



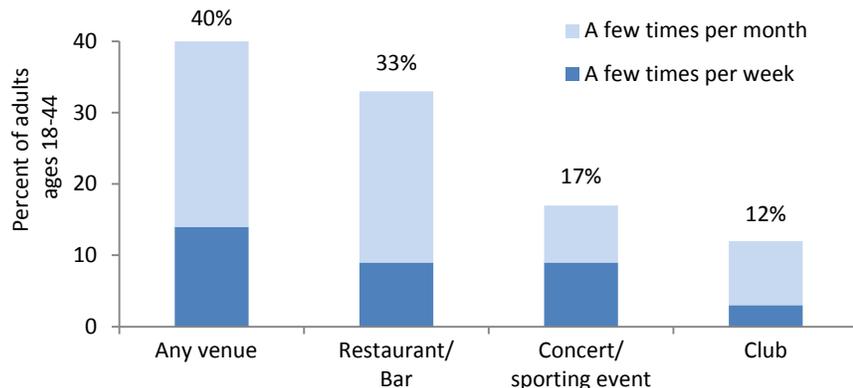
Exposure to Loud Sounds and Headphone Use among Teens and Younger Adults in New York City

Exposure to loud sounds can cause hearing problems, including noise-induced hearing loss and tinnitus (a buzzing or ringing in the ear). The risk depends on how loud the sound is, for how long the exposure lasts, and how often it occurs. Routine exposure to very loud sounds presents the highest risk of hearing damage. Even exposure to moderately loud sounds over a long time, or to an extremely loud sound lasting only a few seconds can cause hearing damage. Because the damage is cumulative, exposure to loud sounds at younger ages can result in greater long-term hearing loss.

Although unwanted sound, or “noise,” is pervasive in urban environments from sources like traffic and transportation, construction activities, and disruptive neighbors, many leisure activities that people enjoy can also create sounds that are loud enough to damage hearing. These include visiting loud entertainment and sporting venues, clubs, bars, and restaurants, and listening to a personal music player with headphones.

Visiting loud venues is common among New Yorkers ages 18 to 44^A

Frequency of visiting loud venues among adults ages 18-44, New York City, 2014



Source: NYC DOHMH Loud Sounds Survey, 2014

- Forty percent of New York City (NYC) adults ages 18 to 44 visited loud venues (club, restaurant or bar, concert or sporting event) at least a few times per month; 14% visited loud venues as often as a few times per week.
- Loud restaurants or bars were the most commonly visited venues: 33% of adults ages 18 to 44 visited loud restaurants or bars, 17% attended loud concerts or sporting events, and 12% visited loud clubs a few times per month or more.
- Among adults ages 18 to 44 who were currently working, 18% had four or more hours of daily exposure to loud sounds at work; 11% had between one to three hours of daily exposure to loud sounds at work.
- Among NYC adults ages 18 to 44 who visited loud venues at least a few times per month, 20%* had experienced ringing in the ear in the last twelve months compared with 7%* among those who visited loud venues less frequently.

*Estimate should be interpreted with caution. Estimate's Relative Standard Error (a measure of estimate precision) is greater than 30%, or the 95% Confidence Interval's half width is greater than 10, or the sample size is too small making the estimate potentially unreliable.

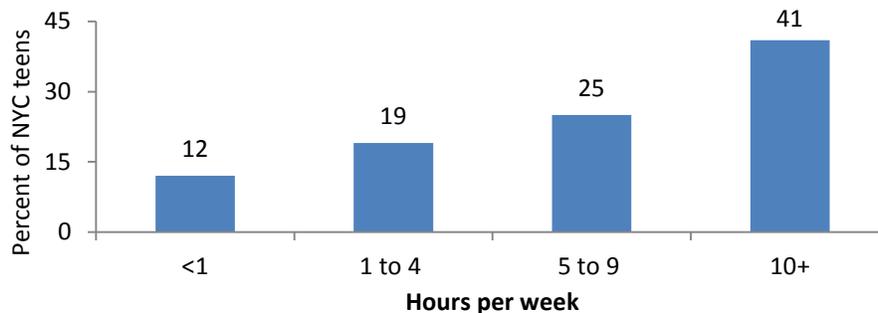
What is loud?

