

Self-reported lifetime use of NPS in the United States from 2007-14: Trends in prevalence and correlates of use from the NSDUH

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National Survey of Drug Use and Health (NSDUH)

- Annually repeated cross-sectional, nationally representative survey of civilian, non-institutionalized individuals aged 12+; we analysed individuals 18+ ($N=290,839$)
- Sampling for each year is conducted independently
- Sampling and analytical weights are calculated based on population estimates from the 2000/2010 decennial census to address unit- and individual-level non-response
- Exclusions: individuals with no fixed household address, active duty military, individuals living in institutionalized group quarters
- As the NSDUH does not capture past-month or past-year NPS use, we considered lifetime use of NPS as our outcome variable

Defining NPS (1 of 2)

- With the understanding that NPS as a category of substances continues to be refined and expand, this study included the following substances:
 - "Ecstasy" (MDMA), X-TC, "X"
 - 2,5-Dimethoxyamphetamine, DMA
 - 2,5-dimethoxy-4-bromoamphetamine, DOB
 - 2,5-Dimethoxy-4-iodophenethylamine, 2C-I
 - 25B-NBOMe, NBOMe-2C-B
 - 25C-NBOMe, 2C-C-NBOMe, NBOMe-2C-C, N-Bomb
 - 25I-NBOMe, 2C-I-NBOMe, BOM-CI, Cimbi-5
 - 2C-B, Bromo mescaline, Nexus
 - 2C-E, 2-5-Dimethoxy-4-ethylphenethylamine
 - 2C-P, 4-propyl-2,5-dimethoxyphenethylamine
 - 2C-T-2
 - 3C-Bromo-Dragonfly, DOB-Dragonfly
 - 3-MeO-2-Oxo-PCE, MXE, Methoxetamine
 - 4-FMA, 4-Fluoromethamphetamine
 - 5-MeO-DMT
 - 6-APB, Benzo Fury
 - 7H
 - Acid paper, blotter (acid)
 - Actiq, Fentanyl, Duragesic, Sublimaze
 - Adderall
 - Alpha-methyltryptamine, AMT, IT-290, 3-IT
 - Amyl nitrite, "poppers," locker room odorizer, "rush"
 - Angel's trumpet
 - Ayahuasca, Yahe
 - Bath salts, otherwise unspecified
 - Bean
 - Belladonna plant/flower/root, deadly nightshade
 - Benadryl, Diphenhydramine
 - Black cats
 - Boat
 - Boomers
 - Cathinone, cat, khat, Q'at
 - CCC, "Triple C," C3
 - CHC, chlorofluorocarbon, freon, refrigerant
 - Cold medicine, cold tablets
 - Coriciden
 - Crystal
 - Datura stramonium, daytura, thorn apple
 - Delsym, Dextromethorphan polistirex
 - DET, Dimethyltryptamine, DMT
 - Dextromethorphan hydrobromide
 - Dimenhydrinate, Dramamine, sea/motion sickness
 - Diviner's sage, Salvia divinorum
 - DOM, STP
 - DXM
 - Ergot, rye mold



Defining NPS (2 of 2)

- With the understanding that NPS as a category of substances continues to be refined and expand, this study included the following substances:
 - GHB, NSC, gamma hydroxybutyrate
 - Happy stick, sherm, sherman, shermstick
 - Hawaiian wood rose, Hawaiian Woodrow seeds
 - Helium
 - Hell bells
 - Herb, flower, plant; type unspecified
 - Incense
 - Jimson weed
 - Kanna powder, sceletium tortuosom
 - Kava Kava
 - LAH, LSH, Lysergic acid hydroxyethylamide
 - Lean (Promethazine w/codeine mixed w/Sprite)
 - LSA
 - Madderwort, wormwood
 - Marezine
 - MCAT, Mephedrone
 - MDA, Methylenedioxy amphetamine
 - MDPV, Methylenedioxypropyvalerone
 - Mescaline
 - Methaqualone, Sopor, Quaalude
 - Microdot(s), green microdot, purple microdot
 - Molly; not otherwise specified
 - Morning glory seeds, morning glory tendrils, ricea
 - Nitrous oxide, "whippits, " dentist gas
 - Nutmeg, Mace
 - PCP ("angel dust, " phencyclidine)
 - Peyote
 - Phenergan, Promethazine
 - Psilocybin (mushrooms), sclerotia, shrooms
 - Purple haze
 - Ritalin, Methylphenidate
 - Robitussin DM
 - Robo, robo tripping
 - Rocket Fuel
 - San Pedro
 - Sassafras, sassafras tea
 - Skittles
 - Smoke/smoking; not otherwise specified
 - Synthetic cannabinoids (eg, K2, Spice, JWH-018)
 - Synthetic cannabis; otherwise unspecified
 - Talwin
 - TCP
 - Tryptamine, not otherwise specified
 - Unisom
 - Window, window pane, 4-way pane, 4-way
 - Xanax, Alprazolam, Tafil, Xanax bars

Sample Characteristics by Percentage (Demographic)

