389 (0.86%)
Gallbladder disease[3,4]	5673 (0.95%)	834 (0.96%)	1148 (0.98%)	2543 (0.99%)	1148 (0.85%)
Hysterectomy	5097 (0.35%)	823 (0.37%)	1206 (0.40%)	2279 (0.35%)	789 (0.27%)
Glaucoma[4]	8483 (1.87%)	845 (1.33%)	1372 (1.59%)	3899 (1.99%)	2367 (2.19%)
Osteoporosis[4]	20720 (4.75%)	2100 (3.35%)	3378 (4.00%)	9524 (5.07%)	5718 (5.63%)
Osteoarthritis[5]	28373 (3.28%)	4503 (2.82%)	6149 (3.07%)	12453 (3.41%)	5268 (3.81%)
Rheumatoid arthritis[4]	4588 (0.68%)	636 (0.67%)	883 (0.68%)	1888 (0.65%)	1181 (0.76%)
Intestinal polyps	22604 (1.70%)	3627 (1.73%)	5092 (1.79%)	10028 (1.71%)	3857 (1.55%)
Lupus	1592 (0.11%)	226 (0.10%)	310 (0.10%)	721 (0.11%)	335 (0.12%)
Kidney stones[4,5]	2317 (0.57%)	292 (0.55%)	433 (0.59%)	994 (0.57%)	598 (0.60%)
Cataracts[4,5]	27103 (7.93%)	1726 (3.21%)	4088 (5.63%)	14045 (9.25%)	7244 (11.34%)
Hypertension treated w/pills	34408 (3.20%)	4694 (2.54%)	6760 (2.80%)	15400 (3.32%)	7554 (4.07%)
COPD[6]	5604 (0.81%)	732 (0.71%)	1171 (0.84%)	2856 (0.94%)	845 (0.64%)
Macular degeneration[7]	12927 (1.20%)	1024 (0.63%)	1886 (0.85%)	6464 (1.36%)	3553 (1.73%)
Dementia[7]	9814 (0.91%)	442 (0.27%)	1071 (0.48%)	5003 (1.05%)	3298 (1.61%)
Parkinson's disease[7]	1696 (0.16%)	133 (0.08%)	278 (0.13%)	934 (0.20%)	351 (0.17%)

[1] During the main WHI Study and the WHI Extension Study 2005-2010, pulmonary embolism includes only inpatient self-reports. During WHI Extension Study 2010-2020, pulmonary embolism includes both inpatient and outpatient self-reports.

[2] During WHI Extension Study 2005-2010, the outcome was angina with hospitalization for a heart condition that may or may not have been related to the angina.

[3] "Gallbladder disease" includes self-reports of both hospitalized and non-hospitalized events.

[4] Data not collected for the WHI Extension Studies 2005-2020.

[5] These outcomes have not been self-reported on all versions of Form 33. The annualized percentages are corrected for the different amounts of follow-up.

[6] Data only collected during the WHI Extension Study 2010-2020.

[7] Data only collected during the WHI Extension Studies 2005-2020.

Table 4.4 (continued)
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for OS Participants Who Did Not Report a Prevalent Condition at Baseline

Data as of: February 28, 2020; Events through February 28, 2020

	Race/Ethnicity					
Outcomes	**American Indian/ Alaskan Native**	**Asian/Pacific Islander**	**Non-Hispanic Black/African American**	**Hispanic/ Latina**	**Non-Hispanic White**	**Unknown**
Number enrolled	421	2671	7635	3609	78016	1324
Mean follow-up (months)	157.0	157.7	149.9	145.3	194.6	168.4
Hospitalizations						
Ever	282 (5.12%)	1245 (3.55%)	4690 (4.92%)	1804 (4.13%)	58161 (4.60%)	857 (4.61%)
Two or more	207 (3.76%)	722 (2.06%)	3054 (3.20%)	1103 (2.52%)	43774 (3.46%)	623 (3.35%)
Other						
DVT	9 (0.17%)	26 (0.07%)	225 (0.24%)	60 (0.14%)	2787 (0.23%)	41 (0.23%)
Pulmonary embolism[1]	7 (0.13%)	15 (0.04%)	124 (0.13%)	24 (0.06%)	1745 (0.14%)	16 (0.09%)
Angina (hospitalized)[2]	36 (0.72%)	98 (0.29%)	465 (0.53%)	165 (0.40%)	5805 (0.48%)	85 (0.48%)
Diabetes (treated)	81 (1.66%)	355 (1.06%)	1329 (1.55%)	549 (1.33%)	10388 (0.84%)	201 (1.13%)
Gallbladder disease[3,4]	31 (1.32%)	81 (0.46%)	374 (0.78%)	231 (1.19%)	4879 (0.98%)	77 (0.95%)
Hysterectomy	13 (0.24%)	82 (0.23%)	183 (0.19%)	151 (0.35%)	4596 (0.36%)	72 (0.39%)
Glaucoma[4]	45 (2.31%)	253 (1.85%)	991 (2.72%)	309 (1.79%)	6763 (1.78%)	122 (1.89%)
Osteoporosis[4]	90 (4.59%)	626 (4.78%)	1073 (2.84%)	737 (4.41%)	17871 (4.95%)	323 (5.25%)
Osteoarthritis[5]	99 (3.23%)	814 (3.26%)	1941 (3.48%)	1052 (3.69%)	24070 (3.25%)	397 (3.46%)
Rheumatoid arthritis[4]	38 (1.39%)	98 (0.53%)	662 (1.34%)	383 (1.66%)	3320 (0.59%)	87 (0.96%)
Intestinal polyps	77 (1.54%)	507 (1.61%)	1645 (1.88%)	678 (1.66%)	19420 (1.69%)	277 (1.67%)
Lupus	11 (0.20%)	28 (0.08%)	146 (0.15%)	74 (0.17%)	1311 (0.10%)	22 (0.12%)
Kidney stones[4,5]	17 (0.96%)	40 (0.32%)	263 (0.77%)	125 (0.80%)	1828 (0.55%)	44 (0.76%)
Cataracts[4,5]	102 (6.76%)	683 (6.71%)	1937 (6.61%)	894 (6.21%)	23094 (8.18%)	393 (8.19%)
Hypertension treated w/pills	141 (3.85%)	828 (3.29%)	2132 (4.42%)	1210 (3.61%)	29619 (3.11%)	478 (3.55%)
COPD[6]	23 (0.76%)	69 (0.33%)	308 (0.55%)	116 (0.42%)	5029 (0.87%)	59 (0.62%)
Macular degeneration[7]	35 (0.74%)	178 (0.57%)	428 (0.51%)	271 (0.66%)	11869 (1.32%)	146 (1.00%)
Dementia[7]	35 (0.74%)	156 (0.50%)	482 (0.58%)	213 (0.52%)	8793 (0.98%)	135 (0.92%)
Parkinson's disease[7]	6 (0.13%)	25 (0.08%)	82 (0.10%)	32 (0.08%)	1525 (0.17%)	26 (0.18%)

[1] During the main WHI Study and the WHI Extension Study 2005-2010, pulmonary embolism includes only inpatient self-reports. During WHI Extension Study 2010-2020, pulmonary embolism includes both inpatient and outpatient self-reports.
[2] During WHI Extension Study 2005-2010, the outcome was angina with hospitalization for a heart condition that may or may not have been related to the angina.
[3] "Gallbladder disease" includes self-reports of both hospitalized and non-hospitalized events.
[4] Data not collected for the WHI Extension Studies 2005-2020.
[5] These outcomes have not been self-reported on all versions of Form 33. The annualized percentages are corrected for the different amounts of follow-up.
[6] Data only collected during the WHI Extension Study 2010-2020.
[7] Data only collected during the WHI Extension Studies 2005-2020.

Table 4.5
Self Reported Fractures (Annualized Percentages): MRC and SRC Super Cohort Participants

Data as of: February 28, 2020; Events through February 28, 2020

	MRC Super Cohort[1]	SRC Super Cohort[2]
Number of participants	44174	117634
Mean follow-up (months)	181.7	198.8
Elbow	675 (0.10%)	2351 (0.12%)
Foot	1977 (0.30%)	7321 (0.38%)
Hand	631 (0.09%)	2037 (0.10%)
Hip	1817 (0.27%)	6621 (0.34%)
Knee	1095 (0.16%)	3272 (0.17%)
Lower arm	3231 (0.48%)	10582 (0.54%)
Lower leg	2420 (0.36%)	7716 (0.40%)
Pelvis	826 (0.12%)	3680 (0.19%)
Tailbone	303 (0.05%)	1214 (0.06%)
Upper arm	1979 (0.30%)	6387 (0.33%)
Upper leg	733 (0.11%)	2911 (0.15%)
Spine	2000 (0.30%)	8484 (0.44%)
Other	6997 (1.05%)	24511 (1.26%)
Any fracture	15423 (2.31%)	51711 (2.65%)

[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS.

[2] The SRC Super Cohort includes all Non-Hispanic White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.

Table 4.6
Self Reported Fractures (Annualized Percentages): CT and OS Participants

Data as of: February 28, 2020; Events through February 28, 2020

	CT		OS		Total	
Number of participants	68132		93676		161808	
Mean follow-up (months)	202.7		187.9		194.1	
Elbow	1292	(0.11%)	1734	(0.12%)	3026	(0.12%)
Foot	4065	(0.35%)	5233	(0.36%)	9298	(0.36%)
Hand	1232	(0.11%)	1436	(0.10%)	2668	(0.10%)
Hip	3583	(0.31%)	4855	(0.33%)	8438	(0.32%)
Knee	1867	(0.16%)	2500	(0.17%)	4367	(0.17%)
Lower arm	6086	(0.53%)	7727	(0.53%)	13813	(0.53%)
Lower leg	4526	(0.39%)	5610	(0.38%)	10136	(0.39%)
Pelvis	1794	(0.16%)	2712	(0.18%)	4506	(0.17%)
Tailbone	622	(0.05%)	895	(0.06%)	1517	(0.06%)
Upper arm	3788	(0.33%)	4578	(0.31%)	8366	(0.32%)
Upper leg	1534	(0.13%)	2110	(0.14%)	3644	(0.14%)
Spine	4345	(0.38%)	6139	(0.42%)	10484	(0.40%)
Other	13330	(1.16%)	18178	(1.24%)	31508	(1.20%)
Any fracture	28837	(2.51%)	38297	(2.61%)	67134	(2.56%)

Table 5.1
Agreement of the Central Adjudications with Self-Reports for Outcomes Reported in Extension Study 2010-2020