“Loud” is defined as so loud that you must shout to be heard by a person an arm’s length away. Having to shout at arm’s length is a useful indicator for a potentially hazardous level of sound (approximately 85 dBA). At this level, occupational guidelines recommend limiting routine exposure to eight hours per day. At much higher levels, such as 100dBA, guidelines limit routine exposure to only a few minutes.¹

Listening to music with headphones is common among teens; teens who listen longer also listen at a higher volume^B

- Ninety-two percent of NYC teens listened to music with headphones in 2013.
- Overall, 34% of NYC teens listened for 10 or more hours in an average week; 26% normally listened at the maximum volume.
- Among teens who listened for 10 or more hours in an average week, 41% normally listened at the maximum volume, compared with only 12% among those who usually listened for less than an hour in an average week.

Prevalence of New York City teens who listen to music with headphones at maximum volume by listening duration, 2013

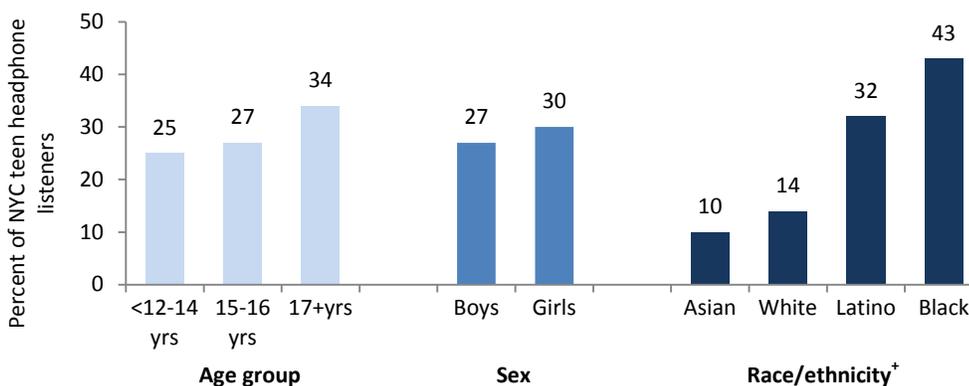


Source: NYC Youth Risk Behavior Survey, 2013

Older teens, girls, and Black and Latino teens were more likely to listen at maximum volume compared with other demographic groups

- Among teen listeners, teens ages 17 and older were more likely to normally listen at the maximum volume than younger teens ((34% vs. 27% (ages 15 to 16) and 25% (ages 14 and under)).
- Girl listeners were more likely to normally listen at the maximum volume than boy listeners (30% vs. 27%).
- Among teen listeners, the prevalence of listening at maximum volume was highest among Black teens, followed by Latino, White, and Asian[†] teens respectively (43%, 32%, 14%, and 10%).

Prevalence of listening to music with headphones at maximum volume by age, sex, and race/ethnicity among New York City teen listeners, 2013



[†]White, Black, and Asian race categories exclude Hispanic/Latino ethnicity.

Source: NYC Youth Risk Behavior Survey, 2013

Data Sources

^AThe Loud Sounds Survey was a telephone survey (landline and cell-phone-only samples) conducted by the Health Department in 2014 that asked New Yorkers ages 18 years and older about their exposure to select sources of loud sounds. A total of 502 New Yorkers were surveyed, including 192 adults ages 18-44 years. New Yorkers were asked to estimate their frequency of visiting loud bars or restaurants, loud nightclubs, and loud concerts or sporting events as well as about loud sounds at work, ringing in the ear, and general hearing health.

