

Appendix B: Information Presented in the Nutrition Report

The tables below provide information on the type of data included for each biochemical indicator by topic area:

- Trend tables/figures show concentrations by survey cycle for the overall population and for supplement users and nonusers
- Reference interval tables show concentrations by 4-year period where available and otherwise by 2-year cycle as indicated by an asterisk (*)
- Multi-level stratified tables/figures show concentrations by race and Hispanic origin group and by 4-year period where available and otherwise by 2-year cycle as indicated by an asterisk (*)

Water-soluble vitamins, NHANES 1999–2010

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 1999–2002 (T)	RI, 2003–2006 (T)	RI, 2007–2010 (T)	MLS, 1999–2002 (F, T)	MLS, 2003–2006 (F, T)	MLS, 2007–2010 (F, T)
Red blood cell folate	1999–2010	X	X	X	X	X	X	X	X	X	X
Serum folate	1999–2010	X	X	X	X	X	X	X	X	X	X
Serum 5-methyltetrahydrofolic acid	2007–2008	---	X	X	X	---	---	X*	---	---	X*
Serum folic acid	2007–2008	---	X	X	X	---	---	X*	---	---	X*
Serum vitamin B ₁₂	1999–2006	X	X	X	X	X	X	---	X	X	---
Serum pyridoxal-5'-phosphate	2005–2010	X	X	X	X	---	X*	X	---	X*	X
Serum 4-pyridoxic acid	2005–2010	X	X	X	X	---	X*	X	---	X*	X
Plasma homocysteine	1999–2006	X	X	X	X	X	X	---	X	X	---
Plasma methylmalonic acid	1999–2004	X	X	X	X	X	X*	---	X	X*	---
Serum 3cB ₁₂	1999–2004	X	X	X	X	X	X*	---	X	X*	---
Serum vitamin C	2003–2006	X	X	X	X	---	X	---	---	X	---

Abbreviations: 3cB₁₂, composite score to assess vitamin B₁₂ status calculated using the conventional biomarkers serum B₁₂, methylmalonic acid, and homocysteine; F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Water-soluble vitamins, NHANES 2011–2018

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2011–2014 (T)	RI, 2015–2018 (T)	MLS, 2011–2014 (F, T)	MLS, 2015–2018 (F, T)
Red blood cell folate	2011–2016	X	X	X	X	X	X*	X	X*
Serum folate (total; sum of bioactive folate forms)	2011–2016	X	X	X	X	X	X*	X	X*
Serum 5-methyltetrahydrofolic acid	2011–2016	X	X	X	X	X	X*	X	X*
Serum folic acid	2011–2016	X	X	X	X	X	X*	X	X*
Serum 5-formyltetrahydrofolic acid	2011–2016	X	X	X	X	X	X*	X	X*
Serum tetrahydrofolic acid	2011–2016	X	X	X	X	X	X*	X	X*
Serum 5,10-methenyltetrahydrofolic acid	2011–2016	X	X	X	X	X	X*	X	X*
Serum MeFox	2011–2016	X	X	X	X	X	X*	X	X*
Serum vitamin B ₁₂	2011–2014	X	X	X	X	X	---	X	---
Plasma methylmalonic acid	2011–2014	X	X	X	X	X	---	X	---
Serum vitamin C	2017–2018	---	X	X	X	---	X*	---	X*

Abbreviations: F, Figure; MeFox, oxidation product of 5-methyltetrahydrofolic acid (pyrazino-s-triazine derivative of 4 α -hydroxy-5-methyl(THF); MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Water-soluble vitamins, NHANES August 2021–August 2023

