

# **Adducts of Hemoglobin**

## Acrylamide (2003 - 2006)

CAS Number 79-06-1

Geometric mean and selected percentiles of hemoglobin adduct concentrations (in pmol/g hemoglobin) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (Years)	Geometric Mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	61.2 (58.1-64.4)	54.8 (52.8-57.7)	79.1 (73.5-85.6)	141 (124-155)	192 (168-217)	7101
Total population	05-06	61.6 (58.1-65.4)	54.8 (52.8-56.8)	79.1 (75.1-86.1)	165 (151-178)	221 (204-246)	7857
Age 3-5 years	03-04	59.4 (53.6-65.7)	58.6 (51.7-64.9)	75.7 (63.4-83.6)	90.6 (81.9-105)	108 (86.2-118)	350
Age 3-5 years	05-06	59.1 (55.8-62.6)	63.6 (58.6-66.4)	74.4 (73.2-76.3)	90.3 (80.8-100)	102 (87.3-121)	483
Age 6-11 years	03-04	58.6 (56.1-61.2)	57.3 (55.2-59.7)	71.0 (67.4-76.3)	86.8 (81.2-91.4)	98.8 (91.0-104)	769
Age 6-11 years	05-06	56.1 (53.9-58.5)	57.1 (54.8-59.9)	67.8 (65.3-69.8)	78.8 (74.9-86.8)	93.8 (81.1-103)	924
Age 12-19 years	03-04	57.4 (54.4-60.5)	54.5 (52.1-57.4)	70.7 (65.6-75.7)	100 (89.2-114)	132 (115-151)	1889
Age 12-19 years	05-06	56.4 (52.5-60.6)	53.1 (50.7-55.8)	69.5 (66.2-73.1)	112 (98.0-127)	162 (131-221)	1977
Age 20-59 years	03-04	66.2 (62.2-70.6)	57.9 (54.6-61.1)	96.1 (83.6-108)	163 (147-191)	223 (194-243)	2570
Age 20-59 years	05-06	66.8 (62.1-71.9)	56.4 (53.7-59.8)	101 (87.1-118)	196 (177-210)	257 (222-298)	3066
Age 60+ years	03-04	50.1 (47.9-52.3)	46.5 (44.0-49.2)	61.0 (57.6-66.0)	96.1 (88.0-108)	141 (120-152)	1523
Age 60+ years	05-06	52.5 (49.4-55.7)	47.8 (45.0-49.6)	65.9 (60.2-71.6)	136 (112-156)	184 (167-198)	1407
Males	03-04	63.9 (60.2-67.9)	57.0 (53.7-60.1)	85.5 (79.2-93.7)	152 (139-175)	220 (189-237)	3509
Males	05-06	65.7 (61.5-70.1)	57.5 (55.1-60.4)	91.5 (80.9-101)	183 (163-208)	246 (213-277)	3826
Females	03-04	58.7 (55.9-61.5)	53.4 (51.8-55.9)	73.9 (69.5-80.6)	126 (111-142)	164 (147-191)	3592
Females	05-06	58.1 (54.6-61.7)	52.8 (50.9-54.7)	73.1 (68.3-78.2)	146 (131-160)	199 (182-211)	4031
Mexican Americans	03-04	61.7 (58.7-64.9)	57.4 (54.4-60.4)	73.0 (69.2-77.3)	101 (95.0-115)	149 (125-179)	1792
Mexican Americans	05-06	57.2 (54.0-60.7)	54.8 (51.4-58.2)	70.2 (67.2-73.7)	94.0 (86.2-104)	130 (110-148)	2035
Non-Hispanic Blacks	03-04	63.8 (57.3-71.1)	57.1 (52.1-64.1)	86.5 (74.6-104)	156 (120-203)	218 (172-271)	1874
Non-Hispanic Blacks	05-06	58.1 (53.5-63.2)	54.2 (52.4-55.7)	82.3 (74.0-95.4)	170 (147-189)	226 (198-259)	2061
Non-Hispanic Whites	03-04	62.4 (59.0-66.0)	55.3 (53.0-58.6)	82.2 (75.4-89.1)	146 (129-163)	197 (172-223)	2994
Non-Hispanic Whites	05-06	63.9 (59.8-68.3)	55.4 (53.0-58.5)	83.8 (76.5-94.9)	177 (160-194)	228 (208-258)	3153

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 and 05-06 are 3.0 and 0.11, respectively.

