

Annual Florida HIV Incidence Estimate, 2007-2010

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To protect, promote and improve the health of all people in Florida through integrated state, county, and community efforts.



Outline

- Background Information
- Florida Incidence Estimate and Analysis
- Conclusions
- Online Resources
- Contact Information

HIV Surveillance

- All 50 states and US territories report various data on reportable HIV diagnoses to CDC.
- In the past, prevalence data were used to estimate number of new HIV cases.
- However, a new diagnosis is not necessarily a new infection. Diagnosis can occur at any point during infection.

Prevalence vs. Incidence

- Prevalence: number of individuals infected with HIV at a specific point in time
 - Includes people living with HIV at any disease stage, including AIDS
- Incidence: number of persons *newly* infected at a specific point in time

HIV Incidence Surveillance

- In 2004, HIV incidence surveillance was initiated in Florida to provide a window into the earliest stage of HIV disease.
 - Complete implementation occurred in 2005.
- Data collection on HIV testing behavior, antiretroviral use and incidence testing allow for more accurate incidence estimates.
 - Estimates include diagnosed and *undiagnosed* cases.

HIV Incidence Surveillance

- Incidence surveillance requires two elements:
 - (1) The serologic testing algorithm for recent HIV seroconversion (STARHS) results.
 - This enzyme immunoassay is capable of identifying recent (<five months) vs. longer HIV infection.
 - (2) Data on testing and treatment history
 - Data are also used to categorize testers as new or repeat testers.
 - Antiretroviral treatment can also affect STARHS test outcome.

Assumptions

- Incidence estimate is based on a series of assumptions:[§]
 - Data are missing at random.
 - Information on testing group, especially the date of last negative HIV test, is accurate.
 - The recency period distribution is well defined.
 - All HIV infections will eventually be diagnosed either through testing or through death.
 - HIV incidence has been relatively stable in the most recent two years.
 - Testing behavior has not changed over several years.

[§] Centers for Disease Control and Prevention. Estimated HIV Incidence in the United States, 2007-2010. HIV Surveillance Supplemental Report 2012;17(No. 4). <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/#supplemental>. Published December 2012. Accessed February 4, 2013.

Calculating Incidence Estimates

- Stratified Extrapolation Approach[§]
 - Determines probability that an individual would have an HIV test during his/her period of recent infection
 - Assigns weight to each case deemed recent or long-standing
 - Separate probabilities are calculated for new testers vs. repeat testers
 - Incidence = sum of weighted number of infections deemed recent

[§] Centers for Disease Control and Prevention. Estimated HIV Incidence in the United States, 2007-2010. HIV Surveillance Supplemental Report 2012;17(No. 4). <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/#supplemental>. Published December 2012. Accessed February 4, 2013.

Disclaimers

- Other race category not included in estimates
 - Other includes persons who self-identify as multi-race, Asian, American Indian/Alaskan Native or Native Hawaiian/Pacific Islander
 - Data did not meet minimum data completeness criteria to create stable and reliable estimates
 - Represents approximately 2% of new HIV cases

Disclaimers

- As a result of changes in CDC estimation methodologies, 2006 data were insufficient to re-create incidence estimate.
- Incidence numbers are ***estimates*** and should be interpreted with some caution.
 - 95% confidence intervals are presented with data.

The Data

- All rates are per 100,000 population aged ≥ 13 years ($[\text{estimate}/\text{population}] \times 100,000$)
 - Based on 2010 postcensal population estimates from the Florida Community Health Assessment Resource Tool Set (CHARTS) as of February 2013
 - Cannot calculate rates for Mode of Transmission because population denominators are not available

The Data

- Case Reporting Delay
 - The CDC local estimate model does not account for delays in the reporting of new diagnoses.
 - This has limited impact on Florida's estimate since reporting is timely according to CDC's evaluation tool. Nearly all reported persons newly diagnosed with HIV infection in 2010 were reported by the end of December 2011 in Florida.
- Race/Ethnicity
 - CDC's model separates Hispanic and non-Hispanic groups.
 - Hispanic category includes persons of all races of Hispanic descent
 - White, Black/African American and Other categories exclude persons of Hispanic descent

The Data

- Updated estimates will differ from previous estimates
 - Reflects dynamic character of surveillance data
 - Data collection methods have improved over time
 - Data changes based on:
 - De-duplication of HIV cases in- and out-of-state
 - Changes in surveillance practices

The Data

- Available data compared via two modes: raw incidence estimates and incidence rates.
 - **Read titles, charts and tables carefully as each one presents data differently.**
- Comparisons describe differences between 2007 and 2010 estimates.
 - Data statistically significant at the 0.05 level using z-test.
 - Note, 4-year trends can be influenced by short term changes in data.[§]

§Centers for Disease Control and Prevention. Estimated HIV Incidence in the United States, 2007-2010. HIV Surveillance Supplemental Report 2012;17(No. 4). <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/#supplemental>. Published December 2012. Accessed February 4, 2013.