Characteristic	2007 (n=35,746)	2008 (n=35,617)	2009 (n=35,584)	2010 (n=36,813)	2011 (n=36,911)	2012 (n=5,691)	2013 (n=35,239)	2014 (n=39,238)
Age Cohort								
18-25	14.46 (14.04 - 14.89)	14.36 (13.90 - 14.82)	14.50 (14.00 - 15.02)	14.59 (14.09 - 15.11)	14.42 (13.88 - 14.96)	14.33 (13.96 - 14.72)	14.31 (13.83 - 14.80)	14.10 (13.69 - 14.52)
26-34	15.73 (15.13 - 16.35)	15.80 (15.22 - 16.39)	15.86 (15.30 - 16.44)	15.81 (15.23 - 16.41)	15.53 (14.94 - 16.13)	15.61 (14.97 - 16.26)	15.64 (14.96 - 16.36)	15.70 (15.26 - 16.15)
35-49	29.40 (28.61 - 30.21)	28.78 (28.07 - 29.50)	28.24 (27.35 - 29.16)	27.46 (26.78 - 28.16)	26.48 (25.72 - 27.25)	25.88 (25.07 - 26.71)	25.66 (24.83 - 26.50)	25.12 (24.38 - 25.87)
50-64	23.89 (22.89 - 24.92)	24.36 (23.27 - 25.48)	24.47 (23.62 - 25.34)	24.84 (23.86 - 25.85)	25.95 (25.05 - 26.88)	26.02 (25.06 - 27.00)	25.78 (24.70 - 26.90)	25.97 (25.13 - 26.82)
65+	16.51 (15.43 - 17.64)	16.71 (15.67 - 17.81)	16.93 (15.96 - 17.94)	17.29 (16.35 - 18.28)	17.63 (16.78 - 18.51)	18.16 (17.28 - 19.07)	18.61 (17.69 - 19.57)	19.12 (18.31 - 19.96)
Sex								
Male	48.32 (47.47 - 49.16)	48.28 (47.33 - 49.23)	48.25 (47.29 - 49.21)	48.44 (47.52 - 49.35)	48.02 (47.19 - 48.85)	48.07 (47.20 - 48.95)	48.27 (47.41 - 49.12)	48.33 (47.70 - 48.97)
Female	51.68 (50.84 - 52.53)	51.72 (50.77 - 52.67)	51.75 (50.79 - 52.71)	51.56 (50.65 - 52.48)	51.98 (51.15 - 52.81)	51.93 (51.05 - 52.80)	51.73 (50.88 - 52.59)	51.67 (51.03 - 52.30)
Ethnicity								
White	70.27 (69.24 - 71.28)	69.87 (68.91 - 70.81)	69.44 (68.48 - 70.39)	69.13 (68.31 - 69.94)	67.99 (67.09 - 68.87)	67.49 (66.36 - 68.59)	67.16 (66.05 - 68.25)	66.61 (65.55 - 67.66)
Hispanic	13.26 (12.48 - 14.07)	13.49 (12.87 - 14.13)	13.73 (12.98 - 14.53)	13.93 (13.35 - 14.53)	14.60 (13.90 - 15.34)	14.99 (14.28 - 15.73)	15.12 (14.49 - 15.77)	15.44 (14.62 - 16.31)
Black	11.5 (10.76 - 12.27)	11.53 (10.91 - 12.18)	11.65 (10.98 - 12.36)	11.72 (11.12 - 12.34)	11.60 (11.01 - 12.22)	11.69 (10.97 - 12.45)	11.78 (10.95 - 12.67)	11.82 (11.18 - 12.50)
Asian & Pacific Islander	4.56 (4.10 - 5.07)	4.73 (4.27 - 5.24)	4.78 (4.24 - 5.39)	4.81 (4.36 - 5.30)	5.33 (4.78 - 5.94)	5.35 (4.86 - 5.90)	5.49 (4.90 - 6.15)	5.66 (5.17 - 6.19)
Native American	0.41 (0.31 - 0.55)	0.38 (0.30 - 0.48)	0.39 (0.30 - 0.51)	0.41 (0.33 - 0.52)	0.48 (0.38 - 0.60)	0.48 (0.38 - 0.61)	0.45 (0.36 - 0.56)	0.46 (0.38 - 0.56)

Sample Characteristics by Percentage (Demographic)

Characteristic	2007 (n=35,746)	2008 (n=35,617)	2009 (n=35,584)	2010 (n=36,813)	2011 (n=36,911)	2012 (n=5,691)	2013 (n=35,239)	2014 (n=39,238)
Education								
Elementary	3.92 (3.45 - 4.46)	3.43 (3.07 - 3.8)	3.04 (2.77 - 3.33)	3.34 (2.99 - 3.73)	3.00 (2.71 - 3.31)	3.05 (2.73 - 3.41)	3.15 (2.79 - 3.55)	3.26 (2.97 - 3.57)
Secondary	43.04 (42.13 - 43.96)	42.99 (41.99 - 43.99)	42.89 (41.71 - 44.08)	42.05 (41.07 - 43.03)	40.99 (40.11 - 41.87)	41.03 (40.17 - 41.89)	39.72 (38.66 - 40.79)	38.80 (37.93 - 39.68)
Tertiary	53.04 (52.15 - 53.93)	53.59 (52.57 - 54.60)	54.07 (52.93 - 55.20)	54.61 (53.61 - 55.61)	56.02 (55.14 - 56.89)	55.92 (55.07 - 56.78)	57.13 (56.00 - 58.25)	57.94 (56.99 - 58.88)
Marital Status								
Single	24.95 (24.16 - 25.76)	25.67 (24.98 - 26.38)	26.23 (25.52 - 26.96)	26.32 (25.49 - 27.16)	26.24 (25.50 - 26.99)	26.53 (25.73 - 27.36)	27.07 (26.20 - 27.96)	27.49 (26.76 - 28.23)
Married	55.73 (54.83 - 56.63)	55.37 (54.54 - 56.19)	55.07 (53.95 - 56.19)	53.17 (52.18 - 54.15)	53.38 (52.35 - 54.41)	53.27 (52.26 - 54.28)	52.64 (51.59 - 53.69)	52.43 (51.62 - 53.23)
Widowed	6.05 (5.53 - 6.61)	6.08 (5.65 - 6.54)	5.79 (5.34 - 6.27)	6.40 (5.90 - 6.93)	6.00 (5.56 - 6.47)	6.06 (5.54 - 6.62)	6.18 (5.58 - 6.84)	5.83 (5.49 - 6.20)
Divorced or Separated	13.26 (12.64 - 13.92)	12.89 (12.21 - 13.60)	12.90 (12.23 - 13.60)	14.12 (13.48 - 14.77)	14.38 (13.73 - 15.05)	14.14 (13.58 - 14.72)	14.11 (13.54 - 14.70)	14.25 (13.78 - 14.74)
Metropolitan Statistical Area Size								
Large Metropolitan	53.24 (52.05 - 54.42)	53.33 (52.27 - 54.39)	53.14 (51.92 - 54.35)	53.65 (52.46 - 54.83)	53.22 (52.04 - 54.39)	53.37 (52.20 - 54.53)	53.76 (52.60 - 54.92)	55.20 (54.22 - 56.18)
Small Metropolitan	30.23 (29.03 - 31.45)	30.03 (29.05 - 31.03)	30.42 (29.25 - 31.61)	30.30 (29.13 - 31.51)	31.23 (29.98 - 32.52)	30.16 (28.74 - 31.61)	30.08 (28.77 - 31.42)	29.29 (28.35 - 30.25)
Non-Metropolitan	16.53 (15.78 - 17.32)	16.64 (15.72 - 17.59)	16.44 (15.50 - 17.44)	16.05 (15.29 - 16.83)	15.55 (14.69 - 16.45)	16.48 (15.49 - 17.51)	16.16 (15.12 - 17.26)	15.51 (14.75 - 16.29)