Biomonitoring Summary: [https://www.cdc.gov/biomonitoring/Acrylamide\\_BiomonitoringSummary.html](https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html)

Factsheet: [https://www.cdc.gov/biomonitoring/Acrylamide\\_FactSheet.html](https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html)

## Acrylamide (2013 - 2016)

CAS Number 79-06-1

Geometric mean and selected percentiles of hemoglobin adduct concentrations (in pmol/g hemoglobin) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (Years)	Geometric Mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	13-14	48.4 (46.1-50.7)	42.5 (41.1-43.7)	59.2 (55.6-61.7)	113 (95.9-127)	167 (142-203)	2348
Total population	15-16	47.7 (45.0-50.6)	42.3 (40.5-44.6)	59.8 (54.0-67.0)	107 (87.7-125)	146 (125-185)	2413
Age 6-11 years	13-14	43.6 (42.4-44.7)	43.7 (41.7-45.0)	50.6 (47.6-53.5)	62.2 (55.6-68.1)	70.8 (58.3-81.1)	312
Age 6-11 years	15-16	43.2 (41.8-44.6)	43.0 (41.4-45.0)	50.2 (47.4-53.2)	59.6 (54.7-65.2)	66.4 (61.0-74.0)	323
Age 12-19 years	13-14	43.3 (40.4-46.4)	38.0 (34.9-40.7)	51.4 (46.4-58.0)	72.0 (59.2-141)	147 (74.6-246)	387
Age 12-19 years	15-16	42.5 (40.2-44.9)	40.9 (38.5-42.6)	50.0 (48.5-52.3)	63.2 (57.0-73.0)	84.0 (63.0-185)	365
Age 20-59 years	13-14	52.9 (50.1-55.9)	44.0 (42.6-46.8)	69.6 (63.2-77.1)	138 (119-164)	202 (171-231)	1134
Age 20-59 years	15-16	51.9 (47.8-56.4)	45.0 (41.0-48.1)	71.4 (62.7-82.5)	124 (108-141)	171 (137-220)	1152
Age 60+ years	13-14	41.6 (38.3-45.3)	39.1 (35.1-42.9)	51.9 (47.2-56.8)	71.3 (60.9-85.1)	99.5 (74.0-117)	515
Age 60+ years	15-16	42.0 (38.8-45.4)	38.6 (35.2-43.2)	53.2 (47.6-56.0)	83.0 (62.0-111)	118 (83.4-210)	573
Males	13-14	51.2 (49.1-53.4)	44.2 (43.0-46.3)	61.7 (59.6-65.2)	128 (101-152)	197 (164-229)	1158
Males	15-16	50.9 (47.5-54.5)	44.5 (41.5-47.1)	65.6 (54.7-80.4)	125 (99.3-148)	185 (148-210)	1187
Females	13-14	45.8 (42.6-49.2)	41.0 (38.7-42.8)	54.4 (50.4-60.4)	100 (87.6-115)	140 (120-173)	1190
Females	15-16	44.9 (42.0-48.1)	40.6 (38.6-43.2)	56.0 (51.5-64.2)	92.0 (74.1-112)	123 (103-140)	1226
Mexican Americans	13-14	45.7 (43.6-47.9)	43.3 (40.9-45.4)	53.9 (51.0-55.7)	67.4 (62.8-78.1)	107 (72.6-138)	394
Mexican Americans	15-16	46.1 (43.0-49.3)	42.3 (39.2-45.6)	53.5 (48.1-62.3)	80.1 (70.7-96.9)	120 (90.2-177)	467
Non-Hispanic Blacks	13-14	52.0 (48.7-55.5)	42.2 (39.9-45.6)	70.3 (58.6-83.6)	164 (130-198)	234 (198-269)	490
Non-Hispanic Blacks	15-16	54.0 (50.3-57.9)	47.9 (45.2-50.4)	74.8 (62.1-95.6)	146 (114-182)	246 (152-330)	478
Non-Hispanic Whites	13-14	49.3 (46.0-52.9)	42.9 (41.3-44.6)	60.0 (55.0-66.3)	116 (94.1-137)	170 (134-229)	921
Non-Hispanic Whites	15-16	48.0 (44.0-52.3)	41.9 (39.6-45.5)	60.3 (52.3-72.1)	111 (84.2-135)	144 (119-195)	757
All Hispanics	13-14	44.8 (43.4-46.2)	41.3 (39.9-43.1)	53.9 (51.1-56.1)	74.6 (66.7-89.6)	115 (87.6-148)	605
All Hispanics	15-16	45.2 (42.7-47.9)	41.3 (39.1-44.6)	53.5 (49.4-59.0)	82.4 (71.3-96.9)	125 (102-148)	800
Asians	13-14	39.4 (36.4-42.5)	39.0 (34.8-44.4)	53.6 (47.7-59.8)	70.9 (56.9-86.6)	85.8 (70.9-100)	246
Asians	15-16	39.1 (36.6-41.8)	38.8 (36.1-42.2)	50.4 (47.7-54.3)	71.1 (64.1-80.5)	86.8 (73.9-98.8)	274

