

Supplementary Online Content

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

eTable 1. Missing Patterns in the Study of Women’s Health Across the Nation (SWAN) Across 4 Cardiometabolic Outcomes, 1995-2016 (N = 3302)

	Observed ^a	Missing Interval	Loss to Follow Up
	% (n)	% (n)	% (n)
Hypertension			
Overall	67.9 (2241)	8.5 (279)	23.7 (782)
Racial/Ethnic Group			
Black	76.3 (713)	8.4 (78)	15.3 (143)
Chinese	70.8 (177)	4.8 (12)	24.4 (61)
Hispanic	45.5 (130)	17.5 (50)	37.1 (106)
Japanese	70.1 (197)	4.6 (13)	25.3 (71)
White	66.0 (1024)	8.1 (126)	25.9 (401)
Isolated Systolic HTN			
Overall	64.6 (2132)	8.9 (293)	26.6 (877)
Racial/Ethnic Group			
Black	72.4 (676)	9.5 (89)	18.1 (169)
Chinese	70.4 (176)	4.4 (11)	25.2 (63)
Hispanic	33.6 (96)	21.7 (62)	44.8 (128)
Japanese	66.9 (188)	5.0 (14)	28.1 (79)
White	64.2 (996)	7.5 (117)	28.2 (438)
Insulin Resistance			
Overall	61.5 (2029)	8.5 (280)	30.1 (993)
Racial/Ethnic Group			
Black	63.6 (594)	13.3 (124)	23.1 (216)
Chinese	54.0 (135)	7.6 (19)	38.4 (96)
Hispanic	47.6 (136)	11.2 (32)	41.3 (118)
Japanese	56.2 (158)	6.1 (17)	37.7 (106)
White	64.9 (1006)	5.7 (88)	29.5 (457)
Diabetes			
Overall	66.2 (2186)	1.9 (64)	31.9 (1052)
Racial/Ethnic Group			
Black	66.3 (619)	1.9 (18)	31.8 (297)
Chinese	78.0 (195)	0.0 (0)	22.0 (55)
Hispanic	39.2 (112)	9.4 (27)	51.4 (147)
Japanese	73.7 (207)	0.0 (0)	26.3 (74)
White	67.9 (1053)	1.2 (19)	30.9 (479)

Note: HTN = hypertension.
^aObserved fully or carried forward (due to no change in status through interval).

eTable 2. Percentage Difference in Age at Onset and Estimated Median Age at Onset of Hypertension (Stage 2) by Racial or Ethnic Group in the Study of Women’s Health Across the Nation