^BThe NYC Youth Risk Behavior Survey (YRBS)

2013: The YRBS is a self-administered, anonymous survey conducted in NYC public high schools by the Health Department and NYC Department of Education. For more survey details, visit: www1.nyc.gov/site/doh/data/data-sets/nyc-youth-risk-behavior-survey.page

^CThe Community Health Survey (CHS) 2011 and 2014:

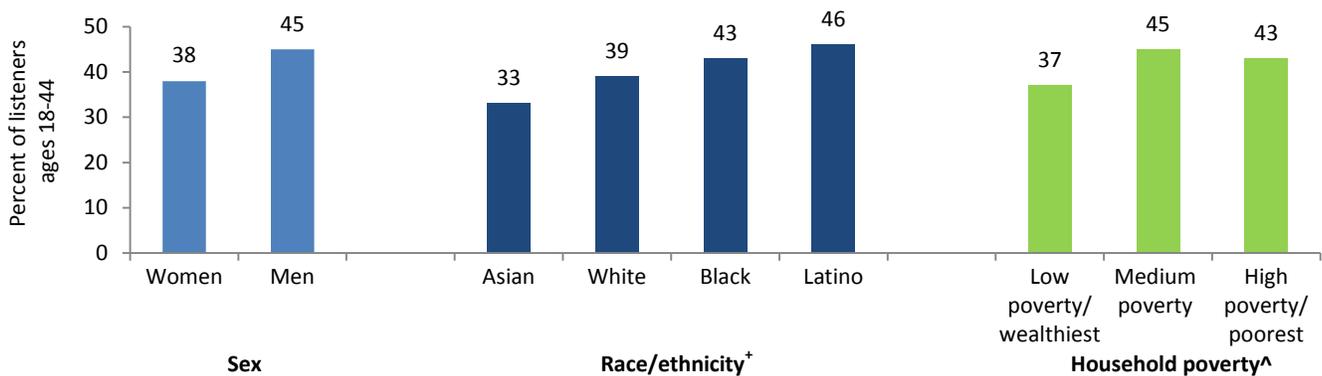
The CHS is conducted annually by the Health Department with approximately 9,000 NYC residents ages 18 and older. Presented findings are among adults ages 18-44 years. CHS has included adults with landline phones since 2002 and, starting in 2009, also has included adults who can be reached by cell-phone. For more survey details, visit:

www1.nyc.gov/site/doh/data/data-sets/community-health-survey.page

Headphone use is common among younger adults; among listeners four out of ten listen every day^C

- About six in ten (58%) NYC younger adults (ages 18 to 44) were headphone listeners in 2014, defined as listening to music with headphones at least one day per week.
- The prevalence of listening at least one day per week was higher among men (62% vs. 55% among women), Black younger adults (71% vs. 57% of Latinos, 54% of Whites, and 51% of Asian/Pacific Islanders); and among younger adults living in low poverty (wealthiest) households ((63% vs. 55% in high poverty households (poorest)) in 2014.
- In 2014, 42% percent of younger adult listeners listened seven days per week (daily) compared with 36% in 2011.
- Among younger adult listeners, daily listening was higher among men (45% vs. 38% among women) and among Latinos and Blacks compared with Asian/Pacific Islanders (46% and 43% vs. 33%) in 2014.
- Heavy headphone usage -- defined as listening at more than half maximum volume five to seven days per week -- remained stable at 5% from 2011 to 2014 among 18 to 44 year olds.

Daily headphone use by sex, race/ethnicity, and household poverty among New York City younger adult listeners, 2014



[†]White, Black, and Asian/Pacific Islander race categories exclude Hispanic/Latino ethnicity.

[^]Household poverty level defined as <200% of the Federal Poverty Level (FPL) as high poverty/poorest, 200-399% FPL as medium poverty, and ≥400% FPL as low poverty/wealthiest.

Source: NYC Community Health Survey, 2014

Definitions:

Teens: New York City public high school students in grades 9 through 12.

Race/ethnicity: White, Black and Asian race categories exclude Hispanic/Latino ethnicity. "Latino" ethnicity defined as Hispanic or Latino of any race.

Household poverty; high poverty/poorest = <200% of the Federal Poverty Level (FPL), medium poverty = 200-399% FPL, and low poverty/wealthiest = ≥400% FPL.