Data as of: February 28, 2020

	Participants with a self-report[1]	Closed		Confirmed		Denied – related outcome found[2]		Denied – unrelated outcome found		Denied – no outcome found	
		N	%	N	(%)[3]	N	(%)[3]	N	(%)[3]	N	(%)[3]
Cardiovascular											
Clinical MI	733	654	89%	418	(64%)	119	(18%)	3	(0%)	114	(17%)
CABG	239	217	91%	149	(69%)	40	(18%)	0	(0%)	28	(13%)
PTCA	741	680	92%	457	(67%)	91	(13%)	3	(0%)	129	(19%)
Carotid artery disease	203	185	91%	103	(56%)	47	(25%)	0	(0%)	35	(19%)
Stroke	1470	1278	87%	885	(69%)	145	(11%)	0	(0%)	248	(19%)
PVD	373	298	80%	130	(44%)	74	(25%)	2	(1%)	92	(31%)
DVT	788	671	85%	378	(56%)	117	(17%)	6	(1%)	170	(25%)
Pulmonary embolism	415	376	91%	318	(85%)	25	(7%)	3	(1%)	30	(8%)
Valvular heart disease	490	443	90%	307	(69%)	87	(20%)	0	(0%)	49	(11%)
Cancers											
Breast cancer	3454	3269	95%	3195	(98%)	6	(0%)	1	(0%)	67	(2%)
Ovarian cancer	410	370	90%	235	(64%)	91	(25%)	0	(0%)	44	(12%)
Endometrial cancer	546	511	94%	388	(76%)	95	(19%)	1	(0%)	27	(5%)
Cervical cancer	80	75	94%	17	(23%)	22	(29%)	1	(1%)	35	(47%)
Colorectal cancer	1007	915	91%	775	(85%)	67	(7%)	3	(0%)	70	(8%)
Bladder/urinary tract cancer	455	409	90%	350	(86%)	27	(7%)	0	(0%)	32	(8%)
Brain cancer	188	143	76%	54	(38%)	16	(11%)	2	(1%)	71	(50%)
Esophagus cancer	78	70	90%	43	(61%)	10	(14%)	1	(1%)	16	(23%)
Gallbladder/bile duct cancer	97	88	91%	36	(41%)	36	(41%)	0	(0%)	16	(18%)
Kidney cancer	366	326	89%	195	(60%)	69	(21%)	2	(1%)	60	(18%)
Leukemia	369	327	89%	250	(76%)	25	(8%)	2	(1%)	50	(15%)
Liver cancer	344	272	79%	59	(22%)	55	(20%)	7	(3%)	151	(56%)
Lung cancer	1447	1269	88%	1059	(83%)	60	(5%)	3	(0%)	147	(12%)
Hodgkin's lymphoma	64	53	83%	11	(21%)	31	(58%)	0	(0%)	11	(21%)
Non-Hodgkin's lymphoma	484	444	92%	380	(86%)	36	(8%)	0	(0%)	28	(6%)
Melanoma	1783	1385	78%	1074	(78%)	43	(3%)	0	(0%)	268	(19%)
Multiple myeloma	224	198	88%	171	(86%)	9	(5%)	3	(2%)	15	(8%)
Pancreas cancer	453	399	88%	331	(83%)	27	(7%)	3	(1%)	38	(10%)
Stomach cancer	171	147	86%	58	(39%)	43	(29%)	0	(0%)	46	(31%)

[1] Excludes duplicates and prior conditions.
[2] All cardiovascular outcomes are considered related, all cancers are considered related and all fractures are considered related.
[3] Percentages between parentheses are relative to "closed."

Table 5.1 (continued)
Agreement of the Central Adjudications with Self-Reports for Outcomes Reported in Extension Study 2010-2020

Data as of: February 28, 2020

	Participants with a self-report[1]	Closed		Confirmed		Denied – related outcome found[2]		Denied – unrelated outcome found		Denied – no outcome found	
		N	%	N	(%)[3]	N	(%)[3]	N	(%)[3]	N	(%)[3]
Thyroid cancer	176	160	91%	125	(78%)	5	(3%)	0	(0%)	30	(19%)
Other genital organ cancer[4]	144	122	85%	14	(11%)	85	(70%)	0	(0%)	23	(19%)
Other cancer[5]	1094	841	77%	388	(46%)	186	(22%)	6	(1%)	261	(31%)
Fractures											
Hip fracture	814	688	85%	587	(85%)	0	(0%)	7	(1%)	94	(14%)
Upper leg fracture[6]	409	344	84%	0	(0%)	155	(45%)	17	(5%)	172	(50%)

[1] Excludes duplicates and prior conditions.
[2] All cardiovascular outcomes are considered related, all cancers are considered related and all fractures are considered related.
[3] Percentages between parentheses are relative to "closed."
[4] Does not include cancer of the ovary, endometrium, or cervix.
[5] Any cancer other than those listed above, excluding non-melanoma skin cancer.
[6] Upper leg fractures are only investigated for possible occurrence of hip fracture.

Table 5.2
Agreement of the UNC Heart Failure (HF) Adjudications with Self-Reports among MRC Super Cohort Participants[1]

Data as of: February 28, 2020

	Potential Case[2]	Case Eligible for UNC[3]		Case Processed by UNC[3]		Case Confirmed[4]		Case Denied		Case Unclassifiable	
		N	%	N	(%)[5]	N	(%)[6]	N	(%)[6]	N	(%)[6]
Overall	8722	8638	99%	8384	(97%)	6737	(80%)	1212	(14%)	442	(5%)
By Self Report											
Self-reported HF	4431	4386	99%	4162	(95%)	3518	(85%)	544	(13%)	103	(2%)
No HF self-report	4291	4252	99%	4222	(99%)	3219	(76%)	668	(16%)	339	(8%)

[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Non-Hispanic Black/African American and Hispanic/Latina participants from the CT and OS.
[2] Includes all self-reported or discovered heart failure cases and a portion of self reported angina or other heart condition cases with 2 or more essential documents among MRC Super Cohort participants.
[3] Cases are eligible if they self-reported HF, or if not, were forwarded by another outcomes committee for possible HF; cases are sent to and processed by UNC when all required records have been received.
[4] Diagnosis was either definite or probable decompensated heart failure, or chronic stable heart failure.
[5] Percentages are relative to "Case Eligible for UNC".
[6] Percentages are relative to "Case Processed by UNC".

Table 5.3
Source of Outcomes Confirmed by Central Adjudication for Self-Reported Outcomes in Extension Study 2010-2020

Data as of: February 28, 2020

	Centrally confirmed	Reason for central investigation					
		Self-report same outcome		Self-report related outcome[1]		Self-report unrelated outcome[2]	
	N	N	%	N	%	N	%
Cardiovascular							
Clinical MI	800	417	52%	228	29%	155	19%
CABG	167	149	89%	14	8%	4	2%
PTCA	518	461	89%	43	8%	14	3%
Carotid artery disease	96	80	83%	10	10%	6	6%
Stroke	1002	893	89%	17	2%	92	9%
PVD	194	130	67%	53	27%	11	6%
DVT	512	388	76%	62	12%	62	12%
Pulmonary embolism	415	316	76%	50	12%	49	12%
Valvular heart disease	506	306	60%	133	26%	67	13%
Cancers							
Breast cancer	3231	3195	99%	24	1%	12	<1%
Ovarian cancer	255	235	92%	15	6%	5	2%
Endometrial cancer	426	388	91%	34	8%	4	1%
Cervical cancer	24	17	71%	6	25%	1	4%
Colorectal cancer	808	770	95%	27	3%	11	1%
Bladder/urinary tract cancer[3]	449	351	78%	92	20%	6	1%
Brain cancer	54	54	100%	0	0%	0	0%
Esophagus cancer	45	44	98%	1	2%	0	0%
Gallbladder/bile duct cancer	77	36	47%	41	53%	0	0%
Kidney cancer	207	198	96%	5	2%	4	2%
Leukemia	306	250	82%	44	14%	12	4%
Liver cancer	72	60	83%	10	14%	2	3%
Lung cancer	1124	1065	95%	36	3%	23	2%
Hodgkin's lymphoma	16	11	69%	3	19%	2	13%
Non-Hodgkin's lymphoma	532	380	71%	147	28%	5	1%
Melanoma	1092	1077	99%	14	1%	1	<1%
Multiple myeloma	196	171	87%	22	11%	3	2%
Pancreas cancer	346	332	96%	10	3%	4	1%
Stomach cancer	76	58	76%	14	18%	4	5%
Thyroid cancer	126	125	99%	1	1%	0	0%
Other genital organ cancer[4]	151	14	9%	137	91%	0	0%
Fractures							
Hip fracture	745	585	79%	142	19%	18	2%

[1] All cardiovascular outcomes are considered related, all cancers are considered related and all fractures are considered related.
[2] Includes self-report of hospitalizations.
[3] Cancers of the urinary tract include renal pelvis, ureter and urinary organs (NOS).
[4] Does not include cancers of the ovary, endometrium or cervix; includes cancers of the vulva, vagina, uterus (NOS) and genital organs (NOS).

Table 6.1
Consent Status and Participant Characteristics for Long Life Study Participants[1] by Race/Ethnicity
Data as of: September 20, 2013

	Total		Non-Hispanic White		Non-Hispanic Black/African American		Hispanic/Latina	
	N	Mean (SD) or %	N	Mean (SD) or %	N	Mean (SD) or %	N	Mean (SD) or %
Number eligible	14081		6386		5433		2262	
Phase 1: Age 72-79	9930	70.5	4821	75.5	3676	67.7	1433	63.4
Phase 2: Age 63-72	2651	18.8	404	6.3	1493	27.5	754	33.3
Phase 3: Age 64-98	1500	10.7	1161	18.2	264	4.9	75	3.3
Consented[2]	9246	65.7	4459	69.8	3246	59.7	1541	68.1
Completed visit 2012-2013[3]	7875	85.2	3910	87.7	2651	81.7	1314	85.3
LLS Participants	7875	100.0	3910	49.7	2651	33.7	1314	16.7
Blood draw	7475	94.9	3760	96.2	2440	92.0	1275	97.0
Age at visit	7875	79.2 (6.8)	3910	82.6 (5.7)	2651	76.0 (6.1)	1314	75.3 (6.0)
63-69	724	9.2	88	2.3	395	14.9	241	18.3
70-79	3050	38.7	774	19.8	1530	57.7	746	56.8
80-89	3689	46.8	2713	69.4	666	25.1	310	23.6
≥90	412	5.2	335	8.6	60	2.3	17	1.3
Education								
0-8 years	112	1.4	15	0.4	24	0.9	73	5.6
Some high school	286	3.7	96	2.5	114	4.3	76	5.8
High school diploma/GED	1288	16.5	789	20.3	300	11.4	199	15.3
School after high school	3041	38.9	1510	38.8	971	36.9	560	42.9
College degree or higher	3099	39.6	1484	38.1	1219	46.4	396	30.4
Body-mass Index (BMI), kg/m^2	7775	28.2 (5.9)	3859	27.3 (5.5)	2614	29.8 (6.2)	1302	27.9 (5.6)
Underweight (< 18.5)	112	1.4	74	1.9	26	1.0	12	0.9
Normal (18.5 - 24.9)	2378	30.6	1380	35.8	558	21.3	440	33.8
Overweight (25.0 - 29.9)	2799	36.0	1406	36.4	922	35.3	471	36.2
Obesity I (30.0 - 34.9)	1505	19.4	651	16.9	613	23.5	241	18.5
Obesity II (35.0 - 39.9)	633	8.1	228	5.9	316	12.1	89	6.8
Extreme Obesity III (>= 40)	348	4.5	120	3.1	179	6.8	49	3.8
Systolic blood pressure, mmHg	7864	125.9 (14.6)	3905	125.8 (14.8)	2646	127.0 (14.6)	1313	123.7 (13.6)
<=120	2962	37.7	1461	37.4	919	34.7	582	44.3
120 - 140	3796	48.3	1892	48.5	1323	50.0	581	44.2
>140	1106	14.1	552	14.1	404	15.3	150	11.4
Diastolic blood pressure, mmHg	7862	72.6 (8.9)	3904	71.8 (9.1)	2647	74.0 (8.9)	1311	72.2 (8.2)
<80	6073	77.2	3077	78.8	1927	72.8	1069	81.5
80-89	1535	19.5	713	18.3	609	23.0	213	16.5
≥90	254	3.2	114	2.9	111	4.2	29	2.2
Grip strength, kg	7274	17.8 (7.0)	3599	16.3 (6.7)	2485	20.0 (7.3)	1190	18.0 (6.4)
Repeated chair stands,	6949	0.35 (0.13)	3399	0.35 (0.13)	2330	0.34 (0.13)	1220	0.37 (0.12)
Walking pace, m/sec	6911	0.65 (0.29)	3445	0.65 (0.28)	2308	0.61 (0.27)	1158	0.73 (0.31)
Look AHEAD SPPB[4]	7022	1.3 (0.5)	3453	1.2 (0.5)	2385	1.3 (0.5)	1184	1.5 (0.5)
EPESE SPPB[5]	7102	7.9 (2.7)	3495	7.8 (2.8)	2412	7.8 (2.6)	1195	8.7 (2.5)