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.110 and 0.110 respectively.

Biomonitoring Summary: [https://www.cdc.gov/biomonitoring/Acrylamide\\_BiomonitoringSummary.html](https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html)

Factsheet: [https://www.cdc.gov/biomonitoring/Acrylamide\\_FactSheet.html](https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html)

## Ethylene Oxide Hemoglobin Adduct in Non-smokers (2013 - 2016)

CAS Number 75-21-8

Geometric mean and selected percentiles of hemoglobin adduct concentrations of (in pmol/g hemoglobin) for the non-smoking<sup>^</sup> U.S. population from the National Health and Nutrition Examination Survey.

Demographic (Categories)	Survey (Years)	Geometric Mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	13-14	28.5 (27.0-30.1)	29.1 (27.6-30.5)	37.5 (35.4-39.7)	50.1 (46.8-52.9)	60.8 (55.9-69.7)	1945
Total population	15-16	27.7 (26.1-29.5)	26.5 (25.2-27.7)	34.7 (32.7-36.6)	47.8 (44.0-53.4)	63.8 (54.0-80.1)	1896
Age 6-11 years	13-14	33.9 (31.6-36.4)	33.2 (30.2-36.8)	42.9 (37.9-47.9)	52.6 (48.8-56.2)	62.9 (55.8-76.1)	321
Age 6-11 years	15-16	33.1 (31.8-34.4)	32.2 (30.7-33.7)	39.9 (37.8-42.0)	52.0 (46.6-58.6)	60.3 (56.0-64.2)	301
Age 12-19 years	13-14	29.3 (27.4-31.2)	29.6 (27.4-31.2)	36.4 (34.4-40.0)	49.0 (44.1-56.8)	60.3 (48.0-79.8)	358
Age 12-19 years	15-16	27.6 (25.1-30.3)	27.0 (25.2-29.3)	35.3 (31.3-39.1)	46.3 (40.7-53.9)	54.0 (46.3-60.4)	328
Age 20+ years	13-14	27.8 (26.2-29.5)	28.6 (26.9-30.1)	36.8 (34.6-38.8)	49.2 (44.5-54.1)	60.8 (54.1-69.7)	1266
Age 20+ years	15-16	27.2 (25.5-29.0)	25.7 (24.1-27.2)	33.7 (32.0-36.2)	47.5 (43.1-54.0)	65.8 (54.0-82.7)	1267
Males	13-14	29.0 (27.2-31.0)	30.2 (28.3-31.3)	38.4 (35.9-40.4)	50.5 (45.3-52.9)	60.4 (52.9-71.1)	897
Males	15-16	29.1 (27.5-30.8)	27.3 (25.7-28.7)	36.4 (34.4-37.8)	51.2 (45.8-56.9)	80.1 (60.5-83.0)	882
Females	13-14	28.1 (26.5-29.8)	28.6 (26.9-29.7)	36.6 (34.9-38.6)	49.6 (45.7-55.6)	60.8 (54.7-69.7)	1048
Females	15-16	26.6 (24.7-28.6)	25.8 (24.1-27.3)	33.2 (31.7-35.6)	46.6 (40.5-52.6)	56.9 (49.0-68.1)	1014
Non-Hispanic Blacks	13-14	31.3 (29.1-33.7)	30.8 (28.7-33.7)	43.9 (38.0-47.9)	58.3 (51.7-69.2)	78.4 (61.9-109)	376
