



## **HIV Incidence Estimates, Alabama 2010-2013**

### **Background:**

HIV Incidence Surveillance is a supplemental National HIV Surveillance System (NHSS) activity funded by the Centers for Disease Control and Prevention (CDC), and conducted in 25 areas across the United States, including Alabama. HIV incidence estimates provide the most representative picture of HIV trends available, identifying at-risk target groups for focused prevention efforts. HIV Incidence Surveillance provides national and local estimates of the number of recent HIV infections in a given period, and is different from the number of newly diagnosed HIV infections reported through case surveillance. Whereas a person newly diagnosed with HIV may have been infected for years before diagnosis, HIV incidence refers to persons recently infected with HIV within the last 5 months. As an HIV Incidence Surveillance site, Alabama is able to provide local incidence estimates to depict the burden of HIV in the state and assess the effectiveness of prevention efforts over time.

The CDC's HIV Incidence Surveillance methodology is based on an approach known as the Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS). STARHS uses a special laboratory test (i.e., BED or AVIDITY assay) to classify newly diagnosed infections as either long-standing (i.e., infected  $\geq 6$  months prior to testing) or recent (i.e., infected within the last five months). The STARHS method is conducted on HIV-1 antibody positive blood samples collected within 90 days of diagnosis from newly diagnosed HIV cases age  $\geq 13$  years without a Stage 3 (AIDS) infection within 6 months of initial diagnosis. STARHS results indicating recent infection, in combination with case-based surveillance data HIV testing and treatment history (TTH) information, are used to estimate HIV incidence. The CDC extrapolates data collected by the 25 HIV Incidence Surveillance sites to estimate HIV incidence at the national level via a Stratified Extrapolation Approach.

### **Overview:**

The CDC estimates national HIV incidence has remained stable at about 50,000 infections per year since the mid-1990s. African Americans, Latinos, and gay and bisexual men who have sex with men (MSM) continue to be disproportionately affected by HIV in the United States. Similar disparities are seen in Alabama, where African Americans comprise 27% of the state's population (according to United States Census Bureau 2013 population estimates), but account for an estimated 77% of recent HIV infections in 2013 (Table 1). Of all recent estimated HIV infections during 2013, 72% were among gay and bisexual MSM, 23% were attributed to heterosexual contact, and 3% were attributed to injection drug use (IDU). African Americans experienced similar risk factors, with 72% of estimated recent infections occurring among MSM, 25% attributed to heterosexual contact, and 2% attributed to IDU.



**Table 1. Annualized HIV Incidence Estimation among Adults and Adolescents ≥ 13 Years, by Year of Infection and Selected Characteristics, Alabama 2010-2013**