[1] Long Life Study participants are a subset of the Medical Records Cohort.
[2] Percentage is relative to number eligible.
[3] Percentage is relative to consented.
[4] The Look AHEAD Short Physical Performance Battery (SPPB) ranges from 0 to 3, with higher scores indicating better physical performance.
[5] 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 6.2
Participation and Vital Status: Long Life Study (LLS) Participants

Data as of: February 28, 2020

	LLS Participants (N=7875)	
	N	**%**
Vital Status/Participation		
Deceased	1828	23.2
Alive: Current Participation[1]	5359	68.1
Alive: Recent Participation[2]	217	2.8
Stopped Follow-Up[3]	249	3.2
Lost to Follow-Up[4]	222	2.8

[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 6.3
Verified Outcomes (Annualized Percentages)
After Long Life Study (LLS) Visit by Age at Visit for LLS Participants

Data as of: February 28, 2020; Events through February 28, 2020

Outcomes	Total	Age at Visit 63-69	70-79	80-89	≥ 90
Number enrolled	7875	723	3052	3688	412
Mean follow-up (months) after LLS visit	72.3	77.7	76.8	68.9	58.9
Cardiovascular					
CHD[1]	410 (0.86%)	14 (0.30%)	95 (0.49%)	261 (1.23%)	40 (1.98%)
CHD death[2]	247 (0.52%)	5 (0.11%)	42 (0.21%)	163 (0.77%)	37 (1.83%)
Clinical MI	258 (0.54%)	12 (0.26%)	66 (0.34%)	161 (0.76%)	19 (0.94%)
CABG/PTCA	182 (0.38%)	11 (0.23%)	67 (0.34%)	99 (0.47%)	5 (0.25%)
Carotid artery disease	24 (0.05%)	1 (0.02%)	8 (0.04%)	14 (0.07%)	1 (0.05%)
Heart failure, UNC[3]	469 (0.99%)	12 (0.26%)	103 (0.53%)	307 (1.45%)	47 (2.32%)
Stroke	393 (0.83%)	16 (0.34%)	108 (0.55%)	236 (1.11%)	33 (1.63%)
PVD	64 (0.13%)	1 (0.02%)	17 (0.09%)	42 (0.20%)	4 (0.20%)
DVT	173 (0.36%)	8 (0.17%)	62 (0.32%)	93 (0.44%)	10 (0.49%)
Pulmonary embolism	137 (0.29%)	6 (0.13%)	53 (0.27%)	72 (0.34%)	6 (0.30%)
Coronary disease[4]	662 (1.40%)	24 (0.51%)	164 (0.84%)	416 (1.96%)	58 (2.87%)
DVT/PE	248 (0.52%)	12 (0.26%)	94 (0.48%)	130 (0.61%)	12 (0.59%)
Aortic aneurysm	18 (0.04%)	1 (0.02%)	5 (0.03%)	11 (0.05%)	1 (0.05%)
Valvular heart disease	158 (0.33%)	3 (0.06%)	33 (0.17%)	105 (0.50%)	17 (0.84%)
Total cardiovascular disease[5]	1027 (2.17%)	37 (0.79%)	271 (1.39%)	621 (2.93%)	98 (4.84%)
Cancer					
Breast cancer	187 (0.39%)	19 (0.41%)	103 (0.53%)	63 (0.30%)	2 (0.10%)
Invasive breast cancer	165 (0.35%)	14 (0.30%)	91 (0.47%)	57 (0.27%)	3 (0.15%)
In situ breast cancer	27 (0.06%)	6 (0.13%)	15 (0.08%)	6 (0.03%)	0 (0.00%)
Ovarian cancer	25 (0.05%)	1 (0.02%)	11 (0.06%)	11 (0.05%)	2 (0.10%)
Endometrial cancer[6]	14 (0.03%)	0 (0.00%)	5 (0.03%)	9 (0.04%)	0 (0.00%)
Colorectal cancer	72 (0.15%)	3 (0.06%)	18 (0.09%)	49 (0.23%)	2 (0.10%)
Other cancer[7]	398 (0.84%)	21 (0.45%)	143 (0.73%)	215 (1.01%)	19 (0.94%)
Total cancer	608 (1.28%)	42 (0.90%)	245 (1.25%)	300 (1.42%)	21 (1.04%)
Fractures					
Hip fracture	268 (0.56%)	3 (0.06%)	37 (0.19%)	194 (0.92%)	34 (1.68%)
Deaths					
Cardiovascular deaths	668 (1.41%)	11 (0.23%)	108 (0.55%)	440 (2.08%)	109 (5.39%)
Cancer deaths	338 (0.71%)	13 (0.28%)	98 (0.50%)	207 (0.98%)	20 (0.99%)
Other known cause	671 (1.41%)	13 (0.28%)	104 (0.53%)	455 (2.15%)	99 (4.89%)
Unknown cause	18 (0.04%)	2 (0.04%)	1 (0.01%)	13 (0.06%)	2 (0.10%)
Not yet adjudicated	133 (0.28%)	4 (0.09%)	31 (0.16%)	83 (0.39%)	15 (0.74%)
Total death	1828 (3.85%)	43 (0.92%)	342 (1.75%)	1198 (5.66%)	245 (12.11%)

[1] CHD includes clinical MI and CHD death.
[2] CHD death includes definite and possible CHD death.
[3] Definite or possible decompensated heart failure adjudicated by UNC.
[4] Coronary disease includes clinical MI, CHD death, UNC heart failure and CABG/PTCA.
[5] Total CVD does not include aortic aneurysm or valvular heart disease.
[6] Only women without a baseline hysterectomy 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 6.4
Verified Outcomes (Annualized Percentages)
After Long Life Study (LLS) Visit by Race/Ethnicity for LLS Participants

Data as of: February 28, 2020; Events through February 28, 2020

Outcomes	Race/Ethnicity: Non-Hispanic Black/African	Hispanic/Latina	Non-Hispanic White
Number enrolled	2651	1314	3910
Mean follow-up (months) after LLS visit	74.0	76.9	69.6
Cardiovascular			
CHD[1]	96 (0.59%)	42 (0.50%)	272 (1.20%)
CHD death[2]	52 (0.32%)	18 (0.21%)	177 (0.78%)
Clinical MI	58 (0.35%)	31 (0.37%)	169 (0.75%)
CABG/PTCA	46 (0.28%)	19 (0.23%)	117 (0.52%)
Carotid artery disease	8 (0.05%)	0 (0.00%)	16 (0.07%)
Heart failure, UNC[3]	119 (0.73%)	33 (0.39%)	317 (1.40%)
Stroke	109 (0.67%)	44 (0.52%)	240 (1.06%)
PVD	24 (0.15%)	4 (0.05%)	36 (0.16%)
DVT	67 (0.41%)	17 (0.20%)	89 (0.39%)
Pulmonary embolism	57 (0.35%)	11 (0.13%)	69 (0.30%)
Coronary disease[4]	163 (1.00%)	60 (0.71%)	439 (1.94%)
DVT/PE	102 (0.62%)	23 (0.27%)	123 (0.54%)
Aortic aneurysm	7 (0.04%)	1 (0.01%)	10 (0.04%)
Valvular heart disease	15 (0.09%)	19 (0.23%)	124 (0.55%)
Total cardiovascular disease[5]	275 (1.68%)	99 (1.18%)	653 (2.88%)
Cancer			
Breast cancer	77 (0.47%)	30 (0.36%)	80 (0.35%)
Invasive breast cancer	67 (0.41%)	27 (0.32%)	71 (0.31%)
In situ breast cancer	13 (0.08%)	4 (0.05%)	10 (0.04%)
Ovarian cancer	7 (0.04%)	4 (0.05%)	14 (0.06%)
Endometrial cancer[6]	3 (0.02%)	2 (0.02%)	9 (0.04%)
Colorectal cancer	15 (0.09%)	6 (0.07%)	51 (0.22%)
Other cancer[7]	117 (0.72%)	54 (0.64%)	227 (1.00%)
Total cancer	197 (1.21%)	87 (1.03%)	324 (1.43%)
Fractures			
Hip fracture	23 (0.14%)	15 (0.18%)	230 (1.01%)
Deaths			
Cardiovascular deaths	149 (0.91%)	46 (0.55%)	473 (2.09%)
Cancer deaths	96 (0.59%)	40 (0.47%)	202 (0.89%)
Other known cause	121 (0.74%)	60 (0.71%)	490 (2.16%)
Unknown cause	7 (0.04%)	2 (0.02%)	9 (0.04%)
Not yet adjudicated	39 (0.24%)	16 (0.19%)	78 (0.34%)
Total death	412 (2.52%)	164 (1.95%)	1252 (5.52%)

[1] CHD includes clinical MI and CHD death.
[2] CHD death includes definite and possible CHD death.
[3] Definite or possible decompensated heart failure adjudicated by UNC
[4] Coronary disease includes clinical MI, CHD death, UNC heart failure and CABG/PTCA.
[5] Total CVD does not include aortic aneurysm or valvular heart disease.
[6] Only women without a baseline hysterectomy 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 6.5
Self-Reported Outcomes (Annualized Percentages) After Long Life Study (LLS) Visit by Age at Visit and Race/Ethnicity for LLS Participants Who Did Not Report a Prevalent Condition at Baseline

Data as of: February 28, 2020; Events through February 28, 2020

Outcome	Total	Age at Visit 63-69	70-79	80-89	≥ 90
Number enrolled	7875	723	3052	3688	412
Mean follow-up (months) after LLS visit	72.3	77.7	76.8	68.9	58.9
Angina (hospitalized)	436 (0.92%)	32 (0.68%)	135 (0.69%)	249 (1.18%)	20 (0.99%)
Diabetes (treated)	618 (1.30%)	59 (1.26%)	272 (1.39%)	265 (1.25%)	22 (1.09%)
Hysterectomy	85 (0.18%)	11 (0.23%)	48 (0.25%)	26 (0.12%)	0 (0.00%)
Osteoarthritis	819 (1.73%)	83 (1.77%)	363 (1.86%)	335 (1.58%)	38 (1.88%)
Intestinal polyps	469 (0.99%)	89 (1.90%)	264 (1.35%)	112 (0.53%)	4 (0.20%)
Lupus	37 (0.08%)	4 (0.09%)	19 (0.10%)	13 (0.06%)	1 (0.05%)
Pills for hypertension	574 (1.21%)	68 (1.45%)	235 (1.20%)	247 (1.17%)	24 (1.19%)
COPD	738 (1.56%)	58 (1.24%)	278 (1.42%)	376 (1.78%)	26 (1.28%)
Macular degeneration	1067 (2.25%)	45 (0.96%)	336 (1.72%)	616 (2.91%)	70 (3.46%)
Dementia	1046 (2.21%)	32 (0.68%)	243 (1.24%)	669 (3.16%)	102 (5.04%)
Parkinson's disease	99 (0.21%)	7 (0.15%)	39 (0.20%)	49 (0.23%)	4 (0.20%)