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2021–2023 (T)	MLS, 2021–2023 (F, T)
Red blood cell folate	2021–2023	---	X	X	X	X	X
Serum folate (total; sum of bioactive folate forms)	2021–2023	---	X	X	X	X	X
Serum 5-methyltetrahydrofolic acid	2021–2023	---	X	X	X	X	X
Serum folic acid	2021–2023	---	X	X	X	X	X
Serum 5-formyltetrahydrofolic acid	2021–2023	---	X	X	X	X	X
Serum tetrahydrofolic acid	2021–2023	---	X	X	X	X	X
Serum 5,10-methenyltetrahydrofolic acid	2021–2023	---	X	X	X	X	X
Serum MeFox	2021–2023	---	X	X	X	X	X
Red blood cell folate (total; sum of bioactive folate forms)	2021–2023	---	X	X	X	X	X
Red blood cell 5-methyltetrahydrofolic acid	2021–2023	---	X	X	X	X	X
Red blood cell folic acid	2021–2023	---	X	X	X	X	X
Red blood cell 5-formyltetrahydrofolic acid	2021–2023	---	X	X	X	X	X
Red blood cell tetrahydrofolic acid	2021–2023	---	X	X	X	X	X
Red blood cell 5,10-methenyltetrahydrofolic acid	2021–2023	---	X	X	X	X	X
Red blood cell MeFox	2021–2023	---	X	X	X	X	X

Abbreviations: F, Figure; MeFox, oxidation product of 5-methyltetrahydrofolic acid (pyrazino-s-triazine derivative of 4 α -hydroxy-5-methyl(THF); MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Vitamins A and E, and Carotenoids, NHANES 1999–2010

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 1999–2002 (T)	RI, 2003–2006 (T)	RI, 2007–2010 (T)	MLS, 1999–2002 (F, T)	MLS, 2003–2006 (F, T)	MLS, 2007–2010 (F, T)
Serum vitamin A (retinol)	1999–2002; 2005–2006	X	X	X	X	X	X*	---	X	X*	---
Serum retinyl palmitate	1999–2002; 2005–2006	X	X	X	X	X	X*	---	X	X*	---
Serum retinyl stearate	1999–2002; 2005–2006	X	X	X	X	X	X*	---	X	X*	---
Serum vitamin E (<i>alpha</i> -tocopherol)	1999–2002; 2005–2006	X	X	X	X	X	X*	---	X	X*	---
Serum <i>gamma</i> -tocopherol	1999–2002; 2005–2006	X	X	X	X	X	X*	---	X	X*	---
Serum <i>alpha</i> -carotene	2001–2002; 2005–2006	X	X	X	X	X*	X*	---	X*	X*	---
Serum <i>trans-beta</i> -carotene	2001–2002; 2005–2006	X	X	X	X	X*	X*	---	X*	X*	---
Serum <i>cis-beta</i> -carotene	2001–2002; 2005–2006	X	X	X	X	X*	X*	---	X*	X*	---
Serum <i>beta</i> -cryptoxanthin	2001–2002; 2005–2006	X	X	X	X	X*	X*	---	X*	X*	---
Serum lutein/zeaxanthin	2001–2002; 2005–2006	X	X	X	X	X*	X*	---	X*	X*	---
Serum <i>trans</i> -lycopene	2001–2002; 2005–2006	X	X	X	X	X*	X*	---	X*	X*	---
Serum total lycopene	2005–2006	---	X	X	X	---	X*	---	---	X*	---

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Vitamins A and E, and Carotenoids, NHANES 2011–2018

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2011–2014 (T)	RI, 2015–2018 (T)	MLS, 2011–2014 (F, T)	MLS, 2015–2018 (F, T)
Serum vitamin A (retinol)	2017–2018	---	X	X	X	---	X*	---	X*
Serum retinyl palmitate	2017–2018	---	X	X	X	---	X*	---	X*
Serum retinyl stearate	2017–2018	---	X	X	X	---	X*	---	X*
Serum vitamin E (<i>alpha</i> -tocopherol)	2017–2018	---	X	X	X	---	X*	---	X*
Serum <i>gamma</i> -tocopherol	2017–2018	---	X	X	X	---	X*	---	X*
Serum <i>alpha</i> -carotene	2017–2018	---	X	X	X	---	X*	---	X*
Serum <i>trans-beta</i> -carotene	2017–2018	---	X	X	X	---	X*	---	X*
Serum <i>cis-beta</i> -carotene	2017–2018	---	X	X	X	---	X*	---	X*
Serum <i>alpha</i> -cryptoxanthin	2017–2018	---	X	X	X	---	X*	---	X*
Serum <i>beta</i> -cryptoxanthin	2017–2018	---	X	X	X	---	X*	---	X*
Serum lutein/zeaxanthin	2017–2018	---	X	X	X	---	X*	---	X*
Serum <i>trans</i> -lycopene	2017–2018	---	X	X	X	---	X*	---	X*
Serum total lycopene	2017–2018	---	X	X	X	---	X*	---	X*

