eTable1. Methods used for thyroid function analytes across NHANES cycles 1999-2000 to 2012-2013

Cycle	Analyte	Lab	Instrument	Method
1999-2000	Total Thyroxine (Total T4)	Coulston Foundation, Alamogordo, New Mexico	Hitachi 704 System	N/A
	TSH		Abbott Imx System (Imx Ultrasensitive hTSH II)	Microparticle Enzyme Immunoassay (MEIA)
2001-2002	Total Thyroxine (Total T4)	Coulston Foundation, Alamogordo, New Mexico	Hitachi 704 System	N/A
		Collaborative Laboratory Services, Ottumwa, Iowa	Beckman Access2 Immunoassay System	Chemiluminescent Immunoassay
	TSH	Coulston Foundation, Alamogordo, New Mexico	Abbott Imx System (Imx Ultrasensitive hTSH II)	Microparticle Enzyme Immunoassay (MEIA)
		Collaborative Laboratory Services, Ottumwa, Iowa	Beckman Access2 Immunoassay System	Chemiluminescent Immunoassay
2003-2004, 2005-2006	N/A			
2007-2008	Free Thyroxine (Free T4)	University of Washington Medical Center	Beckman Access2 Immunoassay System	Chemiluminescent Immunoassay
	Total Thyroxine (Total T4)			
	TSH			
2009-2010	Free Thyroxine (Free T4)	University of Washington Medical Center	Beckman Access2 Immunoassay System	Chemiluminescent Immunoassay
		Collaborative Laboratory Services, Ottumwa, Iowa		
	Total Thyroxine (Total T4)	University of Washington Medical Center		
		Collaborative Laboratory Services, Ottumwa, Iowa		
		*NOTE: Although instruments and methods were the same, samples were analyzed at different laboratories. A crossover study of 113 specimens was done and using a fractional polynomial regression, the 2010 TT4 participant results were lowered to compare to the 2009 TT4 results		
	TSH	University of Washington Medical Center	Beckman Access2 Immunoassay System	Chemiluminescent Immunoassay
		Collaborative Laboratory Services, Ottumwa, Iowa		
2011-2012	Free Thyroxine (Free T4)	Collaborative Laboratory Services, Ottumwa, Iowa	Beckman Access2 Immunoassay System	Chemiluminescent Immunoassay
	Total Thyroxine (Total T4)			
	TSH			

eTable 2. Demographic distribution by gender

	BMI < 85 %tile		BMI > 85 %tile	
	Male	Female	Male	Female
	Median (95% CI)	Median (95% CI)	Median (95% CI)	Median (95% CI)
Proportion				
Age (years)	15.5 (15.3-15.7)	15.3 (15.1-15.5)	15.3 (15.0-15.6)	15.0 (14.7-15.3)
Race/ethnicity (%)				
Hispanic	16.0 (12.7-20.0)	15.5 (12.1-19.6)	23.1 (17.9-29.4)	22.6 (17.0-29.4)
Non-Hispanic Black	13.1 (10.6-16.1)	12.2 (9.8-15.1)	17.2 (13.2-22.1)	23.5 (18.9-28.8)
Non-Hispanic White	61.8 (56.6-66.8)	64.2 (59.6-68.6)	54.3 (47.4-61.0)	46.4 (38.5-54.5)
BMI z-score	0.02 (-0.07-0.11)	0.11 (0.05-0.18)	1.81 (1.75-1.87)	1.69 (1.63-1.75)
Waist circumference z-score	-0.07 (-0.02- -0.12)	-0.03 (-0.08-0.13)	1.50 (1.44-1.56)	1.36 (1.30-1.42)
Waist-height ratio > 0.5, (%)	13.0 (8.2-20.1)	11.6 (9.1-14.7)	93.2 (90.0-95.4)	92.7 (89.0-95.3)
Systolic BP, mm Hg	110.0 (109.5-110.5)	104.0 (103.0-105.0)	115.0 (114.0-116.0)	109.0 (108.0-110.0)
TSH (uIU/mL)	1.45 (1.40-1.50)	1.21 (1.16-1.27)	1.52 (1.42-1.63)	1.45 (1.37-1.53)
Total T4 (ug/dL)	7.30 (7.15-7.45)	7.80 (7.70-7.90)	7.30 (7.15-7.45)	8.00 (7.82-8.18)
Total T3 (ng/dL)	133.0 (131.0-135.0)	124.0 (122.0-126.0)	138.0 (135.5-140.4)	125.0 (122.0-127.9)
Free T4 (ng/dL)	0.80 (0.79-0.84)	0.81 (0.78-0.83)	0.80 (0.77-0.82)	0.81 (0.78-0.83)
Free T3 (pg/mL)	3.70 (3.66-3.73)	3.50 (3.45-3.54)	3.80 (3.71-3.88)	3.49 (3.44-3.54)
Triglyceride (mg/dL)	64.5 (61.1-67.9)	69.0 (64.6-73.4)	90.0 (81.7-98.3)	79.0 (73.6-84.4)
HDL-cholesterol (mg/dL)	51.0 (50.5-51.5)	54.0 (53.0-55.0)	43.0 (41.5-44.5)	46.0 (45.0-47.0)
HOMA-IR	1.64 (1.57-1.72)	1.88 (1.75-2.02)	3.12 (2.79-3.45)	3.29 (2.97-3.62)
ALT (U/L)	17.0 (16.5-17.5)	14.0 (13.6-14.2)	22.0 (21.0-23.0)	16.0 (15.5-16.5)