Outcome	Race/Ethnicity Non-Hispanic Black/African American	Hispanic/Latina	Non-Hispanic White
Number enrolled	2651	1314	3910
Mean follow-up (months) after LLS visit	74.0	76.9	69.6
Angina (hospitalized)	147 (0.90%)	51 (0.61%)	238 (1.05%)
Diabetes (treated)	224 (1.37%)	104 (1.23%)	290 (1.28%)
Hysterectomy	29 (0.18%)	18 (0.21%)	38 (0.17%)
Osteoarthritis	286 (1.75%)	129 (1.53%)	404 (1.78%)
Intestinal polyps	197 (1.21%)	116 (1.38%)	156 (0.69%)
Lupus	12 (0.07%)	8 (0.09%)	17 (0.07%)
Pills for hypertension	133 (0.81%)	126 (1.50%)	315 (1.39%)
COPD	235 (1.44%)	109 (1.29%)	394 (1.74%)
Macular degeneration	259 (1.58%)	151 (1.79%)	657 (2.90%)
Dementia	245 (1.50%)	127 (1.51%)	674 (2.97%)
Parkinson's disease	32 (0.20%)	18 (0.21%)	49 (0.22%)

Table 7.1
Number of Falls per Participant During Extension Study 2010-2020 by Visit Year

Data as of: February 28, 2020; Events between September 30, 2010 and February 28, 2020

	Extension Study 2010-2020 Visit Year									
	1 (N=75,553)	**2** (N=83,161)	**3** (N=80,724)	**4** (N=76,931)	**5** (N=74,443)	**6** (N=68,441)	**7** (N=65,622)	**8** (N=62,145)	**9** (N=59,733)	**10** (N=22,756)
Number of falls	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
None	64.8	66.2	65.7	65.0	64.3	64.5	63.6	63.5	62.3	61.1
1	20.9	19.7	19.7	20.2	20.4	20.2	20.6	20.8	21.0	22.0
2	9.5	9.0	9.3	9.4	9.5	9.3	9.6	9.5	9.9	10.0
≥3	4.9	5.1	5.3	5.4	5.7	6.0	6.2	6.3	6.9	7.0

Figure 7.1
Percent of Participants with Falls During Extension Study 2010-2020
by Visit Year and Age at the Start of Extension Study 2010-2020

Data as of: February 28, 2020; Events between September 30, 2010 and February 28, 2020

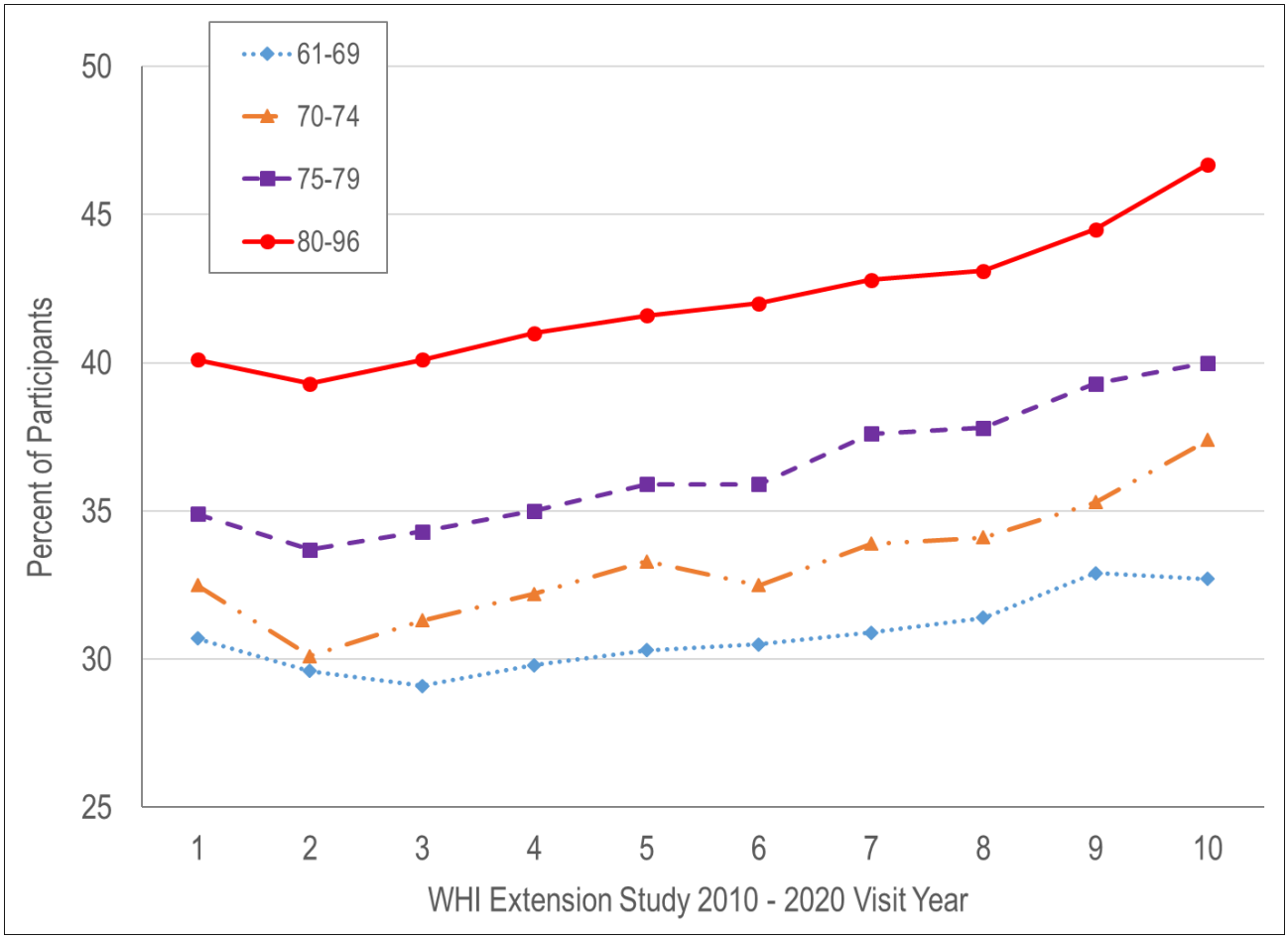
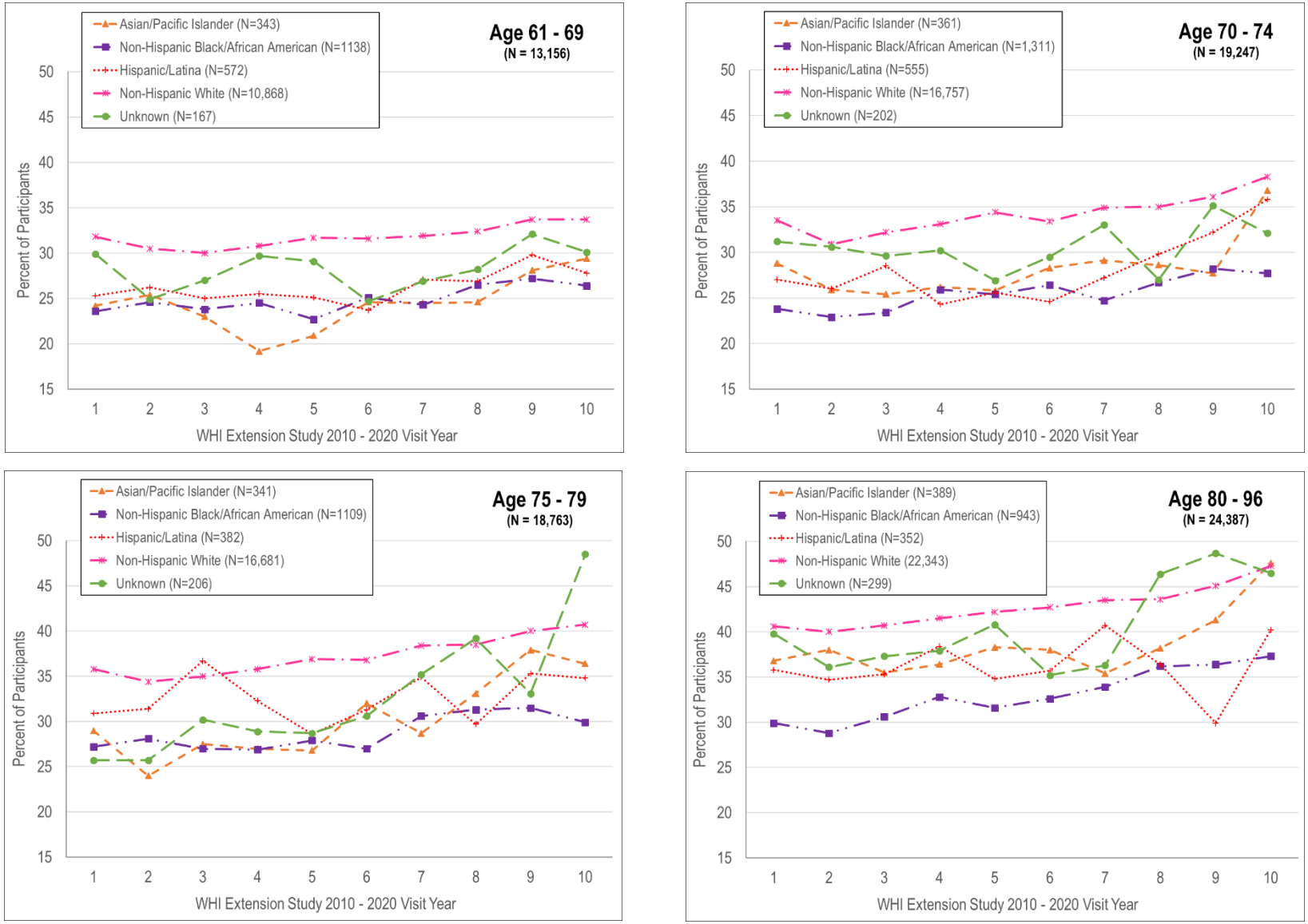


Figure 7.2
Percent of Participants with Falls During Extension Study 2010-2020 by Visit Year, Race/Ethnicity and Age Group[1]

Data as of: February 28, 2020; Events between September 30, 2010 and February 28, 2020



[1]Age group at the start of Extension 2.