	2010				2011			
	No.	%	SD	(95% CI)†	No.	%	SD	(95% CI)†
<b>Sex</b>								
Male	569	73.5%	114	(344-794)	645	83.3%	123	(404-887)
Female	201	26.0%	58	(86-316)	140	18.1%	40	(63-217)
<b>Age at infection</b>								
13-24	383	49.5%	84	(218-547)	325	42.0%	80	(169-481)
25-34	199	25.7%	59	(83-314)	241	31.1%	67	(109-373)
35-44	107	13.8%	41	(26-188)	115	14.9%	46	(25-205)
45-54	67	8.7%	33	(2-131)	85	11.0%	38	(10-159)
≥55	15	1.9%	15	(0-45)	20	2.6%	19	(0-58)
<b>Race/Ethnicity</b>								
<b>Male</b>								
Black	419	73.6%	93	(297-547)	448	69.5%	101	(249-647)
White	112	19.7%	43	(27-197)	152	23.6%	56	(42-262)
Hispanic	2	0.4%	7	(0-15)	27	4.2%	23	(0-72)
<b>Female</b>								
Black	146	72.6%	48	(52-240)	104	74.3%	34	(38-170)
White	49	24.4%	26	(0-100)	30	21.4%	18	(0-66)
Hispanic	0	0.0%	3	(0-6)	0	0.0%	0	-
<b>All</b>								
Black	565	73.0%	102	(364-766)	552	71.3%	107	(343-761)
White	162	20.9%	50	(63-260)	182	23.5%	59	(66-297)
Hispanic	3	0.4%	7	(0-16)	27	3.5%	23	(0-72)
<b>Risk Factor</b>								
<b>Black</b>								
MSM	365	64.6%	85	(197-533)	410	74.3%	96	(221-598)
IDU	15	2.7%	17	(0-48)	15	2.7%	17	(0-48)
MSM/ IDU	13	2.3%	14	(0-41)	11	2.0%	15	(0-41)
Heterosexual	172	30.4%	54	(65-278)	117	21.2%	38	(42-192)
<b>White</b>								
MSM	104	64.2%	41	(23-185)	144	79.1%	55	(37-251)
IDU	14	8.6%	14	(0-41)	13	7.1%	12	(0-37)
MSM/IDU	7	4.3%	11	(0-27)	7	3.8%	12	(0-31)
Heterosexual	38	23.5%	23	(0-84)	17	9.3%	15	(0-46)
<b>Hispanic</b>								
MSM	2	66.7%	6	(0-14)	20	74.1%	20	(0-59)
IDU	0	0.0%	0	-	1	3.7%	5	(0-12)
MSM/IDU	0	0.0%	0	-	5	18.5%	9	(0-23)
Heterosexual	1	33.3%	4	(0-9)	2	7.4%	7	(0-15)
<b>All</b>								
MSM	505	65.2%	106	(297-713)	592	76.5%	118	(360-823)
IDU	29	3.7%	23	(0-74)	31	4.0%	23	(0-76)
MSM/IDU	20	2.6%	18	(0-55)	23	3.0%	22	(0-65)
Heterosexual	217	28.0%	63	(92-341)	140	18.1%	43	(56-224)
<b>Total‡</b>	<b>770</b>	<b>100</b>	<b>126</b>	<b>(521-1,019)</b>	<b>785</b>	<b>100</b>	<b>130</b>	<b>(530-1,041)</b>



**Table 1. Annualized HIV Incidence Estimation among Adults and Adolescents ≥ 13 Years, by Year of Infection and Selected Characteristics, Alabama 2010-2013 (continued)**

	2012				2013			
	No.	%	SD	(95% CI)†	No.	%	SD	(95% CI)†
<b>Sex</b>								
Male	536	69.3%	86	(367-705)	626	80.9%	122	(386-865)
Female	118	15.2%	46	(28-208)	148	19.1%	56	(38-258)
<b>Age at infection</b>								
13-24	299	38.6%	60	(181-418)	353	45.6%	88	(181-525)
25-34	212	27.4%	51	(112-313)	252	32.6%	70	(114-389)
35-44	91	11.8%	34	(26-157)	83	10.7%	40	(4-161)
45-54	43	5.6%	24	(0-91)	51	6.6%	32	(0-114)
≥55	7	0.9%	10	(0-28)	35	4.5%	26	(0-86)
<b>Race/Ethnicity</b>								
<b>Male</b>								
Black	377	70.3%	70	(239-515)	476	76.0%	104	(271-680)
White	123	22.9%	39	(47-199)	123	19.6%	52	(21-225)
Hispanic	5	0.9%	7	(0-19)	2	0.3%	7	(0-17)
<b>Female</b>								
Black	93	78.8%	39	(17-170)	117	79.1%	48	(22-211)
White	20	16.9%	19	(0-57)	28	18.9%	27	(0-81)
Hispanic	4	3.4%	8	(0-19)	1	0.7%	5	(0-12)
<b>All</b>								
Black	470	60.7%	81	(311-630)	592	76.5%	114	(370-815)
White	144	18.6%	44	(58-229)	152	19.6%	59	(36-267)
Hispanic	9	1.2%	10	(0-29)	4	0.5%	9	(0-22)
<b>Risk Factor</b>								
<b>Black</b>								
MSM	364	77.4%	68	(230-498)	423	71.5%	97	(233-612)
IDU	14	3.0%	15	(0-43)	11	1.9%	15	(0-40)
MSM/ IDU	5	1.1%	8	(0-21)	12	2.0%	15	(0-43)
Heterosexual	87	18.5%	38	(13-162)	146	24.7%	53	(42-250)
<b>White</b>								
MSM	114	79.2%	37	(42-187)	106	69.7%	49	(9-202)
IDU	8	5.6%	11	(0-30)	9	5.9%	14	(0-37)
MSM/IDU	5	3.5%	8	(0-20)	8	5.3%	13	(0-33)
Heterosexual	16	11.1%	17	(0-49)	29	19.1%	27	(0-82)
<b>Hispanic</b>								
MSM	4	44.4%	6	(0-16)	2	50.0%	7	(0-15)
IDU	1	11.1%	3	(0-7)	0	0.0%	0	-
MSM/IDU	0	0.0%	0	-	0	0.0%	0	-
Heterosexual	5	55.6%	8	(0-21)	2	50.0%	2	(0-13)
<b>All</b>								
MSM	512	66.1%	83	(350-675)	554	71.6%	112	(333-774)
IDU	23	3.0%	19	(0-59)	19	2.5%	22	(0-63)
MSM/IDU	11	1.4%	11	(0-32)	21	2.7%	20	(0-60)
Heterosexual	108	14.0%	44	(22-195)	180	23.3%	61	(60-299)
<b>Total‡</b>	<b>654</b>	<b>100</b>	<b>100</b>	<b>(458-850)</b>	<b>774</b>	<b>100</b>	<b>132</b>	<b>(514-1,033)</b>