Non-Hispanic Blacks	15-16	31.8 (30.1-33.6)	30.7 (28.0-33.6)	40.6 (38.0-44.4)	53.9 (47.6-63.7)	65.6 (55.2-79.2)	340
Non-Hispanic Whites	13-14	27.2 (25.0-29.5)	28.1 (26.2-30.2)	35.9 (32.6-39.1)	48.0 (42.1-52.9)	59.2 (49.6-69.7)	680
Non-Hispanic Whites	15-16	26.1 (24.0-28.4)	25.0 (23.6-26.6)	32.2 (29.7-34.3)	43.1 (39.9-48.9)	63.8 (46.4-83.1)	569
All Hispanics	13-14	30.2 (28.9-31.6)	30.0 (29.2-31.3)	37.2 (35.1-39.5)	49.1 (44.4-53.7)	59.2 (52.6-73.1)	585
All Hispanics	15-16	29.0 (27.7-30.4)	27.6 (26.4-29.4)	35.7 (34.1-37.4)	47.4 (42.0-58.3)	62.7 (49.4-95.4)	654

Limit of detection (LOD, see Data Analysis section) for Survey years 13-14 and 15-16 are 13.13 and 13.13, respectively.

<sup>^</sup> Non-smoking is defined as a serum cotinine concentration of 10 ng/mL or less.

## Ethylene Oxide Hemoglobin Adduct in Smokers (2013 - 2016)

CAS Number 75-21-8

Geometric mean and selected percentiles of hemoglobin adduct concentrations (in pmol/g hemoglobin) for the cigarette smoking population\* from the National Health and Nutrition Examination Survey.

Demographic (Categories)	Survey (Years)	Geometric Mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	13-14	199 (177-224)	227 (208-244)	354 (325-391)	526 (464-612)	676 (610-894)	416
Total population	15-16	192 (160-230)	228 (191-258)	374 (308-419)	533 (458-585)	675 (577-800)	377
Age 18-49 years	13-14	197 (175-221)	215 (177-250)	354 (314-399)	535 (439-649)	725 (535-926)	271
Age 18-49 years	15-16	151 (113-202)	180 (135-243)	296 (246-387)	464 (341-585)	585 (446-754)	220
Age 50+ years	13-14	204 (155-268)	243 (183-306)	345 (304-438)	510 (438-675)	657 (447-1250)	145
Age 50+ years	15-16	290 (245-342)	300 (228-381)	444 (375-565)	606 (513-806)	806 (577-1530)	157
Males	13-14	200 (174-229)	214 (182-250)	383 (307-438)	578 (435-747)	742 (578-1060)	231
Males	15-16	176 (133-234)	227 (175-272)	360 (294-446)	540 (452-604)	606 (569-685)	231
Females	13-14	199 (159-248)	230 (185-264)	335 (290-388)	503 (404-649)	651 (490-926)	185
Females	15-16	214 (179-256)	228 (173-266)	383 (296-432)	531 (392-922)	763 (434-1530)	146

Limit of detection (LOD, see Data Analysis section) for Survey years 13-14 and 15-16 are 13.13 and 13.13, respectively.