Table 8.1
WHI Manuscript Stages

Stage #	Definition	Number
12*	Published	1964
11	In press / accepted by journal	15
10	Submitted to journal	25
9	Final manuscript approved by P&P Committee	269
8	Final manuscript submitted to P&P Committee	41
7	Draft manuscript	24
6	Analysis completed	35
5	Analysis in progress	51
4	Analysis proposed	6
2 & 3	Approved proposal	1172
Total		**3602**

*Only Stage 12 papers published between April 2019 and February 2020 are included in Table 8.2

Table 8.2
Publications April 2019 - February 2020

MS#	Title	Authors	Focus	Reference	Study #
223	Association of physical activity and fracture risk among postmenopausal women	LaMonte, Wactawski-Wende, Larson, Mai, Robbins, LeBoff, Chen, Jackson, LaCroix, Ockene, Hovey, Cauley	OS	JAMA Netw Open. 2019 Oct 2;2(10):e1914084. doi: 10.1001/jamanetworkopen.2019.14084.	
708	Comparison of methods used to correct self-reported protein intake for systematic variation in reported energy intake using quantitative biomarkers of dietary intake	Korth, Bhutani, Neuhouser, Beresford, Snetselaar, Tinker, Schoeller	Gen	J Nutr. 2020 Feb 6. pii: nxaa007. doi: 10.1093/jn/nxaa007. [Epub ahead of print]	W8
1464	Air pollution-associated changes in biomarkers of diabetes risk	Holliday, Lamichhane, Gondalia, Stewart, Madrigano, Shih, Yanosky, Liao, Wellenius, Whitsel	CT	Environ Epidemiol. 2019 Aug 13;3(4):e059. doi: 10.1097/EE9.0000000000000059. eCollection 2019 Aug	AS140, AS220
1556	A candidate gene study of risk for dementia in older, post-menopausal women: Results from the Women's Health Initiative Memory Study (WHIMS)	Driscoll, Snively, Espeland, Shumaker, Rapp, Goveas, Casanova, Wactawski-Wende, Manson, Rossom, Brooks, Hernandez, Singleton, Resnick	WHIMS	Int J Geriatr Psychiatry. 2019 May;34(5):692-699. doi: 10.1002/gps.5068. Epub 2019 Mar 7.	AS250
1888	Breast cancer risk in postmenopausal women with medical history of thyroid disorder in the Women's Health Initiative	Weng, Okawa, Roberts, Park, Umbricht, Manson, Eaton	Gen	Thyroid. 2020 Jan 9. doi: 10.1089/thy.2019.0426. [Epub ahead of print]	
2000	Racial variation in stroke risk by stroke risk factors	Jimenez, Manson, Cook, Kawachi, Wassertheil-Smoller, Haring, Nassir, Rhee, Sealy-Jefferson, Rexrode	Gen	Stroke. 2019 Apr;50(4):797-804. doi: 10.1161/STROKEAHA.117.017759	
2032	Anthropometric risk factors for cancers of the biliary tract in the Biliary Tract Cancers Pooling Project	Jackson, Van Dyke, Zhu, Pfeiffer, Petrick, Adami, Albanes, Andreotti, Beane-Freeman, Berrington de González, Luo, Neuhouser, Peters, Sesso, Koshiol	Gen	Cancer Res. 2019 May 21. pii: canres.0459.2019. doi: 10.1158/0008-5472.CAN-19-0459. [Epub ahead of print]	
2087	Optimism may moderate screening mammogram frequency in Medicare: A longitudinal study	Progovac, Pettinger, Donohue, Chang, Matthews, Habermann, Kuller, Rosal, Li, Garcia, Tindle	Gen	Medicine (Baltimore). 2019 Jun;98(24):e15869. doi: 10.1097/MD.0000000000015869.	W35

Table 8.2
Publications April 2019 - February 2020

MS#	Title	Authors	Focus	Reference	Study #
2350	Prediagnosis social support, social integration, living status, and colorectal cancer mortality in postmenopausal women from the women's health initiative	Kroenke, Paskett, Cene, Caan, Luo, Shadyab, Robinson, Nassir, Lane, Anderson	Gen	Cancer. 2020 Jan 23. doi: 10.1002/cncr.32710. [Epub ahead of print]	AS370
2369	Short-term exposure to air pollution and incidence of stroke in the Women's Health Initiative	Sun, Stewart, Eliot, Yanosky, Liao, Tinker, Eaton, Whitsel, Wellenius	Gen	Environ Int. 2019 Aug 2;132:105065. doi: 10.1016/j.envint.2019.105065 . [Epub ahead of print]	AS251
2412	Post-cancer diagnosis dietary inflammatory potential is associated with survival among women diagnosed with colorectal cancer in the Women's Health Initiative	Zheng, Tabung, Zhang, Murphy, Shivappa, Ockene, Caan, Kroenke, Hebert, Steck	Gen	Eur J Nutr. 2019 Apr 6. doi: 10.1007/s00394-019-01956-z. [Epub ahead of print]	
2415	Development of a comprehensive health-risk prediction tool for post-menopausal women	Hedlin, Weitlauf, Crandall, Nassir, Cauley, Garcia, Brunner, Robinson, Stefanick, Robbins	Gen	Menopause. 2019 Sep 16. doi: 10.1097/GME.0000000000001411. [Epub ahead of print]	
2421	Association of dietary magnesium intake with fatal coronary heart disease and sudden cardiac death	Li, Hovey, Andrews, Quddus, Allison, Van Horn, Martin, Salmoirago-Blotcher, Song, Manson, Albert, Lu, Eaton	Gen	J Womens Health (Larchmt). 2019 Dec 12. doi: 10.1089/jwh.2019.7775. [Epub ahead of print]	AS391
2458	The association between statins and colorectal cancer stage in the Women's Health Initiative	Rutledge, Desai, Liu, Luo, Nassir, Qi, Arun, Abdel-Rasoul, Simon	Gen	Mol Clin Oncol. 2019 Sep;11(3):252-258. doi: 10.3892/mco.2019.1895. Epub 2019 Jul 4.	
2488	Do additional clinical risk factors improve the performance of fracture risk assessment tool (FRAX) among postmenopausal women? Findings from the Women's Health Initiative Observational Study and Clinical Trials	Crandall, Larson, Cauley, Schousboe, LaCroix, Robbins, Watts, Ensrud	Gen	JBMR Plus. 2019 Nov 30;3(12):e10239. doi: 10.1002/jbm4.10239. eCollection 2019 Dec.	
2499	Postmenopausal breast cancer and physical function change: A difference-in-differences analysis	Michael, Wu, Pan, Seguin, Garcia, Zaslavsky, Chlebowski	Gen	J Am Geriatr Soc. 2020 Jan 24. doi: 10.1111/jgs.16323. [Epub ahead of print]	

Table 8.2
Publications April 2019 - February 2020

MS#	Title	Authors	Focus	Reference	Study #
2513	Women's Health Initiative Clinical Trials: Potential interactive effect of calcium and vitamin D supplementation with hormonal therapy on cardiovascular disease	Jiang, Nudy, Aragaki, Robbins, Manson, Stefanick, O'Sullivan, Shikany, LeBlanc, Kelsey, Cauley, Martin, Payne, Johnson, Howard, Schnatz, et al.	Gen	Menopause. 2019 May 15. doi: 10.1097/GME.0000000000001360. [Epub ahead of print]	
2538	Mendelian randomization of circulating polyunsaturated fatty acids and colorectal cancer risk	Khankari, Banbury, Albanes, Berndt, Bezieau, Brenner, Campbell, Casey, Chan, Chang-Claude, Conti, Li, Newcomb, Sakoda, White, Peters, et al.	Gen	Cancer Epidemiol Biomarkers Prev. 2020 Apr;29(4):860-870. doi: 10.1158/1055-9965.EPI-19-0891. Epub 2020 Feb 12.	AS224
2554	Plasma phospholipid fatty acids and coronary heart disease risk: A matched case-control study within the Women's Health Initiative Observational Study	Liu, Matthan, Manson, Howard, Tinker, Neuhouser, Van Horn, Rossouw, Allison, Martin, Li, Snetselaar, Wang, Lichtenstein, Eaton	OS	Nutrients. 2019 Jul 21;11(7). pii: E1672. doi: 10.3390/nu11071672.	
2557	Particulate air pollutants and trajectories of depressive symptoms in older women	Petkus, Younan, Wang, Serre, Vizuete, Resnick, Espeland, Gatz, Chui, Manson, Chen	WHIMS	Am J Geriatr Psychiatry. 2019 May 9. pii: S1064-7481(19)30354-9. doi: 10.1016/j.jagp.2019.04.019. [Epub ahead of print]	AS252
2640	Pre-diagnosis exercise and cardiovascular events in primary breast cancer	Okwuosa, Ray, Palomo, Foraker, Johnson, Paskett, Caan, Jones	Gen	JACC CardioOncology. 2019 Sep;1(1):41-50	AS370
2706	Association of leukocyte telomere length with mortality among adult participants in 3 longitudinal studies	Arbeev, Kark, Steenstrup, Verhulst, Bagley, Kooperberg, Reiner, Hwang, Levy, Fitzpatrick, Christensen, Yashin, Aviv	Gen	JAMA Netw Open. 2020 Feb 5;3(2):e200023. doi: 10.1001/jamanetworkopen.2020.0023.	BAA25
2787	Citrus consumption and risk of cutaneous malignant melanoma in the Women's Health Initiative	Melough, Wu, Li, Eaton, Nan, Snetselaar, Wallace, Qureshi, Chun, Cho	OS	Nutr Cancer. 2019 Jul 23:1-8. doi: 10.1080/01635581.2019.1644353. [Epub ahead of print]	
2832	Metabolomic profiles associated with all-cause mortality in the Women's Health Initiative	Balasubramanian, Paynter, Giulianini, Manson, Chen, Vitolins, Clish, Albert, Rexrode	Gen	Int J Epidemiol. 2019 Oct 25. pii: dyz211. doi: 10.1093/ije/dyz211. [Epub ahead of print]	BAA24

Table 8.2
Publications April 2019 - February 2020

MS#	Title	Authors	Focus	Reference	Study #
2861	A cross-sectional analysis of telomere length and sleep in the Women's Health Initiative	Grieshober, Wactawski-Wende, Blair, Mu, Liu, Nie, Carty, Hale, Kroenke, LaCroix, Reiner, Ochs-Balcom	Gen	Am J Epidemiol. 2019 May 30. pii: kwz134. doi: 10.1093/aje/kwz134. [Epub ahead of print]	BAA25
2880	Effects of colorectal cancer risk factors on the association between aspirin and colorectal cancer	Seaton, Peters, Johnson, Kooperberg, Bafford, Zubair	Gen	Anticancer Res. 2019 Sep;39(9):4877-4884. doi: 10.21873/anticanres.13673.	
2929	Patterns of home environmental modification use and functional health: The Women's Health Initiative	Welti, Beavers, Mampieri, Rapp, Ip, Shumaker, Beavers	CT	J Gerontol A Biol Sci Med Sci. 2019 Dec 14. pii: glz290. doi: 10.1093/gerona/glz290. [Epub ahead of print]	AS244
2947	Circulating estrogens and postmenopausal ovarian and endometrial cancer risk among current hormone users in the Women's Health Initiative Observational Study	Trabert, Coburn, Falk, Manson, Brinton, Gass, Kuller, Rohan, Pfeiffer, Qi, Stefanick, Wentzensen, Anderson, Xu	OS	Cancer Causes Control. 2019 Sep 21. doi: 10.1007/s10552-019-01233-8. [Epub ahead of print]	AS297
2998	Does season of reported dietary intake influence diet quality? Analysis from the Women's Health Initiative	Crane, Latif, Wertheim, Kohler, Garcia, Rhee, Seguin, Kazlauskaite, Shikany, Thomson	Gen	Am J Epidemiol. 2019 May 13. pii: kwz087. doi: 10.1093/aje/kwz087. [Epub ahead of print]	
3030	Biomarkers of dietary omega-6 fatty acids and incident cardiovascular disease and mortality	Marklund, Harris, Robinson, Tintle	CT	Circulation. 2019 May 21;139(21):2422-2436. doi: 10.1161/CIRCULATIONAHA.118.038908.	BAA19
3033	Associations of circulating very-long chain saturated fatty acids and incident type 2 diabetes: a pooled analysis of prospective cohort studies	Fretts, Imamura, Marklund, Micha, Wu, Murphy, Chien, McNight, Tintle, Forouhi, Harris	CT	Am J Clin Nutr. 2019 Apr 1;109(4):1216-1223. doi: 10.1093/ajcn/nqz005.	BAA19
3085	An association between large optic nerve cupping and cognitive function	Vajaranant, Hallak, Espeland, Pasquale, Klein, Meuer, Rapp, Haan, Maki	WHIMS	Am J Ophthalmol. 2019 Jun 1. pii: S0002-9394(19)30251-X. doi: 10.1016/j.ajo.2019.05.019. [Epub ahead of print]	AS183, AS39, AS62