Reference:

¹ National Institute for Occupational Safety and Health (NIOSH): Criteria for a Recommended Standard Occupational Noise Exposure, Revised Criteria 1998. DHHS (NIOSH) Publication No. 98-126.

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MORE New York City Health Data and Publications

- A related publication, *NYC Vital Signs: Hearing Problems and Headphone Use in NYC*, can be accessed at: <http://www1.nyc.gov/assets/doh/downloads/pdf/survey/survey-2013noise.pdf>
- Visit EpiQuery, the Health Department's online, interactive health data system at nyc.gov/health/EpiQuery

Interactive tools and data publications at nyc.gov/health/data



Epi Data Tables

New York City Department of Health and Mental Hygiene

October 2016, No. 76

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- Table 6.** Prevalence of listening to a personal music player with headphones at least one day per week by age group, and by sex, race/ethnicity, and household poverty among New Yorkers ages 18-44, 2011 versus 2014
- Table 7.** Prevalence of daily listening to personal music players with headphones among listeners ages 18-44 by sex, race/ethnicity, and household poverty, New York City, 2011 versus 2014
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Data Sources

NYC DOHMH Loud Sounds Survey: was a telephone survey (landline and cell-phone-only samples) conducted by the Health Department in 2014 that asked New Yorkers ages 18 years and older about their exposure to select sources of loud sounds. A total of 502 New Yorkers were surveyed, including 192 adults ages 18-44 years. New Yorkers were asked to estimate their frequency of visiting loud bars or restaurants, loud nightclubs, and loud concerts or sporting events, as well as about loud sounds at work, ringing in the ear, and general hearing health status. Loud Sounds Survey data are weighted to the US Census 2012 American Community Survey PUMS age, sex, race, income, Hispanic origin and borough data for New York City adults.

NYC Youth Risk Behavior Survey (YRBS) 2013: The YRBS is a self-administered, anonymous survey conducted in NYC public high schools by the Health Department and NYC Department of Education. YRBS data are weighted to the NYC public high school population. For more survey details, visit: www1.nyc.gov/site/doh/data/data-sets/nyc-youth-risk-behavior-survey.page

NYC Community Health Survey (CHS) 2011 and 2014: the CHS is conducted annually by the Health Department with approximately 9,000 NYC residents ages 18 and older. CHS has included adults with landline phones since 2002 and, starting in 2009, also has included adults who can be reached by cell-phone. CHS 2011 data are weighted to the residential adult population per Census 2010, the 2008 HVS for phone usage, and the 2008-2010 American Community Survey. CHS 2014 data are weighted to the adult residential population per the American Community Survey, 2013.

Table 1. Frequency of visiting loud venues among New Yorkers ages 18-44, 2014

Source: Loud Sounds Survey, 2014.

Data are weighted to the US Census 2012 American Community Survey PUMS age, sex, race, income, Hispanic origin and borough data for New York City adults.

Frequency of visit ¹	Concert/Sporting event			Club			Bar/Restaurant			Any venue (concert/sporting event, club, bar/restaurant)		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
A few times per week	295,000	9	(5-15)	115,000	3*	(2-7)	280,000	9	(5-14)	472,000	14	(10-21)
A few times per month	254,000	8*	(4-14)	290,000	9	(5-15)	788,000	24	(18-32)	839,000	26	(19-33)
A few times per year or less	2,728,000	83	(76-89)	2884000	88	(81-92)	2209000	67	(60-74)	1,978,000	60	(52-67)

95% Confidence Intervals (CIs) are a measure of estimate precision: the wider the CI, the more imprecise the estimate.

*Estimate should be interpreted with caution. Estimate's Relative Standard Error (a measure of estimate precision) is greater than 30% or the 95% Confidence Interval half-width is too large, or the sample size is too small, making the estimate potentially unreliable.