\*Cigarette Smoking is defined as a serum cotinine concentration more than 10 ng/mL in participants from the National Health and Nutrition Examination Survey, excluding those who used other tobacco products.

## Formaldehyde (2013 - 2014)

CAS Number 50-00-0

Geometric mean and selected percentiles of hemoglobin adduct concentrations (in nmol/g hemoglobin) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (Years)	Geometric Mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	13-14	135 (132-139)	135 (131-140)	148 (144-153)	160 (155-164)	167 (162-172)	2149
Age 6-11 years	13-14	134 (130-138)	135 (128-142)	147 (141-152)	155 (151-160)	160 (153-172)	296
Age 12-19 years	13-14	134 (131-138)	134 (129-141)	146 (141-154)	160 (153-166)	170 (158-180)	364
Age 20-59 years	13-14	136 (132-139)	135 (131-141)	149 (144-154)	161 (156-165)	168 (162-173)	1025
Age 60+ years	13-14	134 (130-139)	135 (129-140)	148 (143-153)	159 (153-164)	165 (160-172)	464
Males	13-14	134 (131-138)	134 (130-139)	147 (142-151)	158 (154-161)	163 (160-171)	1049
Females	13-14	136 (132-140)	136 (131-142)	149 (144-155)	162 (156-167)	169 (163-173)	1100
Mexican Americans	13-14	140 (134-147)	141 (134-148)	154 (147-161)	167 (161-175)	178 (171-185)	386
Non-Hispanic Blacks	13-14	129 (123-136)	132 (126-138)	148 (137-156)	160 (152-173)	171 (160-181)	443
Non-Hispanic Whites	13-14	135 (131-138)	134 (130-140)	147 (142-150)	157 (152-162)	163 (158-168)	784
All Hispanics	13-14	138 (133-144)	140 (131-146)	153 (147-159)	164 (160-172)	175 (169-182)	603
Asians	13-14	141 (137-146)	142 (137-145)	154 (149-157)	165 (160-172)	176 (165-191)	231

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 is 0.670.