Source: Alabama Department of Public Health, STD Prevention and Control, HIV Surveillance Branch.

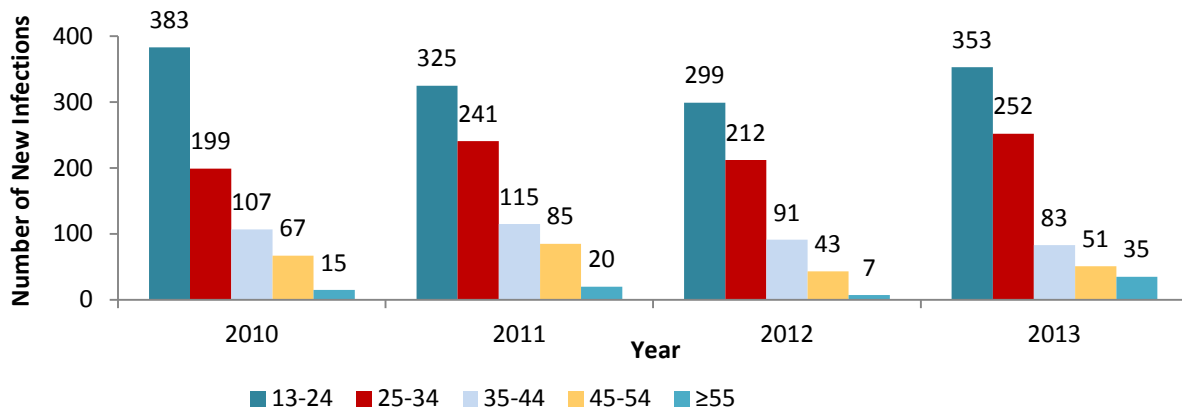
Note: Data by transmission category have been statistically adjusted to account for missing risk-factor information via the multiple imputation method prior to HIV incidence estimation. CI- Confidence Interval. IDU – Injection Drug User. MSM – Men who have Sex with Men. SD – Standard Deviation. †Confidence intervals reflect random variability affecting model uncertainty but may not reflect model-assumption uncertainty; thus, they should be interpreted with caution. ‡Because column totals for estimated numbers were calculated independently of subpopulation values, they may not sum to the column total and percentages may not sum 100%.



### HIV Infections by Age:

In 2013, the estimated number of recent HIV infections was highest among individuals aged 13-24 years (46%, 353 [95% CI: 181-525]), followed by individuals aged 24-34 years (33%, 252 [95% CI: 114-389]), and decreased with age (Table 1). Similar trends were seen in previous years (Figure 1). This downward shift in the age distribution of Alabama’s recently infected HIV population indicates a need for increased prevention efforts targeting adolescents and young adults.