	Hypertension										Isolated Systolic HTN												
	Diff in Age of Onset ^e					Predicted Median Age of Onset ^f					Diff in Age of Onset ^e					Predicted Median Age of Onset ^f							
	%	LCI	UCI	p-value		Median	LCI	UCI	Bias ^g	LCI	UCI	%	LCI	UCI	p-value		Median	LCI	UCI	Bias ^g	LCI	UCI	
Model 1 - Unadjusted ^a																							
Overall	NA					60.2	58.0	62.3	NA			NA					92.0	77.9	106.1	NA			
Racial/Ethnic Group																							
Black	-9.3	-12.0	-6.5	0.001		56.1	54.0	58.3	NA				-19.5	-27.6	-10.5	0.006	77.3	66.3	88.2				
Chinese	3.5	-1.4	8.5	0.10		64.0	60.5	67.6					-7.8	-21.7	8.7	0.18	88.6	70.2	106.9				
Hispanic	-3.1	-9.5	3.7	0.19		60.0	55.7	64.2					-2.7	-27.1	29.9	0.43	93.4	64.2	122.7	NA			
Japanese	-2.7	-6.6	1.3	0.11		60.2	57.3	63.1					-7.9	-20.8	7.1	0.16	88.4	71.7	105.1				
White	reference					61.9	59.7	64.1				reference					96.0	81.6	110.4				
Model 2 - Incorporating Left Censored ^b																							
Overall	NA					53.6	51.3	55.9	-6.6	-6.8	-6.3	NA					45.2	41.9	48.5	-46.8	-36.0	-57.6	
Racial/Ethnic Group																							
Black	-14.9	-17.9	-11.9	0.000		48.5	46.2	50.8	-7.6	-7.7	-7.6	-18.4	-23.1	-13.5	0.001	39.6	36.4	42.7	-37.7	-29.9	-45.5		
Chinese	5.2	-1.0	11.8	0.07		60.0	55.8	64.1	-4.1	-4.7	-3.5	8.9	-1.7	20.5	0.07	52.8	46.7	59.0	-35.7	-23.5	-48.0		
Hispanic	-16.7	-22.4	-10.5	0.003		47.5	43.9	51.1	-12.5	-11.8	-13.1	-12.6	-23.2	-0.5	0.05	42.4	36.6	48.2	-51.0	-27.6	-74.5		
Japanese	-1.5	-6.6	3.8	0.28		56.1	52.6	59.6	-4.1	-4.6	-3.5	-4.4	-12.8	4.7	0.18	46.4	41.4	51.3	-42.0	-30.3	-53.8		
White	reference					57.0	54.5	59.5	-4.9	-5.2	-4.6	reference					48.5	44.9	52.1	-47.5	-36.6	-58.3	
Model 3 - Additionally Accounting for Right Censoring ^c																							
Overall	NA					54.4	53.1	55.6	-5.8	-4.9	-6.7	NA					50.3	48.3	52.2	-41.7	-29.7	-53.8	
Racial/Ethnic Group																							
Black	-12.1	-14.1	-10.2	0.000		50.0	48.7	51.3	-6.1	-5.2	-7.0	-16.0	-19.4	-12.6	0.000	44.5	42.5	46.5	-32.8	-23.8	-41.7		
Chinese	4.9	1.5	8.2	0.003		59.7	57.4	62.0	-4.3	-3.1	-5.6	5.9	0.1	11.6	0.03	56.1	52.4	59.8	-32.5	-17.8	-47.2		
Hispanic	-10.0	-13.2	-6.8	0.000		51.2	49.4	53.1	-8.7	-6.3	-11.2	-0.6	-5.9	4.6	0.41	52.6	49.5	55.8	-40.8	-14.7	-66.9		
Japanese	-0.9	-3.9	2.1	0.28		56.4	54.5	58.4	-3.8	-2.8	-4.7	-2.2	-7.4	3.0	0.20	51.8	48.7	54.9	-36.6	-23.0	-50.2		
White	reference					56.9	55.6	58.3	-5.0	-4.1	-5.8	reference					53.0	50.8	55.2	-43.0	-30.8	-55.3	
Model 4 - Additionally Adjusted for Left Truncation ^d																							
Overall	NA					53.3	51.8	54.9	-6.8	-6.2	-7.4	NA					49.3	47.0	51.6	-42.7	-30.9	-54.5	
Racial/Ethnic Group																							
Black	-9.7	-12.5	-7.0	0.000		50.3	48.7	52.0	-5.8	-5.3	-6.4	-14.9	-18.9	-10.9	0.000	44.1	41.9	46.4	-33.1	-24.5	-41.8		
Chinese	6.0	1.8	10.2	0.003		59.1	56.1	62.1	-5.0	-4.4	-5.5	7.3	0.3	14.2	0.02	55.6	51.2	60.0	-32.9	-19.0	-46.9		
Hispanic	-9.8	-13.8	-5.9	0.000		50.3	48.1	52.4	-9.7	-7.6	-11.8	1.1	-4.1	6.4	0.34	52.4	49.2	55.7	-41.0	-15.0	-67.0		
Japanese	-1.0	-6.4	4.4	0.35		55.2	51.7	58.6	-5.0	-5.6	-4.5	0.5	-5.1	6.2	0.43	52.1	48.7	55.6	-36.3	-23.0	-49.6		
White	reference					55.7	53.9	57.6	-6.1	-5.8	-6.5	reference					51.8	49.2	54.5	-44.2	-32.4	-55.9	

Note: HTN = Hypertension, Diff = Difference.