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Vitamin D, NHANES 1999–2010

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 1999–2002 (T)	RI, 2003–2006 (T)	RI, 2007–2010 (T)	MLS, 1999–2002 (F, T)	MLS, 2003–2006 (F, T)	MLS, 2007–2010 (F, T)
Serum 25-hydroxyvitamin D	2001–2010	X	X	X	X	X*	X	X	X*	X	X
Serum 25-hydroxyvitamin D ₃	2007–2010	X	X	X	X	---	---	X	---	---	X
Serum 25-hydroxyvitamin D ₂	2007–2010	X	X	X	X	---	---	X	---	---	X
Serum 25-hydroxyvitamin D ₃ epimer	2007–2010	X	X	X	X	---	---	X	---	---	X

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Vitamin D, NHANES 2011–2018

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2011–2014 (T)	RI, 2015–2018 (T)	MLS, 2011–2014 (F, T)	MLS, 2015–2018 (F, T)
Serum 25-hydroxyvitamin D	2011–2018	X	X	X	X	X	X	X	X
Serum 25-hydroxyvitamin D ₃	2011–2018	X	X	X	X	X	X	X	X
Serum 25-hydroxyvitamin D ₂	2011–2018	X	X	X	X	X	X	X	X
Serum 25-hydroxyvitamin D ₃ epimer	2011–2018	X	X	X	X	X	X	X	X

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Vitamin D, NHANES August 2021–August 2023

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2021–2023 (T)	MLS, 2021–2023 (F, T)
Serum 25-hydroxyvitamin D	2021–2023	---	X	X	X	X	X
Serum 25-hydroxyvitamin D ₃	2021–2023	---	X	X	X	X	X
Serum 25-hydroxyvitamin D ₂	2021–2023	---	X	X	X	X	X
Serum 25-hydroxyvitamin D ₃ epimer	2021–2023	---	X	X	X	X	X

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Fatty Acids, NHANES 1999–2010

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 1999–2002 (T)	RI, 2003–2006 (T)	RI, 2007–2010 (T)	MLS, 1999–2002 (F, T)	MLS, 2003–2006 (F, T)	MLS, 2007–2010 (F, T)
Plasma myristic acid (14:0)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma palmitic acid (16:0)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma stearic acid (18:0)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma arachidic acid (20:0)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma docosanoic acid (22:0)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma lignoceric acid (24:0)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma myristoleic acid (14:1n-5)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma palmitoleic acid (16:1n-7)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma <i>cis</i> -vaccenic acid (18:1n-7)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma oleic acid (18:1n-9)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma eicosenoic acid (20:1n-9)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma docosenoic acid (22:1n-9)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma nervonic acid (24:1n-9)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma linoleic acid (18:2n-6)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma <i>alpha</i> -linolenic acid (18:3n-3)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma <i>gamma</i> -linolenic acid (18:3n-6)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma eicosadienoic acid (20:2n-6)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma <i>homo-gamma</i> -linolenic acid (20:3n-6)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma arachidonic acid (20:4n-6)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma eicosapentaenoic acid (20:5n-3)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma docosatetraenoic acid (22:4n-6)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma docosapentaenoic acid (22:5n-3)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma docosapentaenoic acid (22:5n-6)	2003–2004	---	X	X	X	---	X*	---	---	X*	---
Plasma docosahexaenoic acid (22:6n-3)	2003–2004	---	X	X	X	---	X*	---	---	X*	---

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Fatty Acids, NHANES 2011–2018