## Glycidamide (2003 - 2006)

CAS Number 486-56-6

Geometric mean and selected percentiles of hemoglobin adduct concentrations (in pmol/g hemoglobin) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (Years)	Geometric Mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	59.3 (56.7-62.1)	59.9 (57.6-62.5)	85.9 (81.6-90.5)	130 (120-141)	167 (153-181)	7278
Total population	05-06	50.4 (46.9-54.1)	49.4 (46.5-52.4)	71.3 (67.1-75.6)	109 (98.4-120)	142 (130-151)	7740
Age 3-5 years	03-04	71.6 (66.9-76.7)	71.1 (66.9-78.9)	94.7 (87.3-101)	118 (103-126)	126 (119-135)	411
Age 3-5 years	05-06	66.7 (61.5-72.2)	72.9 (65.9-76.3)	89.4 (82.8-96.8)	107 (104-113)	120 (109-129)	482
Age 6-11 years	03-04	74.1 (70.3-78.2)	75.0 (70.9-77.9)	95.6 (90.4-103)	121 (112-134)	141 (126-157)	784
Age 6-11 years	05-06	58.2 (55.4-61.2)	59.6 (57.3-61.8)	73.7 (70.0-77.5)	90.8 (81.3-99.8)	106 (93.8-113)	907
Age 12-19 years	03-04	55.4 (51.1-60.1)	59.2 (56.1-62.1)	79.2 (72.7-86.7)	113 (94.9-138)	146 (123-169)	1931
Age 12-19 years	05-06	48.2 (45.1-51.6)	47.3 (44.8-49.3)	64.1 (60.5-67.9)	92.0 (82.8-103)	123 (103-149)	1944
Age 20-59 years	03-04	62.5 (59.4-65.8)	60.9 (58.7-64.4)	90.7 (84.4-98.2)	143 (130-159)	187 (169-204)	2623
Age 20-59 years	05-06	52.3 (47.9-57.1)	50.1 (46.3-54.2)	74.5 (69.5-80.9)	121 (107-134)	154 (140-179)	3025
Age 60+ years	03-04	45.5 (42.8-48.3)	46.8 (44.8-49.3)	65.2 (63.5-66.9)	96.4 (90.0-103)	129 (111-141)	1529
Age 60+ years	05-06	40.9 (38.1-44.0)	39.5 (37.4-42.7)	56.7 (51.1-63.8)	88.7 (75.7-103)	118 (103-133)	1382
Males	03-04	59.5 (56.9-62.3)	59.4 (56.8-61.8)	87.1 (82.5-92.3)	136 (123-148)	174 (157-197)	3604
Males	05-06	50.8 (46.9-55.0)	49.4 (46.1-53.2)	74.5 (70.2-78.8)	113 (102-127)	148 (131-165)	3761
Females	03-04	59.1 (56.0-62.5)	60.4 (57.5-64.0)	85.0 (80.2-90.0)	125 (116-135)	159 (143-175)	3674
Females	05-06	50.0 (46.7-53.6)	49.2 (46.5-52.3)	68.3 (63.9-73.2)	101 (93.8-114)	136 (125-145)	3979
Mexican Americans	03-04	64.7 (61.2-68.4)	65.4 (61.1-70.1)	87.4 (81.5-94.4)	118 (110-129)	152 (135-170)	1841
Mexican Americans	05-06	50.3 (46.5-54.4)	50.7 (46.8-54.8)	66.1 (61.6-70.5)	86.6 (80.6-95.8)	106 (98.1-114)	2022
Non-Hispanic Blacks	03-04	53.8 (51.1-56.7)	56.0 (52.4-59.7)	83.0 (75.2-91.5)	121 (108-140)	159 (129-204)	1954
Non-Hispanic Blacks	05-06	42.3 (38.9-46.0)	44.1 (41.7-45.9)	64.0 (60.3-67.8)	99.9 (87.2-109)	129 (117-140)	2008
Non-Hispanic Whites	03-04	61.1 (57.6-64.9)	60.7 (57.9-64.2)	87.5 (83.0-93.5)	136 (124-149)	172 (157-194)	3044
Non-Hispanic Whites	05-06	52.5 (48.5-56.9)	50.7 (46.8-55.0)	74.5 (69.9-80.1)	115 (102-129)	147 (134-160)	3110

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 and 05-06 are 4.0 and 0.66, respectively.

Biomonitoring Summary: [https://www.cdc.gov/biomonitoring/Acrylamide\\_BiomonitoringSummary.html](https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html)

Factsheet: [https://www.cdc.gov/biomonitoring/Acrylamide\\_FactSheet.html](https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html)