Table 8.2
Publications April 2019 - February 2020

MS#	Title	Authors	Focus	Reference	Study #
3101	Trajectory of recurrent falls in post-menopausal breast cancer survivors and in matched cancer-free controls	Pan, Ray, Cauley, Shadyab, Hurria, Chlebowski	Gen	Breast Cancer Res Treat. 2020 Feb 19. doi: 10.1007/s10549-020-05576-8. [Epub ahead of print]	
3135	Diet quality and cardiovascular disease risk in postmenopausal women with type 2 diabetes mellitus: The Women's Health Initiative	Hirahatake, Jiang, Wong, Shikany, Eaton, Allison, Martin, Garcia, Zaslavsky, Odegaard	Gen	J Am Heart Assoc. 2019 Oct;8(19):e013249. doi: 10.1161/JAHA.119.013249. Epub 2019 Sep 19.	
3145	Identifying metabolomic profiles of inflammatory diets in postmenopausal women	Tabung, Liang, Huang, Balasubramanian, Zhao, Chandler, Manson, Cespedes Feliciano, Hayden, Van Horn, Clish, Giovannucci, Rexrode	Gen	Clin Nutr. 2019 Jun 17. pii: S0261-5614(19)30265-1. doi: 10.1016/j.clnu.2019.06.010. [Epub ahead of print]	BAA24
3149	Lipoprotein(a) plasma levels, bone mineral density and risk of hip fracture: a post-hoc analysis of the Women's Health Initiative, USA	Haring, Crandall, Carbone, Liu, Li, Johnson, Wactawski-Wende, Shadyab, Gass, Kamensky, Cauley, Wassertheil-Smoller	Gen	BMJ Open. 2019 Apr 24;9(4):e027257. doi: 10.1136/bmjopen-2018-027257.	
3173	The renin-angiotensin aldosterone system and osteoporosis: Findings from the Women's Health Initiative	Carbone, Vasan, Prentice, Harshfield, Haring, Cauley, Johnson	Gen	Osteoporos Int. 2019 Jun 17. doi: 10.1007/s00198-019-05041-3. [Epub ahead of print]	
3174	Eating pattern response to a low-fat diet intervention and cardiovascular outcomes in normotensive women: The Women's Health Initiative	Van Horn, Aragaki, Howard, Allison, Isasi, Manson, Neuhouser, Mossavar-Rahmani, Thomson, Vitolins, Wallace, Prentice	CT	Curr Dev Nutr. 2020 Feb 12;4(3):nzaa021. doi: 10.1093/cdn/nzaa021. eCollection 2020 Mar.	
3177	A descriptive pilot study of structural and functional social network ties among women in the women's health initiative (WHI) study	Cene, Frerichs, Evans, Kroenke, Dilworth-Anderson, Corbie-Smith, Snively, Naughton, Shumaker	Gen	J Women Aging. 2019 Jun 9:1-29. doi: 10.1080/08952841.2019.1608138. [Epub ahead of print]	AS414
3180	Application of blood concentration biomarkers in nutritional epidemiology: example of carotenoid and tocopherol intake in relation to chronic disease risk	Prentice, Pettinger, Neuhouser, Tinker, Huang, Zheng, Manson, Mossavar-Rahmani, Anderson, Lampe	Gen	Am J Clin Nutr. 2019 Apr 1;109(4):1189-1196. doi: 10.1093/ajcn/nqy360	AS498

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3188	Methylome-wide association study provides evidence of particulate matter air pollution-associated DNA methylation	Gondalia, Baldassari, Holliday, Justice, Mendez Giraldez, Stewart, Liao, Yanosky, Brennan, Engel, Bhatti, Horvath, Assimes, North, Conneely, Hou, et al.	CT	Environ Int. 2019 Jun 14:104723. doi: 10.1016/j.envint.2019.03.071. [Epub ahead of print]	AS311, AS315, AS534, BAA23
3196	Self-reported barriers to medication use in older women: Findings from the Women's Health Initiative	Marcum, Vasan, Tom, Hart, Wang, Shadyab, LaCroix, Gray	Gen	J Am Pharm Assoc (2003). 2019 Aug 9. pii: S1544-3191(19)30339-5. doi: 10.1016/j.japh.2019.07.003. [Epub ahead of print]	
3198	Intentional weight loss and obesity-related cancer risk	Luo, Hendryx, Manson, Figueiredo, LeBlanc, Barrington, Rohan, Howard, Reding, Ho, Garcia, Chlebowski	OS	JNCI Cancer Spectr. 2019 Aug 9;3(4):pkz054. doi: 10.1093/jncics/pkz054. eCollection 2019 Dec.	
3199	Association between soft drink consumption and osteoporotic fractures among postmenopausal women: the Women´s Health Initiative	Kremer, Laughlin, Shadyab, Crandall, Masaki, Orchard, LaCroix	OS	Menopause. 2019 Oct 14. doi: 10.1097/GME.0000000000001389. [Epub ahead of print]	
3200	Associations between serum levels of cholesterol and survival to age 90 in postmenopausal women	Maihofer, Shadyab, Wild, LaCroix	Gen	J Am Geriatr Soc. 2020 Feb;68(2):288-296. doi: 10.1111/jgs.16306. Epub 2020 Jan 13.	
3223	Determining risk of colorectal cancer and starting age of screening based on lifestyle, environmental, and genetic factors	Jeon, Peters, Hayes, Corley, Hsu, Levin, Sakoda	Gen	Gastroenterology. 2018 Jun;154(8):2152-2164.e19. doi: 10.1053/j.gastro.2018.02.021. Epub 2018 Feb 17.	AS224
3226	Is interpersonal abuse associated with sexual (dis)satisfaction among postmenopausal women?	Kelley, Cannell, Gass, Sealy-Jefferson, Woods, Bird, Stefanick, Weitlauf	Gen	Womens Health Issues. 2019 Jul 2. pii: S1049-3867(18)30558-9. doi: 10.1016/j.whi.2019.05.009. [Epub ahead of print]	

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3247	The effect of reverse causality and selective attrition on the relationship between body mass index and mortality in postmenopausal women	Banack, Bea, Kaufman, Stokes, Kroenke, Stefanick, Beresford, Bird, Garcia, Wallace, Wild, Caan, Wactawski-Wende	Gen	Am J Epidemiol. 2019 Jul 5. pii: kwz160. doi: 10.1093/aje/kwz160. [Epub ahead of print]	
3251	Leukocyte traits and exposure to ambient particulate matter air pollution in the Women's Health Initiative and Atherosclerosis Risk in Communities study	Gondalia, Holliday, Baldassari, Justice, Bhatti, Horvath, Assimes, North, Whitsel, Liao, Hou, Baccarelli, Jordahl, Conneely, Fornage	CT	Environ Health Perspect. 2020 Jan;128(1):17004. doi: 10.1289/EHP5360. Epub 2020 Jan 6.	AS311, AS315, BAA23
3275	Optimism is not associated with two indicators of DNA methylation aging	Kim, Fong, Lee, Spiro, Schwartz, Whitsel, Horvath, Wang, Hou, Baccarelli, Li, Stewart, Grodstein, Manson, DeMeo, Kubzansky, et al.	OS	Aging (Albany NY). 2019 Jul 18. doi: 10.18632/aging.102090. [Epub ahead of print]	AS315, BAA23
3294	Parameterizing and validating existing algorithms for identifying out-of-bed time using hip-worn accelerometer data from older adults	Bellettiere, Zhang, Berardi, Full, Kerr, LaMonte, Evenson, Hovell, LaCroix, Di	Gen	Physiol Meas. 2019 Apr 24. doi: 10.1088/1361-6579/ab1c04. [Epub ahead of print]	AS286
3298	Accelerometer-measured sleep duration and clinical cardiovascular risk factor scores in older women	Full, Malhotra, Gallo, Kerr, Arredondo, Natarajan, LaMonte, Stefanick, Stone, LaCroix	Gen	J Gerontol A Biol Sci Med Sci. 2019 Sep 6. pii: glz201. doi: 10.1093/gerona/glz201. [Epub ahead of print]	AS286
3308	Racial and ethnic disparities in utilization of total knee arthroplasty among older women	Cavanaugh, Rauh, Thompson, Alcaraz, Mihalko, Bird, Eaton, Rosal, Li, Shadyab, Gilmer, LaCroix	Gen	Osteoarthritis Cartilage. 2019 Aug 9. pii: S1063-4584(19)31153-7. doi: 10.1016/j.joca.2019.07.015. [Epub ahead of print]	W35
3318	Dementia outcomes after addition of proxy-based assessments for deceased or proxy-dependent participants	Gaussoin, Espeland, Beavers, Casanova, Garcia, Snively, Shumaker, Wallace, Rapp	WHIMS	Int J Geriatr Psychiatry. 2019 Apr 29. doi: 10.1002/gps.5130. [Epub ahead of print]	AS233, AS244, AS39
3325	Short sleep is associated with low bone mineral density and osteoporosis in the Women's Health Initiative	Ochs-Balcom, Hovey, Andrews, Cauley, Hale, Li, Bea, Sarto, Stefanick, Stone, Watts, Zaslavsky, Wactawski-Wende	Gen	J Bone Miner Res. 2019 Nov 6. doi: 10.1002/jbmr.3879. [Epub ahead of print]	