Figure 1. Estimated Recent HIV infections by Age Group, Alabama 2010-2013

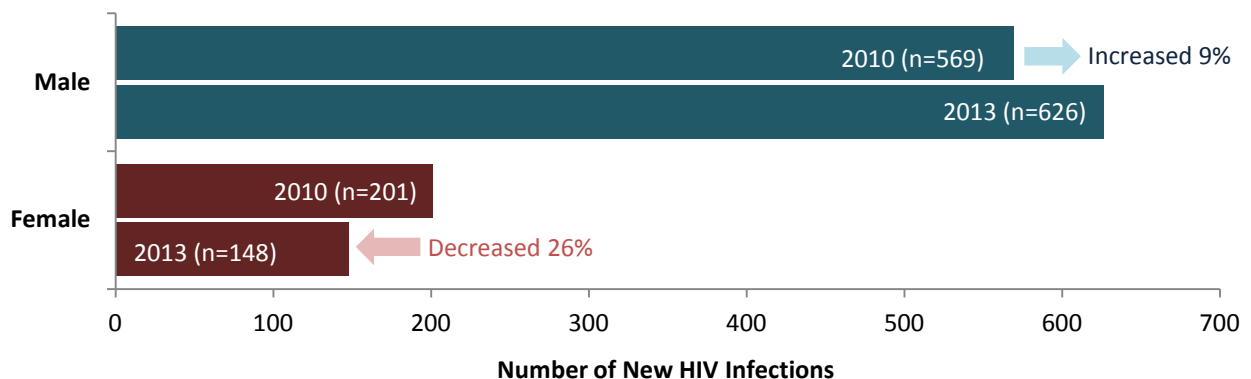


Source: Alabama Department of Public Health, STD Prevention and Control, HIV Surveillance Branch.

### HIV Infections by Sex:

Comparing 2010 to 2013, the overall estimated number of recent HIV infections remained stable (Table 1). However, gender comparison shows the estimated number of recent HIV infections increased among men between 2010 and 2013, while the number decreased in women (Figure 2). In 2013, the estimated rate of recent HIV infections among males (26.7 per 100,000 Alabama males) was 4.5 times that of females (5.9 per 100,000 Alabama females).

Figure 2. Estimated Number of Recent HIV Infections by Gender, Alabama 2010 and 2013



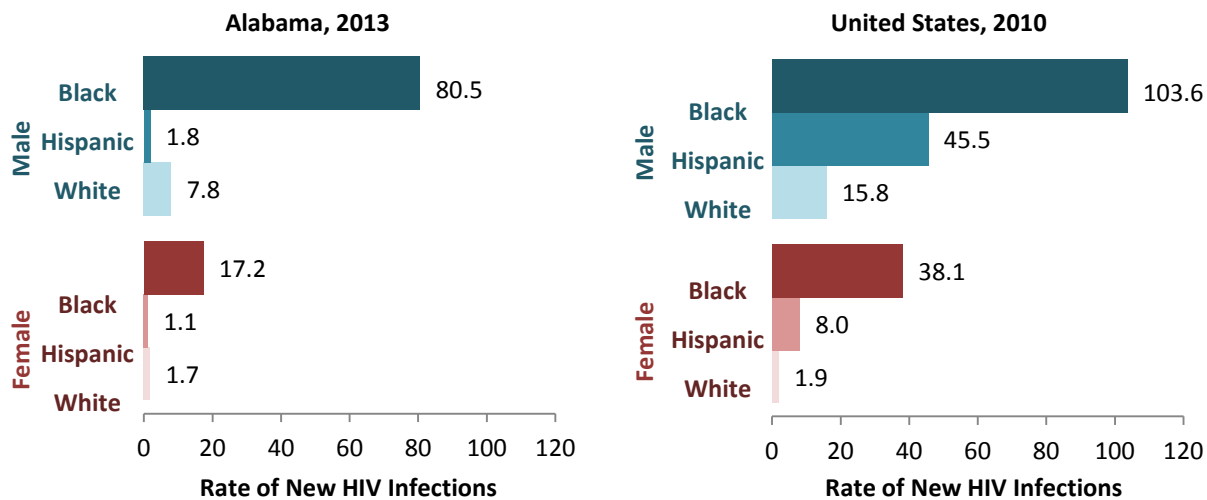
Source: Alabama Department of Public Health, STD Prevention and Control, HIV Surveillance Branch.