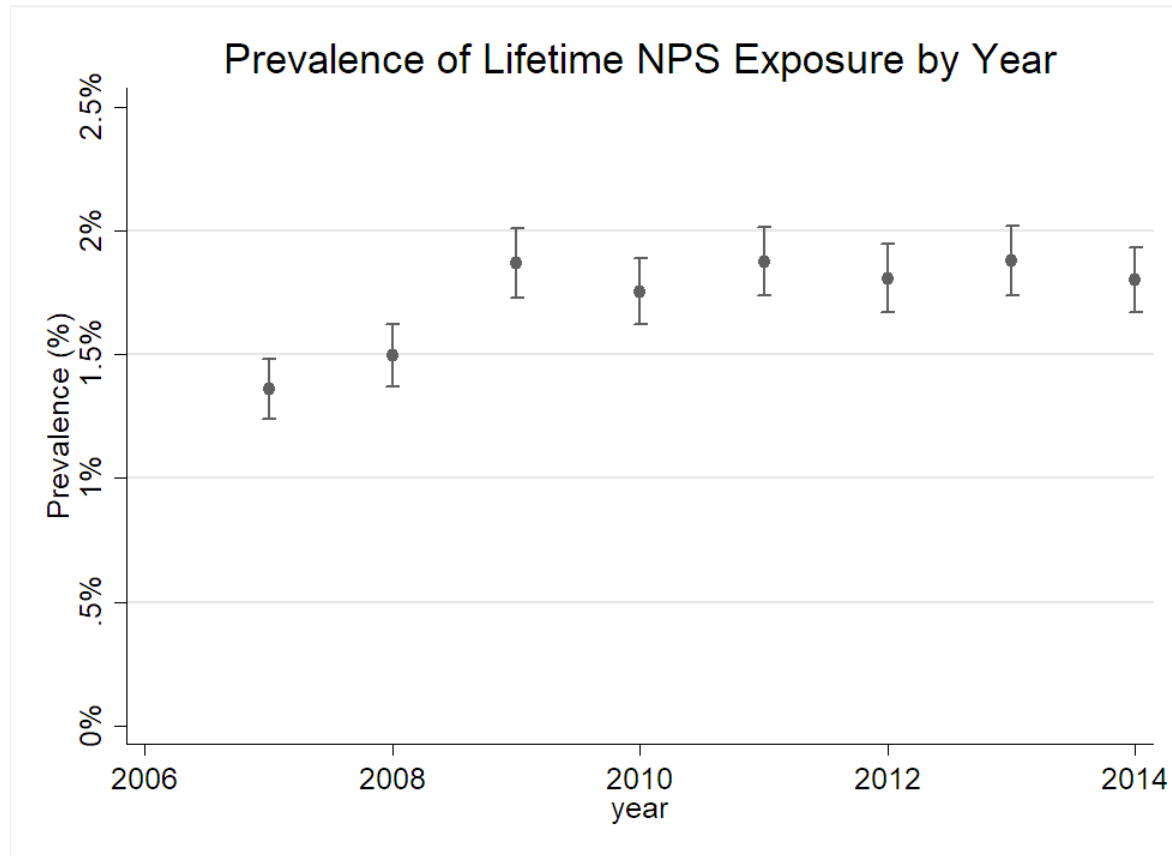
Sample Characteristics by Percentage (Socioeconomic)