¹ Frequency of visiting loud venues collected as a three part question: How often would you say you attend loud concerts or sporting events? Visit loud nightclubs? Visit loud bars or restaurants? Answer choices: once a year or less, a few times year, a few times a month, a few times a month.

Table 2. Frequency of exposure to loud sounds at work by age group, among New Yorkers who are currently working, 2014

Source: Loud Sounds Survey, 2014

Data are weighted to the US Census 2012 American Community Survey PUMS age, sex, race, income, Hispanic origin and borough data for New York City adults.

Hours exposed on an average work day ¹	Ages 18-44			Ages 45+		
	N	%	95% CI	N	%	95% CI
Less than 1 hour	940,000	35	(27-44)	538,000	34	(26-43)
1 to 3 hours	302,000	11	(7-18)	182,000	11	(7-19)
4 or more hours	471,000	18	(12-26)	211,000	13	(8-21)
None, my workplace is not loud	942,000	35	(28-44)	663,000	42	(33-50)

95% Confidence Intervals (CIs) are a measure of estimate precision: the wider the CI, the more imprecise the estimate.

¹Hours exposed on an average work day: approximately how many hours per work day are you exposed to loud sounds at work?

Table 3. Prevalence of ringing in the ear in the last 12 months by frequency of exposure to loud venues,¹ among New Yorkers ages 18-44, 2014

Source: Loud Sounds Survey, 2014.

Data are weighted to the US Census 2012 American Community Survey PUMS age, sex, race, income, Hispanic origin and borough data for New York City adults.

Frequency of loud venue visits ²	Ringing in the ear			
	N	%	95% CI	p-value ³
A few times a year or less	132,000	7*	(3-13)	ref
A few times a month or more	269,000	20*	(12-33)	0.019
Total	401,000	12	(8-18)	--

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¹Loud venues defined as concert, sporting event, club, restaurant, or bar.

²Frequency of visiting loud venues a few times a month or more defined as respondents who answered "a few times a week" or "a few times a month", and frequency of visiting loud venues a few times a month or more defined as those who answered "a few times a year" or "less than once a year/never".

³A p-value is a measure of statistical significance. A p-value less than 0.05 means there is a significant difference between that group and the referent (comparison) group. Bold p-values are significant at the 0.05 level.

Table 4. Prevalence of headphone listening behaviors among New York City teens, 2013

Source: 2013 Youth Risk Behavior Survey.

Data are weighted to the NYC public high school student population

	N ¹	Percent	95% CI
Listening volume²			
Maximum	48,000	26	(23-30)
About 3/4 maximum	56,000	30	(28-32)
About 1/2 maximum	43,000	23	(22-25)
Lower than 1/2 maximum	23,000	12	(10-15)
Do not listen	16,000	8	(7-10)
Listening duration³			
10+ hours per week	61,000	34	(31-36)
5 to 9 hours per week	36,000	20	(19-21)
1 to 4 hours per week	46,000	25	(23-28)
Less than one hour per week	23,000	12	(11-14)
Do not listen	16,000	9	(7-10)
Total (any listening)	176,000	92	(91-93)

95% Confidence Intervals (CIs) are a measure of estimate precision: the wider the CI, the more imprecise the estimate.

¹N's will not sum to citywide total due to missing values.

²Listening volume: At what volume do you normally listen to a personal music player such as an MP3 player or iPod with headphones?

³Listening duration: In an average week, about how many hours do you listen to a personal music player, such as an MP3 player or iPod, with headphones?

Table 5. Prevalence of listening to headphones at maximum volume among teen listeners by age, gender, race/ethnicity, and listening duration, New York City, 2013

Source: 2013 Youth Risk Behavior Survey.