^aAccelerated failure time survival model that is left-censored, right-censored and unadjusted for left-truncation (n_{HTN} = 1360, n_{ISH} = 647).

^bInterval censored accelerated failure time survival model to incorporate left censored cases (n_{HTN} = 2084, n_{ISH} = 1986).

^cInterval censored accelerated failure time survival model with multiply imputed data (n_{HTN} = 3302, n_{ISH} = 3302).

^dWeighted interval censored accelerated failure time survival model with multiply imputed data (n_{HTN} = 3302, n_{ISH} = 3302).

^ePercent difference in age of onset calculated as (exp(β)-1)*100. Models adjusted for covariates including educational level, self-reported health, waist circumference, smoking status, alcohol use and physical activity score.

^fCovariates set to: educational level (some college), self-reported health (very good), waist circumference (86.34 cm), smoking status (never), alcohol use (moderate) and physical activity score (7.65).

^gBias is median age of onset in model adjusted for selection minus median age of onset unadjusted for selection (model 1).

eTable 3. Percentage Difference in Age at Onset and Estimated Median Age at Onset of Metabolic Outcomes by Racial or Ethnic Group in the Study of Women’s Health Across the Nation

		Insulin Resistance										Diabetes									
		Diff in Age of Onset ^e				Predicted Median Age of Onset ^f						Diff in Age of Onset ^e				Predicted Median Age of Onset ^f					
		%	LCI	UCI	p-value	Median	LCI	UCI	Bias ^g	LCI	UCI	%	LCI	UCI	p-value	Median	LCI	UCI	Bias ^g	LCI	UCI
Model 1 - Unadjusted ^a																					
Overall	NA				100.2	90.5	109.8	NA			NA				90.6	84.1	97.1	NA			
Racial/Ethnic Group																					
Black	-9.1	-14.6	-3.3	0.02	94.9	85.6	104.1				-5.4	-10.0	-0.6	0.04	88.9	82.2	95.6				
Chinese ^h	5.7	-8.6	22.1	0.23	110.3	91.9	128.8	NA			-7.4	-14.9	0.8	0.06	87.1	78.4	95.7	NA			
Hispanic	-18.0	-27.0	-8.0	0.011	85.6	74.5	96.6				-1.7	-11.4	9.2	0.37	92.4	81.7	103.1				
Japanese ^h	-2.4	-13.3	9.8	0.34	101.8	87.4	116.3				-13.7	-20.1	-6.8	0.007	81.1	73.8	88.4				
White	reference				104.4	94.0	114.8				reference				94.0	86.9	101.1				
Model 2 - Incorporating Left Censored ^b																					
Overall	NA				101.1	90.5	111.7	0.9	-0.1	1.8	NA				101.5	92.0	111.0	10.9	7.9	13.9	
Racial/Ethnic Group																					
Black	-10.1	-16.4	-3.3	0.02	96.1	85.7	106.5	1.3	0.1	2.4	-8.4	-14.1	-2.3	0.02	98.1	88.6	107.7	9.2	6.3	12.1	
Chinese ^h	9.1	-7.7	28.9	0.16	116.6	94.7	138.6	6.3	2.7	9.8	-3.2	-13.8	8.6	0.29	103.6	89.5	117.8	16.6	11.1	22.1	
Hispanic	-27.2	-35.7	-17.6	0.003	77.8	66.9	88.7	-7.7	-7.5	-8.0	-13.2	-23.2	-1.8	0.04	93.0	80.4	105.7	0.6	-1.3	2.6	
Japanese ^h	4.9	-10.2	22.6	0.27	112.2	92.1	132.2	10.3	4.8	15.9	-12.2	-21.2	-2.3	0.03	94.0	82.2	105.8	12.9	8.4	17.5	
White	reference				106.9	95.3	118.5	2.5	1.2	3.8	reference				107.1	96.5	117.8	13.1	9.6	16.7	