Characteristic	2007 (n=35,746)	2008 (n=35,617)	2009 (n=35,584)	2010 (n=36,813)	2011 (n=36,911)	2012 (n=5,691)	2013 (n=35,239)	2014 (n=39,238)
Employment								
Full-Time	54.64 (53.75 - 55.53)	54.44 (53.37 - 55.52)	50.72 (49.77 - 51.67)	50.13 (49.10 - 51.17)	49.98 (48.98 - 50.97)	50.23 (49.35 - 51.12)	50.27 (49.30 - 51.25)	51.51 (50.77 - 52.26)
Part-Time	13.09 (12.51 - 13.69)	13.37 (12.81 - 13.95)	13.80 (13.21 - 14.40)	14.21 (13.64 - 14.80)	13.77 (13.24 - 14.32)	13.85 (13.37 - 14.35)	14.05 (13.42 - 14.71)	13.54 (13.11 - 13.99)
Unemployed	3.21 (2.99 - 3.43)	3.91 (3.57 - 4.28)	6.48 (6.13 - 6.84)	6.43 (6.06 - 6.81)	5.76 (5.42 - 6.11)	5.67 (5.30 - 6.06)	4.91 (4.58 - 5.26)	4.40 (4.14 - 4.68)
Other (including not in labor force)	29.07 (28.27 - 29.88)	28.28 (27.32 - 29.26)	29.01 (28.00 - 30.04)	29.23 (28.25 - 30.23)	30.49 (29.43 - 31.58)	30.25 (29.33 - 31.18)	30.77 (29.88 - 31.67)	30.54 (29.81 - 31.28)
Income								
Less than 20,000	18.02 (17.25 - 18.82)	16.67 (15.99 - 17.38)	17.33 (16.59 - 18.09)	18.41 (17.54 - 19.33)	18.92 (18.20 - 19.66)	18.50 (17.80 - 19.22)	17.97 (17.11 - 18.86)	17.80 (17.18 - 18.43)
20,000 to 49,999	32.93 (31.94 - 33.94)	32.43 (31.55 - 33.32)	32.68 (31.83 - 33.55)	33.33 (32.38 - 34.30)	32.38 (31.62 - 33.16)	32.88 (31.90 - 33.87)	31.41 (30.55 - 32.28)	30.86 (29.92 - 31.81)
50,000 to 74,999	18.43 (17.53 - 19.38)	18.66 (17.93 - 19.41)	17.25 (16.60 - 17.91)	16.92 (16.26 - 17.60)	17.23 (16.60 - 17.87)	16.65 (15.97 - 17.36)	17.28 (16.48 - 18.11)	16.79 (16.17 - 17.43)
More than 75,000	30.61 (29.66 - 31.59)	32.24 (31.21 - 33.28)	32.74 (31.55 - 33.95)	31.33 (30.21 - 32.47)	31.47 (30.54 - 32.42)	31.97 (30.83 - 33.12)	33.34 (32.07 - 34.64)	34.56 (33.62 - 35.51)
Receives Government Assistance								
No	85.58 (84.98 - 86.17)	86.31 (85.53 - 87.06)	84.56 (83.95 - 85.16)	82.94 (82.31 - 83.55)	80.88 (80.17 - 81.57)	79.86 (79.18 - 80.52)	79.63 (78.75 - 80.47)	80.03 (79.38 - 80.67)
Yes	14.42 (13.83 - 15.02)	13.69 (12.94 - 14.47)	15.44 (14.84 - 16.05)	17.06 (16.45 - 17.69)	19.12 (18.43 - 19.83)	20.14 (19.48 - 20.82)	20.37 (19.53 - 21.25)	19.97 (19.33 - 20.62)

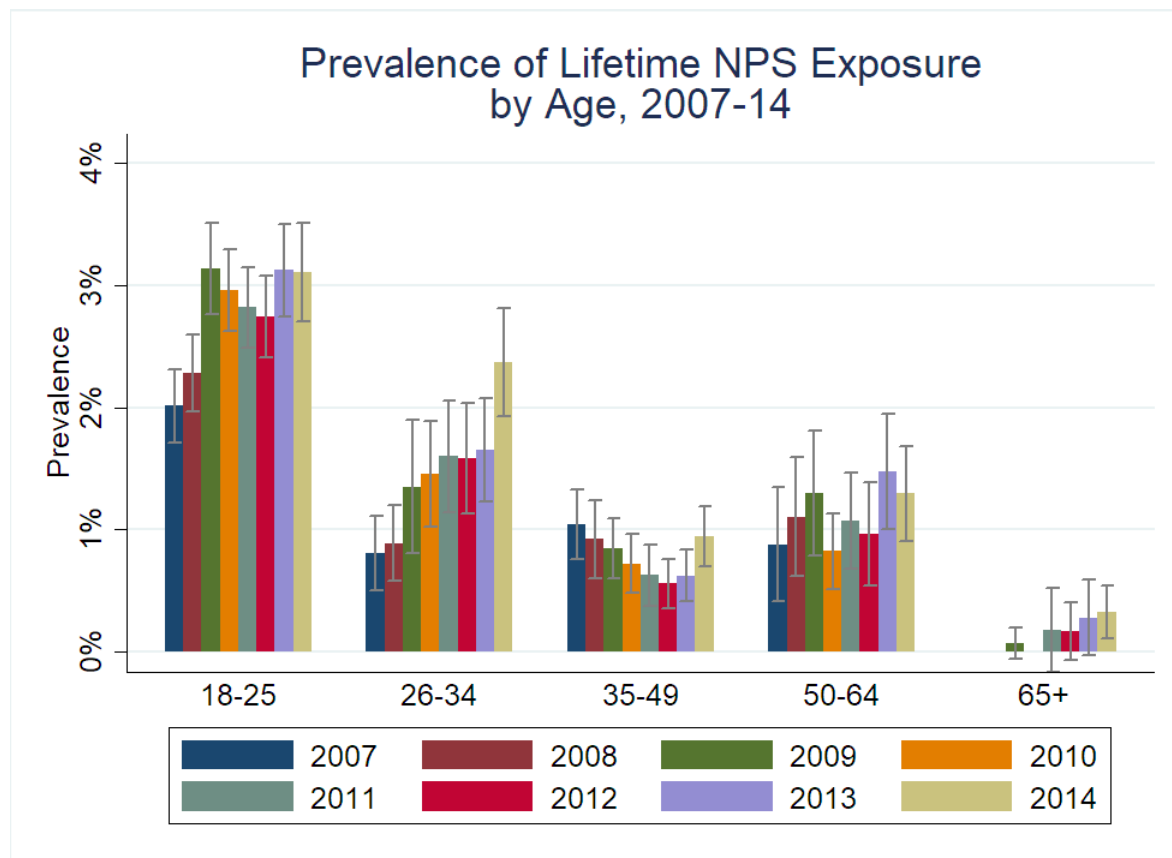
Sample Characteristics by Percentage (Health & Insurance)