### HIV Infections by Race and Ethnicity:

African Americans remain disproportionately affected by HIV in Alabama. The estimated rate of recent HIV infections among African Americans (46.6 per 100,000 African Americans) was nearly 10 times (9.9) as high as the rate in whites (4.7 per 100,000 whites) in 2013. Racial disparities remained when incidence estimates were stratified by sex, with Alabama rates mirroring national trends (Figure 3). In Alabama, the estimated rate of recent HIV infections in African American males (80.5 per 100,000 African American males) was 10.3 times as high as the rate in white males (7.8 per 100,000 white males) during 2013, compared to estimated rates 6.5 higher throughout the United States during 2010. Racial disparities among females were even more pronounced, with African American females having 10.1 times the estimated risk of HIV infection than white females in Alabama during 2013, compared to 20 times the risk throughout the United States in 2010. Continued HIV testing, treatment, and prevention programs are needed in the African American community.

Figure 3. Estimated Rate of Recent HIV Infections, Alabama 2013 and United States 2010



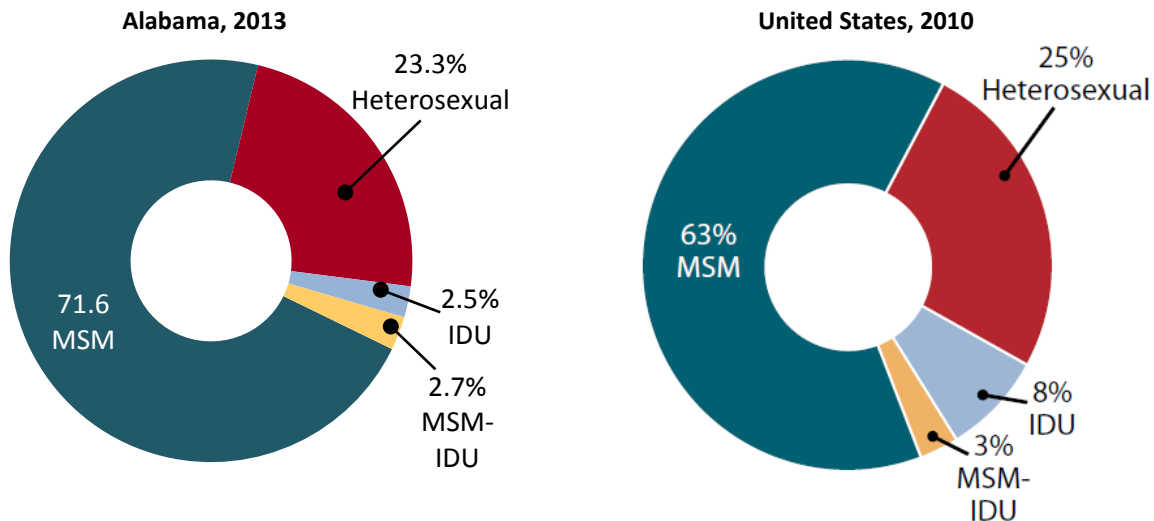
Sources: Alabama Department of Public Health, STD Prevention and Control, HIV Surveillance Branch. Centers for Disease Control and Prevention. Fact Sheet: Estimates of New HIV Infections in the United States, 2007-2010. <http://www.cdc.gov/nchstp/newsroom/docs/2012/HIV-Infections-2007-2010.pdf>. Accessed 2/24/2015. Note: Alabama rates per 100,000 population calculated with U.S. Census Bureau 2013 population estimates for sex, race, and ethnicity.

### HIV Infections by Route of Transmission:

Gay and bisexual MSM remain the population most heavily affected by HIV infection in Alabama and throughout the United States. In Alabama, MSM accounted for 72% of estimated recent infections during 2013, compared to 63% of estimated recent infections in the United States during 2010 (Figure 4). Comparing 2010 to 2013, the estimated number of recent HIV infections among MSM increased 6% while the number of recent infections among heterosexuals decreased 5% in Alabama (Table 1).