Data are weighted to the NYC public high school student population

	N	Percent	95% CI	p-value ²
Age				
<12 to 14 years	10,000	25	(21-30)	ref
15 to 16 years	23,000	27	(23-32)	0.466
17+ years	15,000	34	(30-39)	0.007
Gender				
Male	21,000	27	(23-30)	ref
Female	27,000	30	(27-34)	0.009
Race/Ethnicity¹				
Asian	3,000	10	(7-13)	ref
White	4,000	14	(12-17)	<0.001
Latino	19,000	32	(29-36)	<0.001
Black	20,000	43	(38-47)	<0.001
Listening duration				
Less than one hour per week	3,000	12	(9-17)	ref
1 to 4 hours per week	9,000	19	(16-23)	0.003
5 to 9 hours per week	9,000	25	(22-29)	<0.001
10+ hours per week	24,000	41	(36-46)	<0.001
Total (NYC overall)	48,000	29	(25-32)	--

95% Confidence Intervals (CIs) are a measure of estimate precision: the wider the CI, the more imprecise the estimate.

¹ White, Black and Asian race categories exclude Hispanic/Latino ethnicity. "Latino" ethnicity defined as Hispanic or Latino of any race. In pairwise t-tests all race/ethnicities significantly different.

²A p-value is a measure of statistical significance. A p-value less than 0.05 means there is a significant difference between that group and the referent (comparison) group. Bold p-values are significant at the 0.05 level.

Table 6. Prevalence of listening to a personal music player with headphones at least one day per week by age group, and by sex, race/ethnicity, and household poverty among New Yorkers ages 18-44, 2011 versus 2014

Source: 2011 and 2014 Community Health Survey.

CHS 2011 data are weighted to the residential adult population per Census 2010, the 2008 HVS for phone usage, and the 2008-2010 American Community Survey.

CHS 2014 data are weighted to the adult residential population per the American Community Survey, 2013.

	2011				2014				2011 vs. 2014
	N	Percent	95% CI	p-value ³	N	Percent	95% CI	p-value ³	between years p-value ³
Age									
18 to 44 years	1,995,000	61	(58-63)	ref	1,983,000	58	(56-60)	ref	0.203
45 to 64 years	513,000	26	(24-29)	<0.001	489,000	24	(22-26)	<0.001	0.240
65+ years	106,000	11	(9-14)	<0.001	70,000	7	(6-9)	<0.001	0.004
Total (all adults)	2,613,000	42	(40-44)	-	2,542,000	39	(38-41)	-	0.022
Ages 18-44 years									
Gender									
Male	994,000	63	(58-67)	ref	1,013,000	62	(59-65)	ref	0.737
Female	1,001,000	59	(55-63)	0.181	970,000	55	(52-58)	0.003	0.150
Race/Ethnicity¹									
Asian/Pacific Islander	293,000	61	(52-69)	0.619	283,000	51	(45-56)	<0.001	0.047
White	592,000	60	(55-65)	0.389	550,000	54	(49-58)	<0.001	0.074
Latino	594,000	60	(55-64)	0.317	566,000	57	(53-61)	<0.001	0.418
Black	474,000	63	(57-69)	ref	527,000	71	(67-75)	ref	0.041
Household poverty^{2,3}									
High poverty/poorest	779,000	58	(54-63)	ref	917,000	55	(52-58)	ref	0.236
Medium poverty	272,000	58	(50-66)	0.981	389,000	59	(53-64)	0.266	0.943
Low poverty/wealthiest	630,000	65	(60-70)	0.051	677,000	63	(59-67)	0.002	0.543

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¹ White, Black and Asian/Pacific Islander race categories exclude Hispanic ethnicity. "Latino" ethnicity defined as Hispanic or Latino of any race.

² Household poverty level defined as <200% of the Federal Poverty Level (FPL) as high poverty/poorest, 200-399% FPL as medium poverty, and ≥400% FPL as low poverty/wealthiest. In the 2011 CHS data, household annual income was analyzed only for CHS respondents who provided income information. In the 2014 CHS data, household income was imputed for respondents who had missing information.

³ A p-value is a measure of statistical significance. A p-value less than 0.05 means there is a significant difference between that group and the referent (comparison) group. Bold p-values are significant at the 0.05 level.

Table 7. Prevalence of daily listening to personal music players with headphones among listeners¹ ages 18-44 by sex, race/ethnicity, and household poverty, New York City, 2011 versus 2014

Source: 2011 and 2014 Community Health Survey.