Model 3 - Additionally Accounting for Right Censoring ^c																					
Overall	NA				78.0	73.3	82.7	-22.2	-17.2	-27.1	NA				88.9	84.4	93.5	-1.7	0.2	-3.6	
Racial/Ethnic Group																					
Black	-11.2	-15.2	-7.2	0.000	74.3	69.9	78.7	-20.6	-15.7	-25.4	-7.3	-10.9	-3.7	0.000	86.3	81.5	91.1	-2.6	-0.8	-4.5	
Chinese ^h	-5.2	-17.2	6.7	0.18	79.4	37.9	120.9	-31.0	-54.0	-7.9	-3.5	-10.3	3.3	0.15	89.8	82.6	97.0	2.7	4.2	1.3	
Hispanic	-25.8	-32.2	-19.4	0.000	62.1	56.2	68.0	-23.5	-18.3	-28.6	-13.7	-19.2	-8.1	0.000	80.3	74.7	85.9	-12.1	-7.0	-17.2	
Japanese ^h	-4.2	-12.7	4.3	0.16	80.2	68.4	92.0	-21.7	-19.0	-24.4	-5.0	-11.7	1.7	0.07	88.4	81.3	95.4	7.3	7.5	7.1	
White	reference				83.7	77.8	89.6	-20.7	-16.3	-25.2	reference				93.0	87.8	98.3	-0.9	0.9	-2.8	
Model 4 - Additionally Adjusted for Left Truncation ^d																					
Overall	NA				75.2	67.5	82.9	-25.0	-23.0	-27.0	NA				86.8	75.2	98.5	-3.8	-9.0	1.3	
Racial/Ethnic Group																					
Black	-6.2	-12.2	-0.2	0.02	75.2	67.1	83.3	-19.7	-18.6	-20.8	-6.0	-12.1	0.1	0.02	85.3	75.0	95.5	-3.6	-7.2	-0.1	
Chinese ^h	-4.2	-17.9	9.5	0.26	76.8	26.5	127.2	-33.5	-65.4	-1.6	2.5	-6.3	11.3	0.29	93.0	81.0	105.0	6.0	2.6	9.3	
Hispanic	-25.1	-34.2	-16.0	0.000	60.0	52.7	67.4	-25.5	-21.8	-29.3	-16.1	-25.1	-7.1	0.000	76.1	64.3	88.0	-16.3	-17.4	-15.2	
Japanese ^h	-10.1	-27.4	7.1	0.11	72.0	55.7	88.3	-29.8	-31.6	-28.0	-0.2	-9.0	8.6	0.48	90.6	77.5	103.6	9.5	3.7	15.2	
White	reference				80.1	70.5	89.8	-24.3	-23.5	-25.0	reference				90.7	78.4	103.0	-3.3	-8.4	1.9	

Note: Diff = Difference.

^aAccelerated failure time survival model that is left censored, right censored and unadjusted for left truncation (n_{IR} = 1620, n_{Diabetes} = 1893).

^bInterval censored accelerated failure time survival model to incorporate left censored cases (n_{IR} = 1887, n_{Diabetes} = 2033).

^cInterval censored accelerated failure time survival model with multiply imputed data (n_{IR} = 3302, n_{Diabetes} = 3302).

^dWeighted interval censored accelerated failure time survival model with multiply imputed data (n_{IR} = 3302, n_{Diabetes} = 3302).

^ePercent difference in age of onset calculated as (exp(β)-1)*100. Models adjusted for covariates including educational level, self-reported health, waist circumference, smoking status, alcohol use and physical activity score.

^fCovariates set to: educational level (some college), self-reported health (very good), waist circumference (86.34 cm), smoking status (never), alcohol use (moderate) and physical activity score (7.65).

^gBias is median age of onset in model adjusted for selection minus median age of onset unadjusted for selection (model 1).

^hSmall number of cases for Chinese (n with insulin resistance ~46, n with diabetes ~40) and Japanese (n with insulin resistance ~51, n with diabetes ~34) women.