Characteristic	2007 (n=35,746)	2008 (n=35,617)	2009 (n=35,584)	2010 (n=36,813)	2011 (n=36,911)	2012 (n=5,691)	2013 (n=35,239)	2014 (n=39,238)
Self-Rated Health								
Excellent	23.30 (22.64 - 23.96)	23.22 (22.41 - 24.06)	23.47 (22.73 - 24.23)	23.05 (22.29 - 23.83)	23.08 (22.31 - 23.86)	21.85 (21.06 - 22.65)	22.29 (21.53 - 23.07)	21.50 (20.91 - 22.1)
Very Good	36.13 (35.33 - 36.94)	35.89 (34.83 - 36.97)	36.33 (35.45 - 37.22)	36.64 (35.67 - 37.62)	36.16 (35.43 - 36.90)	36.43 (35.60 - 37.27)	36.42 (35.68 - 37.16)	35.99 (35.26 - 36.73)
Good	27.03 (26.23 - 27.84)	27.53 (26.67 - 28.40)	27.51 (26.60 - 28.43)	26.83 (25.96 - 27.71)	27.13 (26.50 - 27.78)	28.25 (27.42 - 29.09)	28.00 (27.27 - 28.75)	28.59 (27.91 - 29.28)
Poor	13.55 (12.74 - 14.40)	13.35 (12.61 - 14.14)	12.69 (12.06 - 13.34)	13.48 (12.75 - 14.24)	13.63 (13.02 - 14.28)	13.48 (12.75 - 14.24)	13.29 (12.54 - 14.09)	13.92 (13.44 - 14.41)
Health Insurer								
Private	70.44 (69.49 - 71.38)	70.59 (69.61 - 71.56)	69.21 (68.33 - 70.07)	67.28 (66.24 - 68.30)	66.36 (65.36 - 67.34)	66.02 (64.98 - 67.04)	66.9 (65.91 - 67.87)	67.66 (66.68 - 68.63)
Medicare & Medicaid	12.36 (11.69 - 13.07)	12.57 (11.88 - 13.28)	12.9 (12.25 - 13.57)	13.91 (13.15 - 14.71)	15.2 (14.42 - 16.03)	15.61 (14.89 - 16.37)	15.26 (14.47 - 16.08)	17.73 (17.01 - 18.47)
Tricare & VA	1.58 (1.39 - 1.79)	1.49 (1.29 - 1.72)	1.7 (1.49 - 1.93)	1.65 (1.43 - 1.90)	1.85 (1.58 - 2.17)	2.04 (1.80 - 2.31)	1.88 (1.63 - 2.17)	2.00 (1.79 - 2.23)
Uninsured	15.61 (14.83 - 16.43)	15.36 (14.71 - 16.03)	16.20 (15.56 - 16.85)	17.16 (16.57 - 17.76)	16.58 (16.00 - 17.19)	16.33 (15.71 - 16.97)	15.96 (15.35 - 16.59)	12.62 (12.14 - 13.10)