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2011–2014 (T)	RI, 2015–2018 (T)	MLS, 2011–2014 (F, T)	MLS, 2015–2018 (F, T)
Serum capric acid (10:0)	2011–2014	X	X	X	X	X	---	X	---
Serum lauric acid (12:0)	2011–2014	X	X	X	X	X	---	X	---
Serum myristic acid (14:0)	2011–2014	X	X	X	X	X	---	X	---
Serum pentadecanoic acid (15:0)	2011–2014	X	X	X	X	X	---	X	---
Serum palmitic acid (16:0)	2011–2014	X	X	X	X	X	---	X	---
Serum margaric acid (17:0)	2011–2014	X	X	X	X	X	---	X	---
Serum stearic acid (18:0)	2011–2014	X	X	X	X	X	---	X	---
Serum arachidic acid (20:0)	2011–2014	X	X	X	X	X	---	X	---
Serum docosanoic acid (22:0)	2011–2014	X	X	X	X	X	---	X	---
Serum tricosanoic acid (23:0)	2011–2014	X	X	X	X	X	---	X	---
Serum lignoceric acid (24:0)	2011–2014	X	X	X	X	X	---	X	---
Serum myristoleic acid (14:1n-5)	2011–2014	X	X	X	X	X	---	X	---
Serum palmitoleic acid (16:1n-7)	2011–2014	X	X	X	X	X	---	X	---
Serum <i>cis</i> -vaccenic acid (18:1n-7)	2011–2014	X	X	X	X	X	---	X	---
Serum oleic acid (18:1n-9)	2011–2014	X	X	X	X	X	---	X	---
Serum eicosenoic acid (20:1n-9)	2011–2014	X	X	X	X	X	---	X	---
Serum nervonic acid (24:1n-9)	2011–2014	X	X	X	X	X	---	X	---
Serum linoleic acid (18:2n-6)	2011–2014	X	X	X	X	X	---	X	---
Serum <i>alpha</i> -linolenic acid (18:3n-3)	2011–2014	X	X	X	X	X	---	X	---
Serum <i>gamma</i> -linolenic acid (18:3n-6)	2011–2014	X	X	X	X	X	---	X	---
Serum stearidonic acid (18:4n-3)	2011–2014	X	X	X	X	X	---	X	---
Serum eicosadienoic acid (20:2n-6)	2011–2014	X	X	X	X	X	---	X	---
Serum <i>homo-gamma</i> -linolenic acid (20:3n-6)	2011–2014	X	X	X	X	X	---	X	---
Serum eicosatrienoic acid (20:3n-9)	2011–2014	X	X	X	X	X	---	X	---
Serum arachidonic acid (20:4n-6)	2011–2014	X	X	X	X	X	---	X	---
Serum eicosapentaenoic acid (20:5n-3)	2011–2014	X	X	X	X	X	---	X	---
Serum docosatetraenoic acid (22:4n-6)	2011–2014	X	X	X	X	X	---	X	---
Serum docosapentaenoic acid (22:5n-3)	2011–2014	X	X	X	X	X	---	X	---
Serum docosapentaenoic acid (22:5n-6)	2011–2014	X	X	X	X	X	---	X	---
Serum docosahexaenoic acid (22:6n-3)	2011–2014	X	X	X	X	X	---	X	---

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Fatty Acids, NHANES August 2021–August 2023

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2021–2023 (T)	MLS, 2021–2023 (F, T)
Red blood cell myristic acid (14:0)	2021–2023	---	X	X	X	X	X
Red blood cell palmitic acid (16:0)	2021–2023	---	X	X	X	X	X
Red blood cell stearic acid (18:0)	2021–2023	---	X	X	X	X	X
Red blood cell arachidic acid (20:0)	2021–2023	---	X	X	X	X	X
Red blood cell docosanoic acid (22:0)	2021–2023	---	X	X	X	X	X
Red blood cell lignoceric acid (24:0)	2021–2023	---	X	X	X	X	X
Red blood cell palmitoleic acid (16:1n-7)	2021–2023	---	X	X	X	X	X
Red blood cell oleic acid (18:1n-9)	2021–2023	---	X	X	X	X	X
Red blood cell eicosenoic acid (20:1n-9)	2021–2023	---	X	X	X	X	X
Red blood cell nervonic acid (24:1n-9)	2021–2023	---	X	X	X	X	X
Red blood cell linoleic acid (18:2n-6)	2021–2023	---	X	X	X	X	X
Red blood cell <i>alpha</i> -linolenic acid (18:3n-3)	2021–2023	---	X	X	X	X	X
Red blood cell <i>gamma</i> -linolenic acid (18:3n-6)	2021–2023	---	X	X	X	X	X
Red blood cell eicosadienoic acid (20:2n-6)	2021–2023	---	X	X	X	X	X
Red blood cell <i>homo-gamma</i> -linolenic acid (20:3n-6)	2021–2023	---	X	X	X	X	X
Red blood cell arachidonic acid (20:4n-6)	2021–2023	---	X	X	X	X	X
Red blood cell eicosapentaenoic acid (20:5n-3)	2021–2023	---	X	X	X	X	X
Red blood cell docosatetraenoic acid (22:4n-6)	2021–2023	---	X	X	X	X	X
Red blood cell docosapentaenoic acid (22:5n-3)	2021–2023	---	X	X	X	X	X
Red blood cell docosapentaenoic acid (22:5n-6)	2021–2023	---	X	X	X	X	X
Red blood cell docosahexaenoic acid (22:6n-3)	2021–2023	---	X	X	X	X	X
Red blood cell omega-3 index	2021–2023	---	X	X	X	X	X