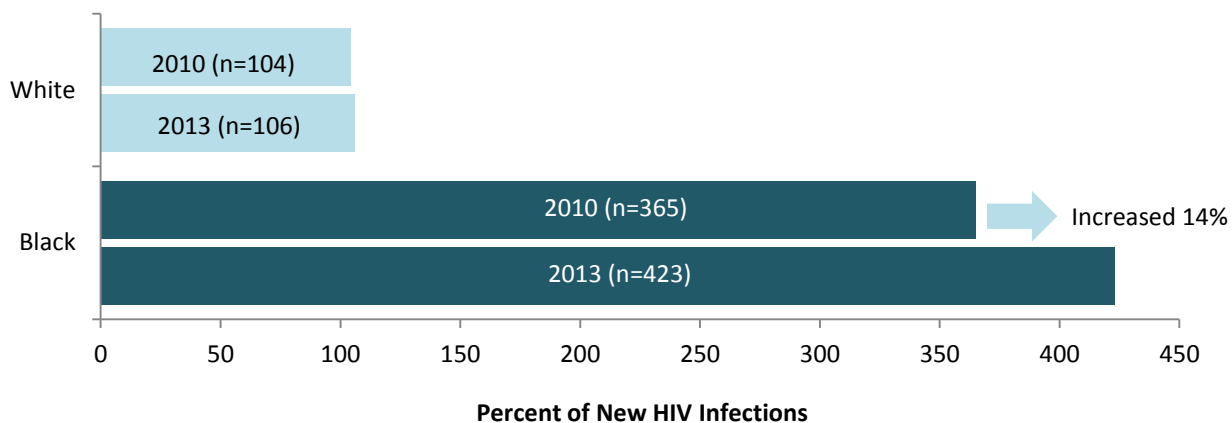
Figure 4. Estimated Recent HIV Infections by Transmission Category, Alabama 2013 and United States 2010



Sources: Alabama Department of Public Health, STD Prevention and Control, HIV Surveillance Branch. Centers for Disease Control and Prevention. Fact Sheet: Estimates of New HIV Infections in the United States, 2007-2010. <http://www.cdc.gov/nchstp/newsroom/docs/2012/HIV-Infections-2007-2010.pdf>. Accessed 2/24/2015. Note: Data by transmission category have been statistically adjusted to account for missing risk-factor information via the multiple imputation method prior to HIV incidence estimation.

Stratification by race indicates an increase in the estimated number of recent HIV infections among African American gay and bisexual MSM between 2010 and 2013, while the estimated number of recent infections among their White counterparts remained stable (Figure 5). HIV testing, treatment, and prevention efforts must reach gay and bisexual men, especially young African Americans, to successfully prevent future infections. As many MSM do not identify as being gay or bisexual, targeting young African American males, regardless of sexual orientation, is advised.

Figure 5. Estimated Number of Recent HIV Infections Among Men who have Sex with Men by Race, Alabama 2010 and 2013



Source: Alabama Department of Public Health, STD Prevention and Control, HIV Surveillance Branch.



Summary:

Alabama’s HIV incidence data estimates 774 cases of recent HIV infections (rate 16.0 per 100,000) occurred among adults and adolescents ≥ 13 years during 2013 (Table 2). Between 2010 and 2013, the estimated number and rate of recent HIV infections remained stable, aside from a decrease during 2012 to 654 estimated recent infections (rate of 13.6 per 100,000). Further analysis indicates no significant difference exists between 2010, 2011, 2012, and 2013 annualized HIV incidence estimates and the 2012 decrease was likely due to chance (Table 3).

Table 2. Estimated Incidence of HIV Infection among Adults and Adolescents ≥ 13 Years, Alabama 2010-2013

Year	Estimated No.	(95% CI)†	Population Estimate	Estimated Rate	(95% CI)†
2010	770	(521-1,019)	4,785,570	16.1	(10.9-21.3)
2011	785	(530-1,041)	4,801,627	16.3	(11.0-21.7)
2012	654	(458-850)	4,817,528	13.6	(9.5-17.6)
2013	774	(514-1,033)	4,833,722	16.0	(10.6-21.4)

Source: Alabama Department of Public Health, STD Prevention and Control, HIV Surveillance Branch. †CI- Confidence Interval. Confidence intervals reflect random variability affecting model uncertainty but may not reflect model-assumption uncertainty; thus, they should be interpreted with caution. Rates per 100,000 population calculated with U.S. Census Bureau 2010, 2011, 2012, and 2013 population estimates.