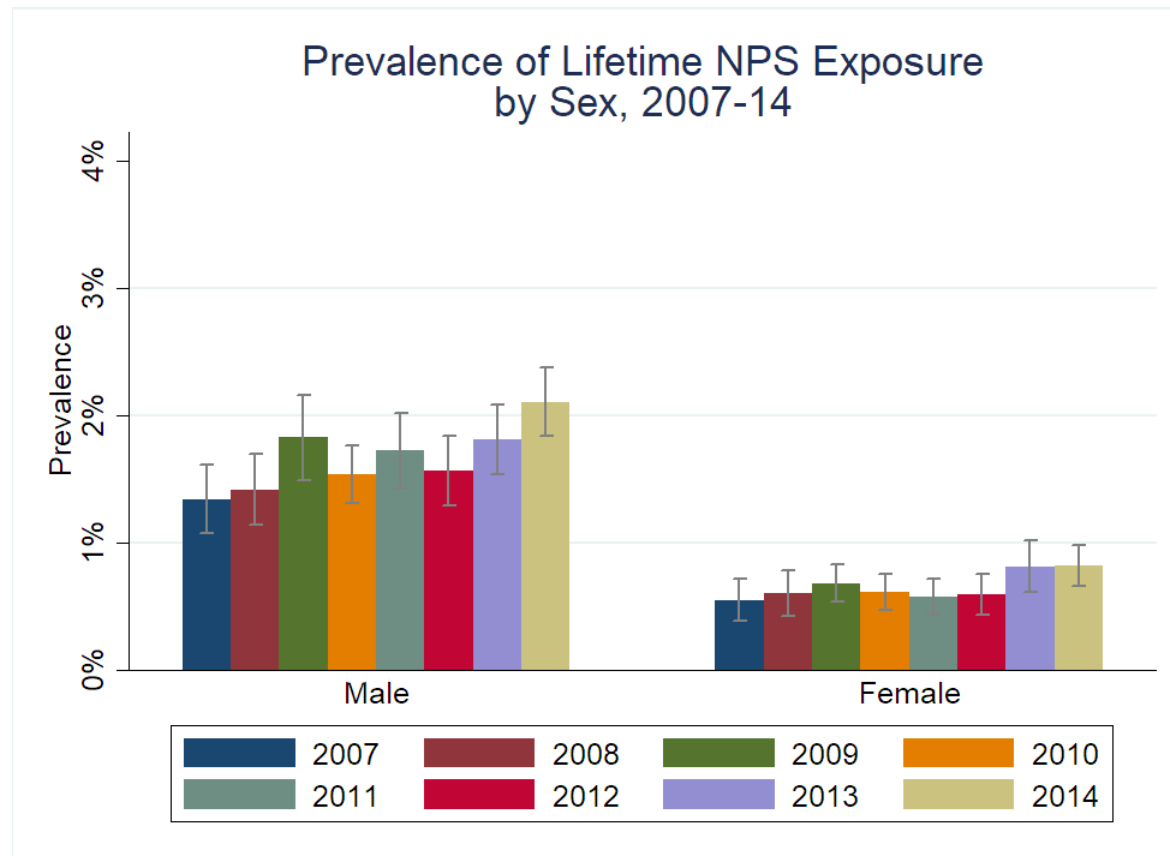
Prevalence of Lifetime NPS Use, 2007-14



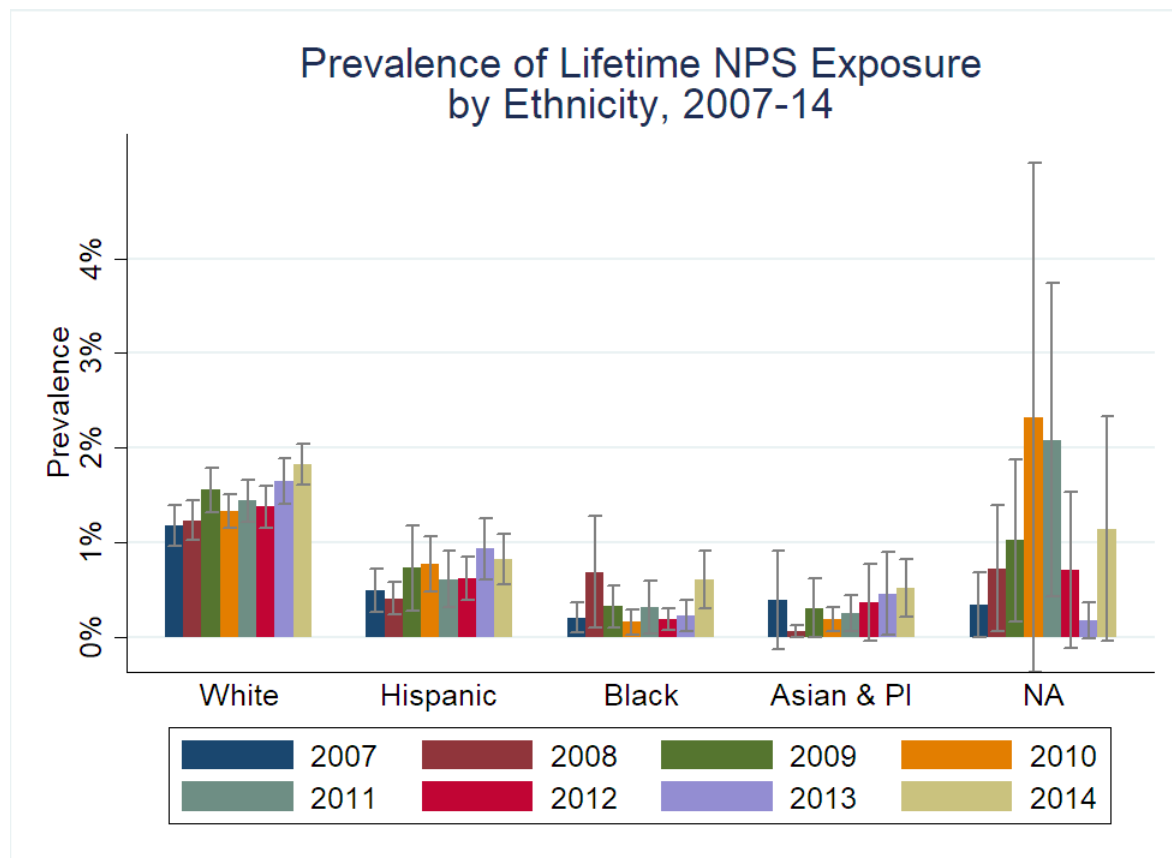
Prevalence of Lifetime NPS Exposure by Age, 2007-14