Abbreviations: F, Figure; MLS, multi-level stratified; omega-3 index, calculated as the sum of eicosapentaenoic acid and docosahexaenoic acid; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Iron-Status Indicators, NHANES 1999–2010

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 1999–2002 (T)	RI, 2003–2006 (T)	RI, 2007–2010 (T)	MLS, 1999–2002 (F, T)	MLS, 2003–2006 (F, T)	MLS, 2007–2010 (F, T)
Serum ferritin, all	1999–2002	X	X	X	X	X	---	---	X	---	---
Serum ferritin, females	1999–2010	X†	X†	X†	X†	X	X	X	X	X	X
Serum ferritin, children	1999–2010	X†	X†	X†	X†	X	X	X	X	X	X
Serum soluble transferrin receptor, females	2003–2010	X	X	X	X	---	X	X	---	X	X
Serum soluble transferrin receptor, children	2003–2010	X	X	X	X	---	X	X	---	X	X
Serum body iron index, females	2003–2010	X	X	X	X	---	X	X	---	X	X
Serum body iron index, children	2003–2010	X	X	X	X	---	X	X	---	X	X
Serum iron	1999–2000	---	X	X	X	X*	---	---	X*	---	---
Serum total iron binding capacity	1999–2000	---	X	X	X	X*	---	---	X*	---	---
Serum transferrin saturation	1999–2000	---	X	X	X	X*	---	---	X*	---	---
Erythrocyte protoporphyrin	1999–2000	---	X	X	X	X*	---	---	X*	---	---

† - Trend tables include data for 2003–2010 only.

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Iron-Status Indicators, NHANES 2011–2018

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2011–2014 (T)	RI, 2015–2018 (T)	MLS, 2011–2014 (F, T)	MLS, 2015–2018 (F, T)
Serum ferritin, females	2015–2018	X	X	X	X	---	X	---	X
Serum ferritin, children	2015–2018	X	X	X	X	---	X	---	X
Serum soluble transferrin receptor, females	2015–2018	X	X	X	X	---	X	---	X
Serum soluble transferrin receptor, children	2015–2018	X	X	X	X	---	X	---	X
Serum body iron, females	2015–2018	X	X	X	X	---	X	---	X
Serum body iron, children	2015–2018	X	X	X	X	---	X	---	X

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Iron-Status Indicators, NHANES August 2021–August 2023

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2021–2023 (T)	MLS, 2021–2023 (F, T)
Serum ferritin, females	2021–2023	---	X	X	X	X	X
Serum ferritin, children	2021–2023	---	X	X	X	X	X
Serum soluble transferrin receptor, females	2021–2023	---	X	X	X	X	X
Serum soluble transferrin receptor, children	2021–2023	---	X	X	X	X	X
Serum body iron, females	2021–2023	---	X	X	X	X	X
Serum body iron, children	2021–2023	---	X	X	X	X	X

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Trace Elements, NHANES 1999–2010