Table 3. Comparison of HIV Incidence Estimates among Adults and Adolescents ≥ 13 Years, Alabama 2010-2013

Comparison (Year 1 vs Year 2)	Year 1		Year 2		Z-Test Results	
	Incidence Estimate	SD†	Incidence Estimate	SD†	Z Statistic	P Value
2010 vs. 2011	770	126.4	785	130.3	0.089	0.93
2010 vs. 2012	770	126.4	654	99.6	0.764	0.44
2010 vs. 2013	770	126.4	774	132.2	0.020	0.8
2011 vs. 2012	785	130.3	654	99.6	0.848	0.40
2011 vs. 2013	785	130.3	774	132.2	0.067	0.95
2012 vs. 2013	654	99.6	774	132.2	0.763	0.45

Source: Alabama Department of Public Health, STD Prevention and Control, HIV Surveillance Branch. †SD-Standard Deviation.

The CDC estimates 14% of HIV positive individuals (approximately 1 out of every 7) are unaware of their status. Although counseling and testing data indicates repeat testers (i.e., individuals with one or more previously negative HIV test) report more HIV risk factors than first time testers, the estimated number of recent HIV infections in Alabama has been greater among first time testers in three of the previous four years (Table 4). This finding indicates HIV counseling and testing campaigns should eliminate testing barriers so that more individuals will undergo regular HIV testing and become aware of their HIV status. Only by increasing awareness will the true burden of HIV be known.

Table 4. HIV Incidence Testing History among Adults and Adolescents ≥ 13 Years, Alabama 2010-2012

Testing History	2010		2011		2012		2013	
	Estimated No.	%	Estimated No.	%	Estimated No.	%	Estimated No.	%
New Testers	394	51.2	425	54.1	260	39.8	465	60.1
Repeat Testers	376	48.8	360	45.9	394	60.2	308	39.9
<b>Total†</b>	<b>770</b>	<b>100</b>	<b>785</b>	<b>100</b>	<b>654</b>	<b>100</b>	<b>774</b>	<b>100</b>

Source: Alabama Department of Public Health, STD Prevention and Control, HIV Surveillance Branch. †Because column totals for estimated numbers were calculated independently of the values for the subpopulations, the values in each column may not sum to the column total.



## **Alabama's HIV Prevention Campaign: Know. Manage. Live.**

While no single strategy exists to effectively control the HIV epidemic, new therapies are available to increase the longevity of HIV positive persons while simultaneously decreasing the likelihood of infecting others. Treatment as Prevention, which refers to using antiretroviral treatment (ART) to decrease the risk of HIV transmission, has emerged as a highly effective HIV prevention method. Alabama's Know. Manage. Live campaign is an HIV awareness and prevention strategy focused on HIV testing, treatment, and prevention that identifies individuals infected with HIV, links these individuals into care, and ensures retention in care by increasing access to HIV care providers and ART to effectively suppress viral load. Ongoing and expanded involvement from community leaders representing African Americans, young adults and adolescents, gay and bisexual men, and other at-risk target groups is needed to decrease the spread of HIV and encourage all individuals to learn the facts about HIV, get tested, and take action to protect themselves and their partners. Additional information about Alabama's Know. Manage. Live. Campaign is available at <https://adph.org/aids>.

## **References:**

Centers for Disease Control and Prevention. Estimated HIV incidence among adults and adolescents in the United States, 2007-2010. *HIV Surveillance Supplemental Report 2012*; 17 (No. 4). [http://www.cdc.gov/hiv/pdf/statistics\\_hssr\\_vol\\_17\\_no\\_4.pdf](http://www.cdc.gov/hiv/pdf/statistics_hssr_vol_17_no_4.pdf). Published December 2012.

Centers for Disease Control and Prevention. Fact Sheet: Estimates of New HIV Infections in the United States, 2007-2010. Available at <http://www.cdc.gov/nchhstp/newsroom/docs/2012/HIV-Infections-2007-2010.pdf>. Accessed November 12, 2014.