CHS 2011 data are weighted to the residential adult population per Census 2010, the 2008 HVS for phone usage, and the 2008-2010 American Community Survey.

CHS 2014 data are weighted to the adult residential population per the American Community Survey, 2013.

	2011				2014				2011 vs. 2014
	N	Percent	95% CI	p-value ⁴	N	Percent	95% CI	p-value ⁴	between years p-value ⁴
Gender									
Male	350,000	35	(30-41)	0.810	456,000	45	(41-49)	0.023	0.004
Female	362,000	36	(31-42)	ref	372,000	38	(34-42)	ref	0.533
Race/Ethnicity²									
Asian/Pacific Islander	97,000	33*	(23-45)	0.061	94,000	33	(26-41)	0.035	0.985
White	184,000	31	(25-39)	0.006	213,000	39	(33-45)	0.325	0.109
Latino	189,000	32	(26-38)	0.006	262,000	46	(41-51)	0.377	<0.001
Black	220,000	46	(38-55)	ref	226,000	43	(38-49)	ref	0.501
Household poverty³									
High poverty/poorest	289,000	37	(31-43)	0.022	399,000	43	(39-48)	0.065	0.083
Medium poverty	121,000	44*	(34-55)	0.006	176,000	45	(39-52)	0.063	0.886
Low poverty/wealthiest	169,000	27	(21-34)	ref	253,000	37	(32-43)	ref	0.012
Total	712,000	36	(32-40)		828,000	42	(39-45)		0.014

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¹ Listeners defined as those who listen at least one day per week

² White, Black and Asian/Pacific Islander race categories exclude Hispanic ethnicity. "Latino" ethnicity defined as Hispanic or Latino of any race. Prevalence among Latinos was significantly higher than Asian/Pacific Islander in 2014, p=.003.

³ Household poverty level defined as <200% of the Federal Poverty Level (FPL) as high poverty/poorest, 200-399% FPL as medium poverty, and ≥400% FPL as low poverty/wealthiest. In the 2011 CHS data, household annual income was analyzed only for CHS respondents who provided income information. In the 2014 CHS data, household income was imputed for respondents who had missing information.

⁴ A p-value is a measure of statistical significance. A p-value less than 0.05 means there is a significant difference between that group and the referent (comparison) group. Bold p-values are significant at the 0.05 level.

Table 8. Prevalence of headphone usage levels by age group, New York City, 2011 versus 2014

Source: 2011 and 2014 Community Health Survey.

CHS 2011 data are weighted to the residential adult population per Census 2010, the 2008 HVS for phone usage, and the 2008-2010 American Community Survey.

CHS 2014 data are weighted to the adult residential population per the American Community Survey, 2013.

	2011			2014			2011 vs. 2014 between years p-value ²
	N	Percent	95% CI	N	Percent	95% CI	
All adults¹							
Heavy	167,000	3	(2-3)	195,000	3	(3-4)	0.427
Light/Moderate	2,428,000	39	(37-41)	2,338,000	36	(35-38)	0.016
None	3,580,000	58	(57-60)	3,860,000	61	(59-62)	0.032
Age 18-44 years							
Heavy	150,000	5	(3-6)	171,000	5	(4-6)	0.574
Light/Moderate	1,838,000	56	(53-59)	1,808,000	53	(51-55)	0.141
None	1,300,000	40	(37-42)	1,423,000	42	(40-44)	0.208
Age 45+ years							
Heavy	16,000	1	(0-1)	24,000	1	(0-1)	0.334
Light/Moderate	585,000	20	(18-22)	530,000	18	(16-19)	0.037
None	2,280,000	79	(77-81)	2,436,000	81	(80-83)	0.062

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¹Age-adjusted estimates

²A p-value is a measure of statistical significance. A p-value less than 0.05 means there is a significant difference between that group and the referent (comparison) group. Bold p-values are significant at the 0.05 level.