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 1999–2002 (T)	RI, 2003–2006 (T)	RI, 2007–2010 (T)	MLS, 1999–2002 (F, T)	MLS, 2003–2006 (F, T)	MLS, 2007–2010 (F, T)
Urine iodine	2001–2010	X	X	X	X	X*	X	X	X*	X	X
Urine iodine (creatinine corrected)	2001–2010	X	X	X	X	X*	X	X	X*	X	X
Serum selenium	1999–2000	X	X	X	X	X*	---	---	X*	---	---

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Trace Elements, NHANES 2011–2018

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2011–2014 (T)	RI, 2015–2018 (T)	MLS, 2011–2014 (F, T)	MLS, 2015–2018 (F, T)
Urine iodine	2011–2018	X	X	X	X	X	X	X	X
Urine iodine (creatinine corrected)	2011–2018	X	X	X	X	X	X	X	X
Serum selenium	2011–2016	X	X	X	X	X	X*	X	X*
Serum zinc	2011–2016	X	X	X	X	X	X*	X	X*
Serum copper	2011–2016	X	X	X	X	X	X*	X	X*

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Trace Elements, NHANES August 2021–August 2023

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2021–2023 (T)	MLS, 2021–2023 (F, T)
Urine iodine	2021–2023	---	Data pending	Data pending	Data pending	Data pending	Data pending
Urine iodine (creatinine corrected)	2021–2023	---	Data pending	Data pending	Data pending	Data pending	Data pending

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Phytoestrogens, NHANES 1999–2010

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 1999–2002 (T)	RI, 2003–2006 (T)	RI, 2007–2010 (T)	MLS, 1999–2002 (F, T)	MLS, 2003–2006 (F, T)	MLS, 2007–2010 (F, T)
Urine genistein	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine genistein (creatinine corrected)	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine daidzein	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine daidzein (creatinine corrected)	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine equol	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine equol (creatinine corrected)	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine O-desmethylangolensin	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine O-desmethylangolensin (creatinine corrected)	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine enterodiol	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine enterodiol (creatinine corrected)	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine enterolactone	1999–2010	X	X	X	X	X	X	X	X	X	X
Urine enterolactone (creatinine corrected)	1999–2010	X	X	X	X	X	X	X	X	X	X

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Caffeine and metabolites, NHANES 1999–2010

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 1999–2002 (T)	RI, 2003–2006 (T)	RI, 2007–2010 (T)	MLS, 1999–2002 (F, T)	MLS, 2003–2006 (F, T)	MLS, 2007–2010 (F, T)
Urine caffeine	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine caffeine (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine theophylline	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine theophylline (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine paraxanthine	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine paraxanthine (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine theobromine	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine theobromine (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 1-methylxanthine	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 1-methylxanthine (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 3-methylxanthine	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 3-methylxanthine (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 7-methylxanthine	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 7-methylxanthine (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 1,3,7-trimethyluric acid	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 1,3,7-trimethyluric acid (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 1,3-dimethyluric acid	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 1,3-dimethyluric acid (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 1,7-dimethyluric acid	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 1,7-dimethyluric acid (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 3,7-dimethyluric acid	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 3,7-dimethyluric acid (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 1-methyluric acid	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 1-methyluric acid (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 3-methyluric acid	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 3-methyluric acid (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 7-methyluric acid	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 7-methyluric acid (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 5-acetylamino-6-amino-3-methyluracil	2009–2010	---	X	X	X	---	---	X*	---	---	X*
Urine 5-acetylamino-6-amino-3-methyluracil (excretion rate)	2009–2010	---	X	X	X	---	---	X*	---	---	X*

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Caffeine and metabolites, NHANES 2011–2018