Abbreviations: BMI: body mass index; BP: blood pressure; TSH: thyroid stimulating hormone; T4: thyroxine; T3: triiodothyronine; HDL-C: high density lipoprotein cholesterol; HOMA-IR: Homeostatic model of insulin resistance; ALT: alanine transferase
SI unit conversion: Total T4 (nmol/L): multiply by 12.9; Total T3 (nmol/L): multiply by 0.0154; fT4 (pmol/L): multiply by 12.9; fT3 (pmol/L): multiply by 1.5362; TG (mmol/L): multiply by 0.0113; HDL-C (mmol/L): multiply by 0.0259

eTable 3. Distribution of subjects by TSH quantiles

	TSH Q1 (<0.97 mIU/L)		TSH Q2 (0.97-1.48 mIU/L)		TSH Q3 (1.49-2.05 mIU/L)		TSH Q4 (> 2.05 mIU/L)	
	Male	Female	Male	Female	Male	Female	Male	Female
	Median (95% CI)		Median (95% CI)		Median (95% CI)		Median (95% CI)	
Waist circumference %	52.3 (47.4-57.3)	54.8 (50.0-59.7)	60.8 (56.3-65.4)	62.1 (58.6-65.5)	61.5 (57.1-65.9)	64.8 (60.7-69.0)	67.7 (64.4-70.1)	66.4 (61.8-70.9)
HDL-Cholesterol (mg/dL)	48.0 (46.0-50.0)	52.0 (50.0-54.0)	48.0 (46.5-49.5)	49.0 (47.5-50.5)	48.0 (46.5-49.5)	51.0 (49.0-52.9)	47.0 (45.5-48.5)	51.0 (49.5-52.5)
Systolic BP % tile	38.0 (32.1-43.9)	37.0 (32.1-41.9)	43.0 (37.6-48.4)	42.5 (37.1-47.9)	42.0 (37.1-46.9)	43.0 (37.6-48.4)	49.0 (44.1-53.9)	43.0 (35.6-50.3)
Diastolic BP %tile	26.0 (21.0-31.0)	39.0 (34.6-43.4)	31.0 (25.1-36.9)	45.0 (40.1-49.9)	34.0 (27.6-40.3)	36.0 (31.6-40.4)	34.0 (29.5-38.4)	41.0 (35.1-46.9)
Systolic BP, mm Hg	111.0 (110.0-112)	105.0 (104.0-106)	112.0 (110.5-113.5)	106.0 (104.5-107.5)	111.0 (109.5-112.5)	106.0 (104.5-107.5)	111.0 (109.5-112.5)	107.5 (105.5-108.5)
Diastolic BP, mm Hg	59.0 (57.5-60.5)	62.0 (61.0-63.0)	60.0 (59.0-61.0)	64.0 (62.5-65.5)	61.0 (60.0-62.0)	62.0 (60.5-63.5)	61.0 (59.0-63.0)	62.0 (61.0-63.0)
Triglyceride (mg/dL)	63.0 (57.6-68.4)	67.0 (60.1-73.8)	73.0 (66.6-79.4)	72.0 (66.1-77.9)	70.0 (64.1-75.9)	73.0 (66.1-79.8)	83.0 (76.1-89.8)	78.5 (70.7-86.3)
Fasting Glucose (mg/dL)	96.3 (94.1-98.4)	92.8 (90.9-94.7)	97.0 (95.8-98.2)	92.8 (91.4-94.2)	98.0 (96.6-99.4)	93.6 (92.5-94.7)	98.7 (97.4-100.0)	94.2 (92.7-95.6)
HOMA-IR	1.95 (1.66-2.23)	2.06 (1.85-2.27)	1.83 (1.65-2.00)	2.18 (1.97-2.40)	2.06 (1.73-2.39)	2.13 (1.83-2.43)	2.25 (2.00-2.50)	2.51 (2.17-2.85)
ALT (U/L)	18.0 (17.0-19.0)	14.0 (13.5-14.5)	18.0 (17.0-19.0)	14.0 (13.5-14.5)	18.0 (17.0-19.0)	15.0 (14.5-15.5)	18.0 (17.5-18.5)	15.0 (14.5-15.5)

BP percentiles are available for subjects < 216 months (18 years).
SI unit conversion: TG (mmol/L) = multiply by 0.0113; HDL-C (mmol/L) = multiply by 0.0259; glucose(mmol/L) = multiply by 0.0555