## Glycidamide (2013 - 2016)

CAS Number 486-56-6

Geometric mean and selected percentiles of hemoglobin adduct concentrations (in pmol/g hemoglobin) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (Years)	Geometric Mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	13-14	41.1 (39.3-43.0)	38.7 (36.8-40.2)	53.4 (50.9-55.8)	85.5 (76.6-93.6)	119 (106-135)	2318
Total population	15-16	40.8 (38.6-43.1)	38.4 (36.2-40.6)	54.2 (50.1-57.8)	79.7 (70.2-90.7)	110 (90.7-136)	2267
Age 6-11 years	13-14	47.0 (44.4-49.8)	47.1 (43.7-50.1)	56.8 (53.2-60.8)	68.4 (61.0-78.4)	78.1 (63.9-138)	320
Age 6-11 years	15-16	46.6 (44.8-48.5)	47.4 (44.5-49.9)	57.4 (54.6-60.0)	65.8 (62.1-72.7)	76.3 (66.3-82.0)	303
Age 12-19 years	13-14	37.9 (35.6-40.2)	35.0 (31.3-38.6)	47.1 (43.5-52.0)	75.1 (59.7-94.0)	108 (75.1-163)	389
Age 12-19 years	15-16	37.3 (34.7-40.0)	35.4 (33.0-39.0)	47.0 (44.0-51.3)	59.3 (55.2-70.0)	77.7 (58.2-147)	341
Age 20-59 years	13-14	43.7 (41.7-45.9)	39.8 (38.7-41.5)	57.2 (53.7-61.6)	100 (92.6-113)	138 (122-150)	1116
Age 20-59 years	15-16	43.1 (39.9-46.6)	39.5 (36.9-42.3)	59.1 (52.6-65.6)	88.1 (76.8-103)	124 (93.9-169)	1092
Age 60+ years	13-14	34.7 (32.0-37.6)	33.4 (31.1-37.0)	43.9 (40.2-50.6)	60.9 (54.5-70.1)	72.2 (60.9-83.6)	493
Age 60+ years	15-16	35.3 (32.7-38.2)	34.6 (29.6-36.7)	44.8 (41.4-47.7)	67.0 (56.8-85.9)	95.1 (70.2-156)	531
Males	13-14	42.0 (40.1-43.9)	39.3 (36.8-41.4)	55.1 (51.8-56.8)	91.2 (75.4-101)	133 (117-143)	1144
Males	15-16	41.8 (39.6-44.2)	38.8 (36.5-41.2)	54.9 (51.0-60.5)	85.0 (74.9-110)	126 (100-149)	1121
Females	13-14	40.3 (37.7-43.1)	38.1 (36.1-39.8)	51.5 (48.5-56.9)	83.3 (70.4-93.2)	108 (93.2-130)	1174
Females	15-16	39.9 (37.2-42.8)	38.0 (35.4-41.5)	53.2 (47.6-58.2)	74.5 (64.9-85.4)	91.4 (81.1-115)	1146
Mexican Americans	13-14	42.9 (40.0-46.1)	42.7 (40.4-45.4)	53.0 (49.1-56.4)	67.3 (60.3-78.6)	89.1 (69.3-106)	390
Mexican Americans	15-16	42.8 (39.7-46.1)	41.7 (38.2-45.2)	52.7 (49.2-56.2)	76.3 (64.3-91.2)	99.3 (81.2-156)	421
Non-Hispanic Blacks	13-14	38.7 (36.8-40.6)	36.3 (34.3-38.1)	50.9 (47.1-57.8)	91.4 (74.6-116)	139 (112-155)	483
Non-Hispanic Blacks	15-16	39.7 (37.2-42.3)	37.1 (35.5-39.3)	54.9 (51.6-59.0)	81.1 (65.8-107)	121 (90.1-158)	473
Non-Hispanic Whites	13-14	41.9 (39.5-44.5)	38.9 (36.2-41.1)	54.5 (50.8-57.4)	89.6 (76.9-102)	130 (113-144)	899
Non-Hispanic Whites	15-16	41.3 (37.9-45.1)	38.4 (35.1-41.5)	55.0 (47.0-62.6)	80.9 (69.9-97.4)	115 (89.8-149)	707
All Hispanics	13-14	41.9 (40.0-43.8)	40.6 (38.0-43.1)	53.7 (49.7-58.2)	72.2 (67.5-77.2)	93.7 (75.9-108)	599
All Hispanics	15-16	40.8 (38.2-43.6)	39.7 (37.0-43.8)	51.8 (48.5-55.5)	72.8 (66.1-81.2)	96.9 (82.3-119)	733
Asians	13-14	33.7 (31.3-36.4)	35.6 (31.3-37.3)	45.7 (41.2-49.0)	60.2 (52.9-68.2)	70.1 (60.2-90.1)	242
Asians	15-16	34.8 (32.0-37.8)	36.2 (32.2-38.6)	47.4 (43.7-52.1)	62.4 (54.7-63.8)	65.3 (62.4-83.6)	256

Limit of detection (LOD, see Data Analysis section) for Survey year 13-14 and 15-16 are 0.660 and 0.660 respectively.

Biomonitoring Summary: [https://www.cdc.gov/biomonitoring/Acrylamide\\_BiomonitoringSummary.html](https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html)

Factsheet: [https://www.cdc.gov/biomonitoring/Acrylamide\\_FactSheet.html](https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html)