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2011–2014 (T)	RI, 2015–2018 (T)	MLS, 2011–2014 (F, T)	MLS, 2015–2018 (F, T)
Urine caffeine	2011–2014	X	X	X	X	X	---	X	---
Urine caffeine (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine theophylline	2011–2014	X	X	X	X	X	---	X	---
Urine theophylline (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine paraxanthine	2011–2014	X	X	X	X	X	---	X	---
Urine paraxanthine (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine theobromine	2011–2014	X	X	X	X	X	---	X	---
Urine theobromine (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 1-methylxanthine	2011–2014	X	X	X	X	X	---	X	---
Urine 1-methylxanthine (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 3-methylxanthine	2011–2014	X	X	X	X	X	---	X	---
Urine 3-methylxanthine (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 7-methylxanthine	2011–2014	X	X	X	X	X	---	X	---
Urine 7-methylxanthine (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 1,3,7-trimethyluric acid	2011–2014	X	X	X	X	X	---	X	---
Urine 1,3,7-trimethyluric acid (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 1,3-dimethyluric acid	2011–2014	X	X	X	X	X	---	X	---
Urine 1,3-dimethyluric acid (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 1,7-dimethyluric acid	2011–2014	X	X	X	X	X	---	X	---
Urine 1,7-dimethyluric acid (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 3,7-dimethyluric acid	2011–2014	X	X	X	X	X	---	X	---
Urine 3,7-dimethyluric acid (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 1-methyluric acid	2011–2014	X	X	X	X	X	---	X	---
Urine 1-methyluric acid (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 3-methyluric acid	2011–2014	X	X	X	X	X	---	X	---
Urine 3-methyluric acid (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 7-methyluric acid	2011–2014	X	X	X	X	X	---	X	---
Urine 7-methyluric acid (excretion rate)	2011–2014	X	X	X	X	X	---	X	---
Urine 5-acetylamino-6-amino-3-methyluracil	2011–2014	X	X	X	X	X	---	X	---
Urine 5-acetylamino-6-amino-3-methyluracil (excretion rate)	2011–2014	X	X	X	X	X	---	X	---

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Acrylamide Hemoglobin Adducts, NHANES 1999–2010

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 1999–2002 (T)	RI, 2003–2006 (T)	RI, 2007–2010 (T)	MLS, 1999–2002 (F, T)	MLS, 2003–2006 (F, T)	MLS, 2007–2010 (F, T)
Acrylamide hemoglobin adduct	2003–2006	X	X	X	X	---	X	---	---	X	---
Glycidamide hemoglobin adduct	2003–2006	X	X	X	X	---	X	---	---	X	---
Glycidamide-to-acrylamide hemoglobin adduct ratio	2003–2006	X	X	X	X	---	X	---	---	X	---

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Acrylamide Hemoglobin Adducts, NHANES 2011–2018

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 2011–2014 (T)	RI, 2015–2018 (T)	MLS, 2011–2014 (F, T)	MLS, 2015–2018 (F, T)
Acrylamide hemoglobin adduct	2013–2016	X	X	X	X	X*	X*	X*	X*
Glycidamide hemoglobin adduct	2013–2016	X	X	X	X	X*	X*	X*	X*
Glycidamide-to-acrylamide hemoglobin adduct ratio	2013–2016	X	X	X	X	X*	X*	X*	X*

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.

Trans Fatty Acids, NHANES 1999–2010

Indicator	Time Period	Trend, Overall (F)	Trend, Overall (T)	Trend, S-user (T)	Trend, S-nonuser (T)	RI, 1999–2002 (T)	RI, 2003–2006 (T)	RI, 2007–2010 (T)	MLS, 1999–2002 (F, T)	MLS, 2003–2006 (F, T)	MLS, 2007–2010 (F, T)
Plasma <i>trans</i> -9-hexadecenoic acid	1999–2000; 2009–2010	X	X	X	X	X*	---	X*	X*	---	X*
Plasma <i>trans</i> -9, <i>trans</i> -12-octadienoic acid	1999–2000; 2009–2010	X	X	X	X	X*	---	X*	X*	---	X*
Plasma <i>trans</i> -9-octadecenoic acid	1999–2000; 2009–2010	X	X	X	X	X*	---	X*	X*	---	X*
Plasma <i>trans</i> -11-octadecenoic acid	1999–2000; 2009–2010	X	X	X	X	X*	---	X*	X*	---	X*
Total <i>trans</i> fatty acids	1999–2000; 2009–2010	X	X	X	X	X*	---	X*	X*	---	X*

Abbreviations: F, Figure; MLS, multi-level stratified; RI, reference intervals; S-nonuser, supplement nonuser; S-user, supplement user; T, Table; ---, no data.