Prevalence of Lifetime NPS Exposure by Sex, 2007-14

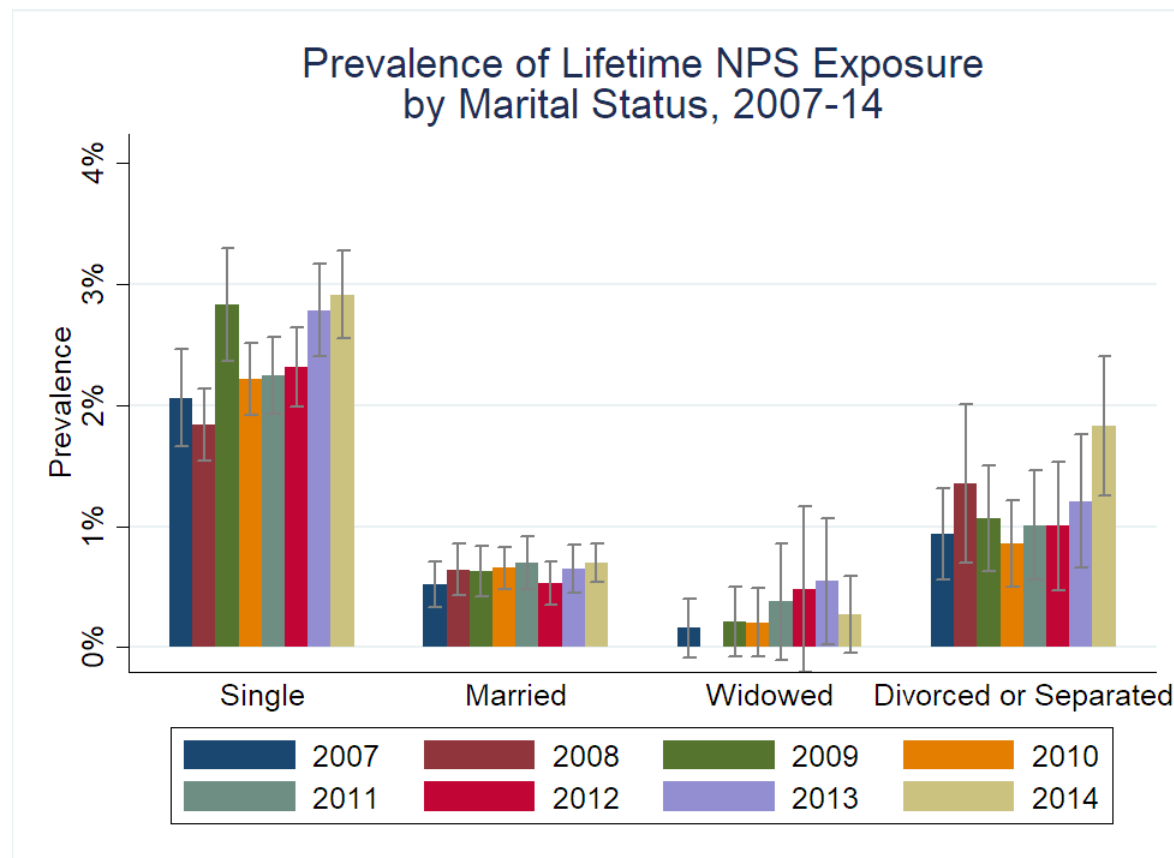


Prevalence of Lifetime NPS Exposure by Ethnicity, 2007-14

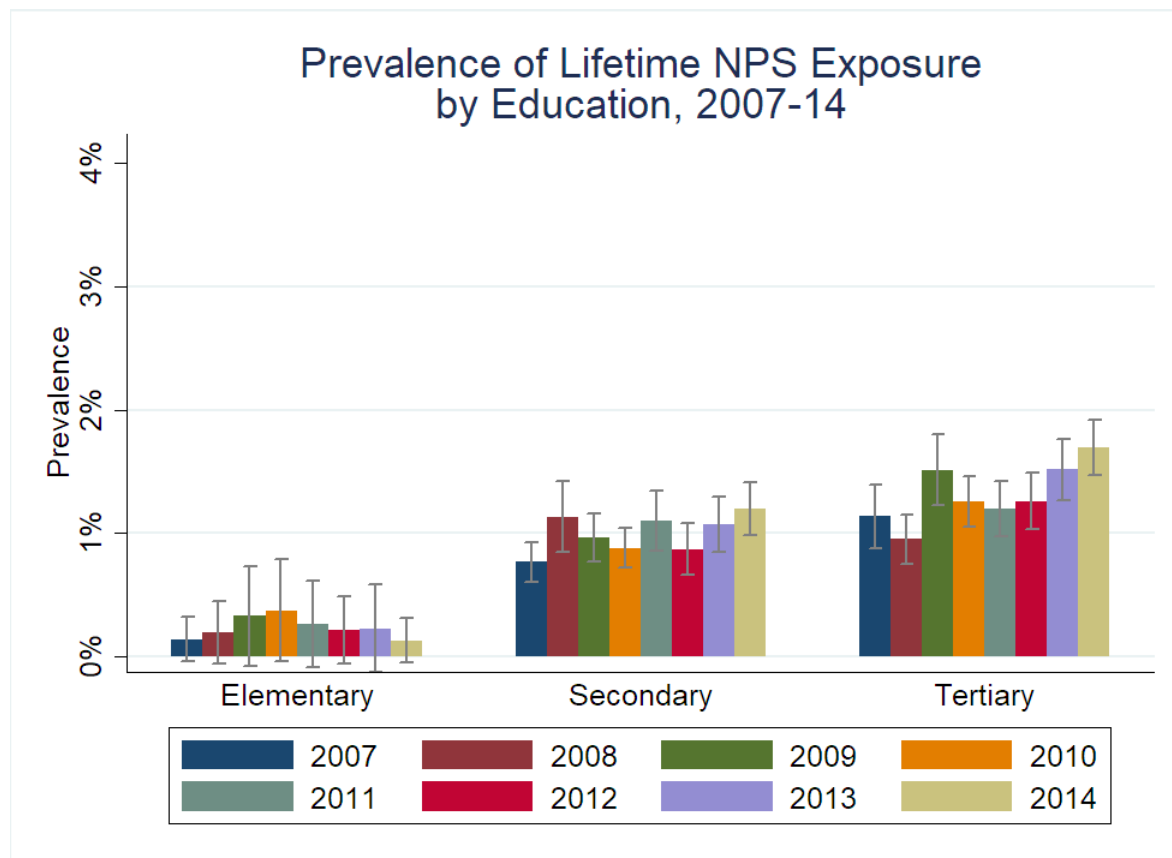


PI = Pacific Islander; NA = Native American

Prevalence of Lifetime NPS Exposure by Marital Status, 2007-14

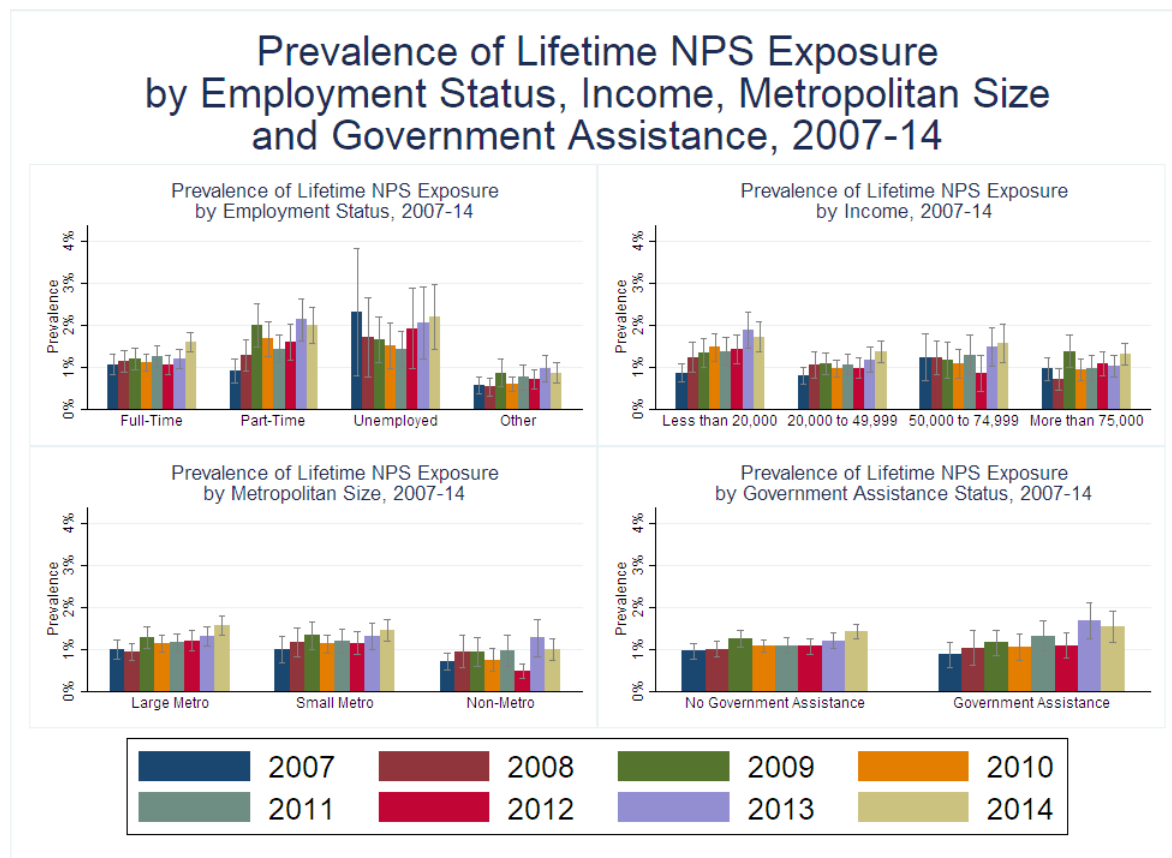


Prevalence of Lifetime NPS Exposure by Education, 2007-14

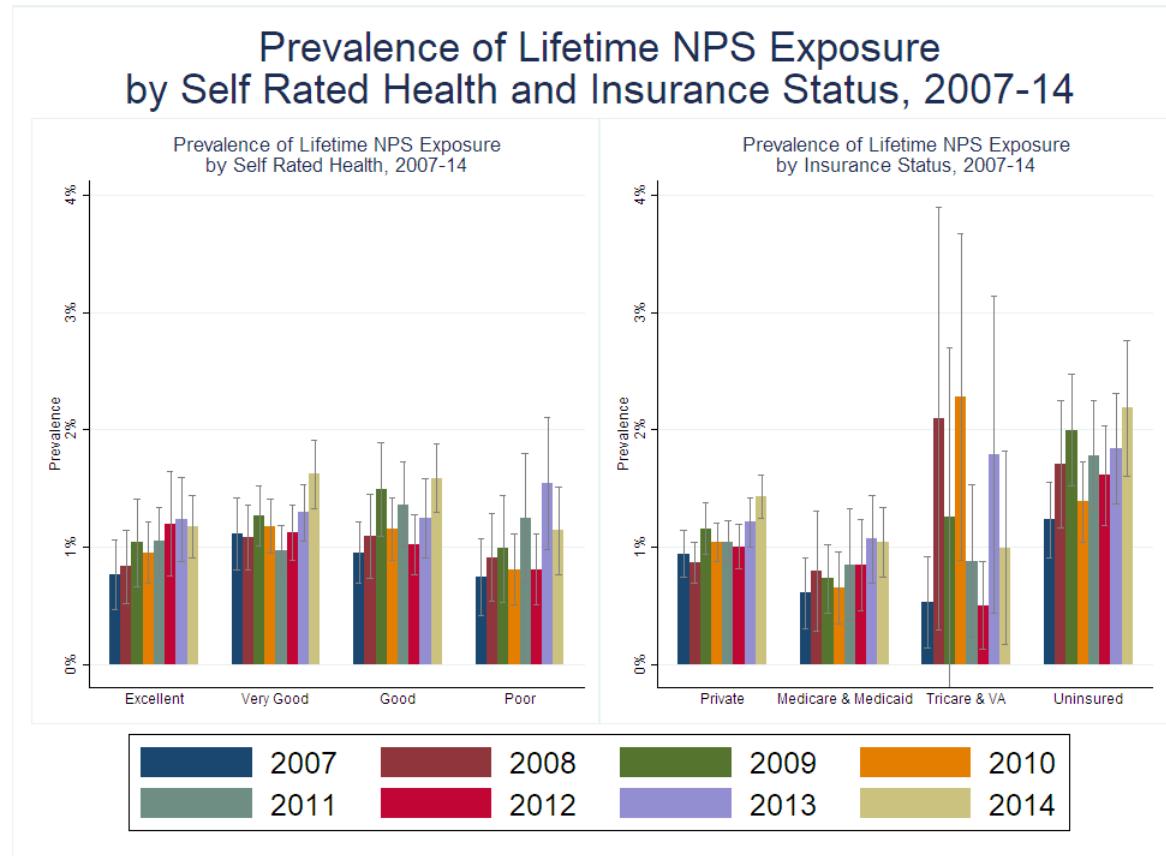


Elementary = <Grade 8; Secondary = Grade 8-12; Tertiary = Grade 12+

Prevalence of Lifetime NPS Exposure by Socioeconomic & Geographic Variables, 2007-14



Prevalence of Lifetime NPS Exposure by Self Rated Health & Insurance Status, 2007-14



VA = Veterans Administration

Summary

- From 2008-9, we observed a statistically significant increase in the prevalence of lifetime NPS use
- Individuals aged 18-25 showed a statistically significant increase in lifetime NPS use from 2008-9 but not any other age groups
- Men exhibited a higher prevalence of lifetime NPS use than women
- Hispanic, Black, and Asian & PI populations were less likely to have used NPS
- Single individuals were the most likely to be associated with lifetime NPS use
- Lifetime NPS use seems to increase with increasing education
- NPS use did not vary significantly based on metropolitan size, employment status, income, self rated health, or insurance status