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3333	Smoking cessation and the risk of bladder cancer among postmenopausal women	Li, Tindle, Hendryx, Xun, He, Liang, Luo	Gen	Cancer Prev Res (Phila). 2019 May;12(5):305-314. doi: 10.1158/1940-6207.CAPR-18-0441.	
3353	Cognitive resilience among APOE ε4 carriers in the oldest old	Hayden, Gaussoin, Hunter, Manson, Sachs, Shadyab, Tindle, Mossavar-Rahmani, Mozhui, Snively, Rapp, Resnick	WHIMS	Int J Geriatr Psychiatry. 2019 Aug 16. doi: 10.1002/gps.5199. [Epub ahead of print]	AS233, AS244, AS39
3356	Higher amounts of sedentary time are associated with short sleep duration and poor sleep quality in postmenopausal women	Creasy, Crane, Garcia, Thomson, Kohler, Wertheim, Baker, Coday, Hale, Womack, Wright, Melanson	Gen	Sleep. 2019 Apr 17. pii: zsz093. doi: 10.1093/sleep/zsz093. [Epub ahead of print]	
3367	Postmenopausal androgen metabolism and endometrial cancer risk in the Women's Health Initiative Observational Study	Michels, Brinton, Wentzensen, Pan, Chen, Anderson, Pfeiffer, Xu, Rohan, Trabert	OS	JNCI Cancer Spectr. 2019 Sep;3(3):pkz029. doi: 10.1093/jncics/pkz029. Epub 2019 Apr 25.	AS297
3372	Circulating SHBG (Sex Hormone-Binding Globulin) and risk of ischemic stroke: Findings from the WHI	Madsen, Luo, Huang, Park, Stefanick, Manson, Liu	Gen	Stroke. 2020 Feb 12:STROKEAHA120028905. doi: 10.1161/STROKEAHA.120.028905. [Epub ahead of print]	AS110, AS167, AS238, AS90, BAA21, BAA7, BAA9, W10, W18, W5, W9
3383	Occupation and Parkinson disease in Women's Health Initiative Observational Study	Burstyn, LaCroix, Litvan, Wallace, Checkoway	OS	Am J Ind Med. 2019 Jul 22. doi: 10.1002/ajim.23022. [Epub ahead of print]	
3384	Contributions of the Women's Health Initiative to understanding associations between sleep duration, insomnia symptoms, and sleep-disordered breathing across a range of health outcomes in post-menopausal women	Hery, Hale, Naughton	N/A	Sleep Health. 2019 Nov 4. pii: S2352-7218(19)30211-6. doi: 10.1016/j.sleh.2019.09.005. [Epub ahead of print]	
3385	Supplemental one-carbon metabolism related B vitamins and lung cancer risk in the Women's Health Initiative	Brasky, Ray, Navarro, Schenk, Newton, Neuhouser	Gen	Int J Cancer. 2020 Feb 6. doi: 10.1002/ijc.32913. [Epub ahead of print]	

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3397	The association of delay in curative intent treatment with survival among breast cancer patients: Findings from the Women's Health Initiative	Yung, Ray, Roth, Johnson, Warnick, Kroenke, Anderson, Chlebowski, Simon, Pan, Barrington, Reding	Gen	Breast Cancer Res Treat. 2020 Feb 15. doi: 10.1007/s10549-020-05572-y. [Epub ahead of print]	AS370, W35
3401	Meta-analysis of 16 studies of the association of alcohol with colorectal cancer	McNabb, Harrison, Albanes, Berndt, Brenner, Caan, Campbell, Cao, Chang-Claude, Chan, Nan, White, Phipps, Peters	Gen	Int J Cancer. 2019 Apr 29. doi: 10.1002/ijc.32377. [Epub ahead of print]	AS224
3414	Modeling the cardiometabolic benefits of sleep in older women: Exploring the 24-hour day	Full, Gallo, Malhotra, Bellettiere, Kerr, Arredondo, Stone, Zaslavsky, Lewis, Lin, LaCroix	Gen	Sleep. 2019 Sep 25. pii: zsz205. doi: 10.1093/sleep/zsz205. [Epub ahead of print]	AS286
3425	Association of normal-weight central obesity with all-cause and cause-specific mortality among postmenopausal women	Sun, Liu, Snetselaar, Wallace, Caan, Rohan, Neuhouser, Shadyab, Chlebowski, Manson, Bao	Gen	JAMA Netw Open. 2019 Jul 3;2(7):e197337. doi: 10.1001/jamanetworkopen.2019.7337.	
3455	Guideline-concordant endometrial cancer treatment and survival in the Women's Health Initiative Life and Longevity After Cancer study	Felix, McLaughlin, Caan, Cohn, Anderson, Paskett	Gen	Int J Cancer. 2019 Oct 16. doi: 10.1002/ijc.32740. [Epub ahead of print]	AS370, W35
3463	Low-fat dietary pattern among postmenopausal women influences long-term cancer, cardiovascular disease, and diabetes outcomes	Prentice, Aragaki, Howard, Chlebowski, Thomson, Van Horn, Tinker, Manson, Anderson, Kuller, Neuhouser, Johnson, Snetselaar, Rossouw	CT	J Nutr. 2019 Sep 1;149(9):1565-1574. doi: 10.1093/jn/nxz107	
3469	Insulin resistance and cancer-specific and all-cause mortality in postmenopausal women: The Women's Health Initiative	Pan, Nelson, Wactawski-Wende, Lee, Manson, Aragaki, Mortimer, Phillips, Rohan, Ho, Saquib, Shadyab, Nassir, Rhee, Hurria, Chlebowski, et al.	Gen	J Natl Cancer Inst. 2019 Apr 26. pii: djz069. doi: 10.1093/jnci/djz069. [Epub ahead of print]	
3478	Low-fat dietary pattern and global cognitive function: Exploratory analyses of the Women's Health Initiative (WHI) randomized Dietary Modification trial	Chlebowski, Rapp, Aragaki, Pan, Neuhouser, Snetselaar, Manson, Wactawski-Wende, Johnson, Hayden, Baker, Henderson, Garcia, Qi, Prentice	Gen	EClinicalMedicine. 2020 Jan 8;18:100240. doi: 10.1016/j.eclinm.2019.100240. eCollection 2020 Jan.	W35

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MS#	Title	Authors	Focus	Reference	Study #
3491	Menopausal hormone therapy and risks of first hospitalized heart failure and Its subtypes during the intervention and extended postintervention follow-up of the Women's Health Initiative Randomized Trials	Liu, Klein, Eaton, Panjrath, Martin, Chae, Greenland, Lloyd-Jones, Wactawski-Wende, Manson	CT	J Card Fail. 2019 Sep 16. pii: S1071-9164(19)30690-6. doi: 10.1016/j.cardfail.2019.09.006. [Epub ahead of print]	
3498	Menopausal estrogen-alone therapy and health outcomes in women with and without bilateral oophorectomy: A randomized trial	Manson, Aragaki, Bassuk, Chlebowski, Anderson, Rossouw, Howard, Thomson, Stefanick, Kaunitz, Crandall, Eaton, Henderson, Liu, Luo, Rohan, et al.	CT	Ann Intern Med. 2019 Sep 10. doi: 10.7326/M19-0274. [Epub ahead of print]	
3505	Social relationships and risk of type 2 diabetes among postmenopausal women	Hendryx, Nicholson, Manson, Kroenke, Lee, Weitlauf, Garcia, Jonasson, Wactawski-Wende, Luo	Gen	J Gerontol B Psychol Sci Soc Sci. 2019 Apr 26. pii: gbz047. doi: 10.1093/geronb/gbz047. [Epub ahead of print]	
3511	General and domain-specific cognitive reserve, mild cognitive impairment, and dementia risk in older women	Petkus, Resnick, Rapp, Espeland, Gatz, Widaman, Wang, Younan, Casanova, Chui, Barnard, Gaussoin, Goveas, Hayden, Henderson, Sachs, et al.	CT	Alzheimers Dement (N Y). 2019 Apr 10;5:118-128. doi: 10.1016/j.trci.2019.02.003. eCollection 2019.	AS252
3512	Personality traits and the risk of coronary heart disease or stroke in women with diabetes – an epidemiological study based on the Women's Health Initiative	Jonasson, Hendryx, Manson, Dinh, Garcia, Liu, Luo	Gen	Menopause. 2019 Aug 30. doi: 10.1097/GME.0000000000001382. [Epub ahead of print]	
3515	Timing of HPV16-E6 antibody seroconversion before OPCSCC: findings from the HPVC3 consortium	Kreimer, Ferreiro-Iglesias, Nygard, Brennan, Schlecht, Wassertheil-Smoller, Agalliu, Tinker, Waterboer, Johansson	Gen	Ann Oncol. 2019 Jun 11. pii: mdz138. doi: 10.1093/annonc/mdz138. [Epub ahead of print]	AS374
3516	The Consortium of Metabolomics Studies (COMETS): Metabolomics in 47 prospective cohort studies	Yu, Zanetti, Temprosa, Albanes, Rexrode, Moore, Clish, Boerwinkle, Gunter, Harris	Gen	Am J Epidemiol. 2019 Jun 1;188(6):991-1012. doi: 10.1093/aje/kwz028.	BAA24
3531	Rehabilitation after total knee arthroplasty: Do racial disparities exist?	Cavanaugh, Rauh, Thompson, Alcaraz, Bird, Gilmer, LaCroix	Gen	J Arthroplasty. 2019 Nov 2. pii: S0883-5403(19)31025-3. doi: 10.1016/j.arth.2019.10.048. [Epub ahead of print]	W35

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MS#	Title	Authors	Focus	Reference	Study #
3536	Associations of hearing loss and menopausal hormone therapy with change in global cognition and incident cognitive impairment among postmenopausal women	Armstrong, Espeland, Chen, Masaki, Wactawski-Wende, Li, Gass, Stefanick, Manson, Deal, Rapp, Lin, Resnick	WHIMS	J Gerontol A Biol Sci Med Sci. 2019 Jul 20. pii: glz173. doi: 10.1093/gerona/glz173. [Epub ahead of print]	AS39
3555	Association of powder use in the genital area with risk of ovarian cancer	O'Brien, Tworoger, Harris, Anderson, Weinberg, Trabert, Kaunitz, D'Aloisio, Sandler, Wentzensen	OS	JAMA. 2020 Jan 7;323(1):49-59. doi: 10.1001/jama.2019.20079.	
3559	Differential DNA methylation in blood as a mediator of the association between cigarette smoking and bladder cancer risk among postmenopausal women	Jordahl, Phipps, Randolph, Tindle, Liu, Tinker, Kelsey, White, Bhatti	OS	Epigenetics. 2019 Jun 23:1-9. doi: 10.1080/15592294.2019.1631112. [Epub ahead of print]	AS311
3565	Relations of magnesium intake to cognitive impairment and dementia among participants in the Women's Health Initiative Memory Study: a prospective cohort study	Lo, Madsen, Rapp, Chen, Neuhouser, Shadyab, Pal, Lin, Shumaker, Manson, Feng, Liu	WHIMS	BMJ Open. 2019 Nov 3;9(11):e030052. doi: 10.1136/bmjopen-2019-030052.	AS39
3568	High glycemic index and glycemic load diets as risk factors for insomnia: analyses from the Women's Health Initiative	Gangwisch, Hale, St-Onge, Choi, LeBlanc, Malaspina, Opler, Shadyab, Shikany, Snetselaar, Zaslavsky, Lane	OS	Am J Clin Nutr. 2019 Dec 11. pii: nqz275. doi: 10.1093/ajcn/nqz275. [Epub ahead of print]	
3569	Vasomotor symptoms and accelerated epigenetic aging in the Women's Health Initiative (WHI)	Thurston, Carroll, Levine, Chang, Crandall, Manson, Pal, Hou, Shadyab, Horvath	Gen	J Clin Endocrinol Metab. 2020 Feb 21. pii: dgaa081. doi: 10.1210/clinem/dgaa081. [Epub ahead of print]	BAA23
3571	Association between regional body fat and cardiovascular disease risk among postmenopausal women with normal body mass index	Chen, Arthur, Iyengar, Kamensky, Xue, Wassertheil-Smoller, Allison, Shadyab, Wild, Sun, Banack, Chai, Wactawski-Wende, Manson, Stefanick, Dannenberg, et al.	Gen	Eur Heart J. 2019 Jun 30. pii: ehz391. doi: 10.1093/eurheartj/ehz391. [Epub ahead of print]	
3578	Psychosocial stress and bone loss among postmenopausal women: Results from the Women's Health Initiative	Follis, Chen, Bea, Odegaard, Thomson	Gen	J Epidemiol Community Health. 2019 Sep;73(9):888-892. doi: 10.1136/jech-2019-212516. Epub 2019 Jul 9	AS554

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3584	Determinants, circumstances, and consequences of injurious falls in older women living in the community	Phelan, Rillamas-Sun, Johnson, LaMonte, Buchner, LaCroix, Anderson	Gen	Inj Prev. 2020 Jan 15. pii: injuryprev-2019-043499. doi: 10.1136/injuryprev-2019-043499. [Epub ahead of print]	AS286
3591	The association between DXA-derived body fat measures and breast cancer risk among postmenopausal women in the Women's Health Initiative	Arthur, Xue, Kamensky, Chlebowski, Simon, Luo, Shadyab, Neuhouser, Banack, Ho, Lane, Pan, Reding, Wassertheil-Smoller, Dannenberg, Rohan, et al.	Gen	Cancer Med. 2019 Dec 25. doi: 10.1002/cam4.2690. [Epub ahead of print]	
3593	Associations between parity, breastfeeding, and risk of maternal type 2 diabetes among postmenopausal women	Luo, Hendryx, LeBlanc, Shadyab, Qi, Sealy-Jefferson, Manson	Gen	Obstet Gynecol. 2019 Aug 7. doi: 10.1097/AOG.0000000000003407. [Epub ahead of print]	
3604	Prediagnostic leukocyte telomere length and pancreatic cancer survival	Hamada, Yuan, Bao, Zhang, Khalaf, Babic, Morales-Oyarvide, Cochrane, Gaziano, Giovannucci, Kraft, Manson, Ng, Nowak, Rohan, Sesso, et al.	OS	Cancer Epidemiol Biomarkers Prev. 2019 Aug 19. pii: cebp.0577.2019. doi: 10.1158/1055-9965.EPI-19-0577. [Epub ahead of print]	AS214
3617	Stress, resilience and cardiovascular disease risk among Black women	Felix, Lehman, Nolan, Sealy-Jefferson, Breathett, Hood, Annison, Anderson, Cene, Warren, Jackson, Williams	Gen	Circ Cardiovasc Qual Outcomes. 2019 Apr;12(4):e005284. doi: 10.1161/CIRCOUTCOMES.118.005284	
3620	A multi-ancestry genome-wide study incorporating gene-smoking interactions identifies multiple new loci for pulse pressure and mean arterial pressure	Sung, de las Fuentes, Winkler, Chasman, Bentley, Kraja, Ntalla, Warren, Guo, Schwander, Kooperberg, Reiner, Franceschini, Howard, Lewis	Gen	Hum Mol Genet. 2019 Apr 10. pii: ddz070. doi: 10.1093/hmg/ddz070. [Epub ahead of print]	BAA14, M13, M5
3657	Shifts in women's paid employment participation during the World War II era and later life health	Falconi, Weber, Cullen, Stefanick, Michael, Darmstadt	OS	J Adolesc Health. 2020 Jan;66(1S):S42-S50. doi: 10.1016/j.jadohealth.2019.10.005	

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MS#	Title	Authors	Focus	Reference	Study #
3700	Composition and diversity of the subgingival microbiome and its relationship with age in postmenopausal women: an epidemiologic investigation	LaMonte, Genco, Buck, McSkimming, Lu, Hovey, Andrews, Zheng, Sun, Millen, Tsompana, Banack, Wactawski-Wende	OS	BMC Oral Health. 2019 Nov 13;19(1):246. doi: 10.1186/s12903-019-0906-2.	AS382, AS98
3701	Associations of parental ages at childbirth with healthy aging among women	Shadyab, Manson, Li, Gass, Brunner, Naughton, Cannell, Howard, LaCroix	Gen	Maturitas. 2019 Nov;129:6-11. doi: 10.1016/j.maturitas.2019.08.002. Epub 2019 Aug 10.	
3713	The association between prebiotic fiber supplement use and colorectal cancer risk and mortality in the Women's Health Initiative	Skiba, Kohler, Crane, Jacobs, Shadyab, Kato, Snetselaar, Qi, Thomson	Gen	Cancer Epidemiol Biomarkers Prev. 2019 Nov;28(11):1884-1890. doi: 10.1158/1055-9965.EPI-19-0326. Epub 2019 Aug 27.	
3721	DNA methylation-based estimator of telomere length	Lu, Quach, Wilson, Reiner, Ferrucci, Raj, Hou, Baccarelli, Li, Stewart, Whitsel, Assimes, Aviv, Horvath	Gen	Aging (Albany NY). 2019 Aug 18. doi: 10.18632/aging.102173. [Epub ahead of print]	AS315, BAA23, M5, W58, W63
3729	Dietary modification and breast cancer mortality: Long-term follow-up of the Women's Health Initiative Randomized Trial	Chlebowski, Aragaki, Anderson, Pan, Neuhouser, Manson, Thomson, Mossavar-Rahmani, Lane, Johnson, Wactawski-Wende, Snetselaar, Rohan, Luo, Barac, Prentice, et al.	CT	J Clin Oncol. 2020 Feb 7:JCO1900435. doi: 10.1200/JCO.19.00435. [Epub ahead of print]	W35
3762	Psychotropic medication use and postmenopausal breast cancer risk	George, Sturgeon, Hankinson, Shadyab, Wallace, Reeves	Gen	Cancer Epidemiol Biomarkers Prev. 2019 Nov 4. pii: cebp.0776.2019. doi: 10.1158/1055-9965.EPI-19-0776. [Epub ahead of print]	
3764	Metabolome-wide association study with habitual physical activity in four prospective cohort studies	Ding, Zeleznik, Guasch-Ferre, Hu, Lasky-Su, Lee, Jackson, Shadyab, LaMonte, Clish, Eliassen, Sacks, Willett, Hu, Rexrode, Kraft, et al.	Gen	Am J Epidemiol. 2019 Jul 31. pii: kwz171. doi: 10.1093/aje/kwz171. [Epub ahead of print]	BAA24
3785	It's absolutely relative: The effect of age on the BMI-mortality relationship in postmenopausal women	Banack, Bea, Stokes, Wactawski-Wende, Bird, Wild, Stefanick, Caan, Beresford, Garcia, Wallace	Gen	Obesity (Silver Spring) . 2020 Jan;28(1):171-177. doi: 10.1002/oby.22662. Epub 2019 Dec 4.	

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MS#	Title	Authors	Focus	Reference	Study #
3788	Particulate matter and episodic memory decline mediated by early neuroanatomic biomarkers of Alzheimer's disease	Younan, Petkus, Widaman, Wang, Casanova, Espeland, Gatz, Henderson, Manson, Rapp, Sachs, Serre, Gaussoin, Barnard, Saldana, Vizuete, et al.	CT	Brain. 2019 Nov 20. pii: awz348. doi: 10.1093/brain/awz348. [Epub ahead of print]	AS252
3797	Identifying metabolomic profiles of insulinemic dietary patterns	Tabung, Balasubramanian, Liang, Clinton, Cespedes Feliciano, Manson, Van Horn, Wactawski-Wende, Clish, Giovannucci, Rexrode	Gen	Metabolites. 2019 Jun 24;9(6). pii: E120. doi: 10.3390/metabo9060120.	BAA24
3811	Ovarian cancer in women of african ancestry (OCWAA) consortium: A resource of harmonized data from eight epidemiologic studies of african american and white women	Schildkraut, Ochs-Balcom, Bandera, Wu, Rosenberg, Setiawan	Gen	Cancer Causes Control. 2019 Jun 24. doi: 10.1007/s10552-019-01199-7. [Epub ahead of print]	
3817	The subgingival microbiome relationship to periodontal disease in older women	Genco, LaMonte, McSkimming, Buck, Li, Hovey, Andrews, Sun, Tsompana, Zheng, Banack, Murugaiyan, Wactawski-Wende	Gen	J Dent Res. 2019 Aug;98(9):975-984. doi: 10.1177/0022034519860449.	AS382
3848	Multi-ancestry sleep-by-SNP interaction analysis in 126,926 individuals reveals lipid loci stratified by sleep duration	Noordam, Winkler, de Vries, Kooperberg, Franceschini, Martin, Shikany, Graff, Reiner, North	Gen	Nat Commun. 2019 Nov 12;10(1):5121. doi: 10.1038/s41467-019-12958-0	M13, M5, W63
3859	Impact of rare and common genetic variants on diabetes diagnosis by hemoglobin A1c in multi-ancestry cohorts: The Trans-Omics for Precision Medicine (TOPMed) Program	Sarnowski, Leong, Raffield, Wu, de Vries, Reiner, Kooperberg, Psaty, Highland, Brody, Meigs	Gen	Am J Hum Genet. 2019 Oct 3;105(4):706-718. doi: 10.1016/j.ajhg.2019.08.010. Epub 2019 Sep 26.	AS564
3883	Exposure to fine particulate matter and temporal dynamics of episodic memory and depressive symptoms in older women	Petkus, Younan, Widaman, Gatz, Manson, Wang, Serres, Vizuete, Chui, Espeland, Resnick, Chen	WHIMS	Environ Int. 2020 Feb;135:105196. doi: 10.1016/j.envint.2019.105196. Epub 2019 Dec 24.	AS252
3948	Allelic heterogeneity at the CRP locus identified by whole-genome sequencing in multi-ancestry cohorts	Raffield, Auer, Reiner, Zhao, Kooperberg, Lange, Gaynor, Spracklen, Wang, Dupuis	Gen	Am J Hum Genet. 2020 Jan 2;106(1):112-120. doi: 10.1016/j.ajhg.2019.12.002. Epub 2019 Dec 26.	AS564

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MS#	Title	Authors	Focus	Reference	Study #
3950	Incidence of diabetes according to metabolically healthy or unhealthy normal weight or overweight/obesity in postmenopausal women: the Women's Health Initiative	Hsu, Ames, Xie, Peterson, Garcia, Going, Phillips, Manson, Anton-Culver, Wong	Gen	Menopause. 2020 Feb 24. doi: 10.1097/GME.0000000000001512. [Epub ahead of print]	
3997	Type and timing of menopausal hormone therapy and breast cancer risk: individual participant meta-analysis of the worldwide epidemiological evidence	Beral, Peto, Pirie, Reeves, Anderson, Gass, O'Sullivan	Gen	Lancet. 2019 Aug 29. pii: S0140-6736(19)31709-X. doi: 10.1016/S0140-6736(19)31709-X. [Epub ahead of print]	
4085	Weight loss, diet composition and breast cancer incidence and outcome in postmenopausal women	Pan, Luo, Aragaki, Chlebowski	Gen	Oncotarget. 2019 May 3;10(33):3088-3092. doi: 10.18632/oncotarget.26864. eCollection 2019 May 3.	
4111	Sex specific associations in genome wide association analysis of renal cell carcinoma	Laskar, Muller, Li, Milne, Kraft, Peters, Anderson, Johnson, Luo, Machiela		Eur J Hum Genet. 2019 Oct;27(10):1589-1598. doi: 10.1038/s41431-019-0455-9. Epub 2019 Jun 23.	M9