Factors that May Impact Estimates

- The model is sensitive to sudden changes in testing. A change in estimated HIV incidence that is accompanied by sudden changes in testing may not represent a change in true HIV incidence.€
- In the absence of evidence suggesting changes in testing behavior, a change in the proportion of the number of results deemed recent may indicate a real change in HIV incidence€ (refer to Table 5).
 - Comparing 2007 to 2010, there was only a 2.6% increase in results deemed recent overall, but the proportions differed quite a bit between new and repeat testers.

€ Centers for Disease Control and Prevention. Local HIV Incidence Estimation Guide. 2012; Version 3.1.

Factors that May Impact Estimates

- Though incidence estimates are not derived from surveillance numbers, the volume of data can affect incidence estimates.
- It should be noted that enhanced reporting laws in 2006 and the expansion of electronic lab reporting in 2007 led to an artificial peak in newly diagnosed cases of HIV infection. These changes led to an increase in reported HIV infection cases in 2008. This was followed by an artificial decrease in 2009 and subsequent decreases.
 - These changes affected data volume and the number of data sources.

Table 2. Estimated incidence and percentage of HIV infection, by mode of transmission and selected characteristics for persons aged 13 and older at HIV infection, 2007-2010-Florida

2007										2008								
	MSM			Heterosexual/Other			IDU			MSM			Heterosexual/Other			IDU		
Category	No. ¹	95% CI	% ²	No. ¹	95% CI	% ²	No. ¹	95% CI	% ²	No. ¹	95% CI	% ²	No. ¹	95% CI	% ²	No. ¹	95% CI	% ²
Sex																		
Male	2,658	(2021-3295)	N/A	563	(317-809)	32%	221	(64-378)	48%	2534	(1997-3071)	N/A	872	(468-1276)	41%	405	(160-651)	72%
Female	N/A	N/A	N/A	1218	(885-1551)	68%	241	(116-365)	52%	N/A	N/A	N/A	1277	(924-1629)	59%	158	(50-266)	28%
Race/Ethnicity⁴																		
White	1202	(823-1581)	45%	317	(175-460)	18%	241	(114-369)	52%	956	(658-1255)	38%	250	(118-382)	12%	212	(63-361)	38%
Black	715	(495-935)	27%	1133	(807-1459)	64%	146	(35-258)	32%	772	(529-1015)	30%	1524	(1066-1981)	71%	203	(44-363)	36%
Hispanic	679	(4454-913)	26%	299	(158-440)	17%	-	-	-	718	(483-954)	28%	349	(175-524)	16%	-	-	-
Age at HIV Diagnosis																		
13-24	582	(388-776)	22%	362	(218-505)	20%	-	-	-	673	(469-877)	27%	413	(245-581)	19%	-	-	-
25-34	757	(508-1006)	28%	516	(328-704)	29%	-	-	-	749	(526-971)	30%	540	(328-753)	25%	-	-	-
35-44	766	(489-1042)	29%	432	(262-601)	24%	-	-	-	661	(425-896)	26%	506	(293-720)	24%	-	-	-
45+	-	-	-	471	(262-680)	26%	-	-	-	-	-	-	689	(398-979)	32%	-	-	-
2009										2010								
	MSM			Heterosexual/Other			IDU			MSM			Heterosexual/Other			IDU		
Category	No. ¹	95% CI	% ²	No. ¹	95% CI	% ²	No. ¹	95% CI	% ²	No. ¹	95% CI	% ²	No. ¹	95% CI	% ²	No. ¹	95% CI	% ²
Sex																		
Male	2256	(1817-2694)	N/A	535	(347-722)	35%	177	(64-291)	64%	2126	(1710-2542)	N/A	400	(260-541)	36%	140	(59-221)	64%
Female	N/A	N/A	N/A	985	(701-1268)	65%	98	(24-173)	36%	N/A	N/A	N/A	709	(513-904)	64%	79	(20-137)	36%
Race/Ethnicity⁴																		
White	827	(557-1097)	37%	207	(97-318)	14%	128	(42-213)	46%	850	(629-1070)	40%	114	(46-183)	10%	90	(28-153)	41%
Black	649	(457-841)	29%	1027	(758-1297)	68%	90	(17-164)	33%	600	(428-772)	28%	792	(591-993)	71%	75	(19-131)	34%
Hispanic	702	(499-906)	31%	244	(120-368)	16%	-	-	-	655	(470-841)	31%	188	(95-281)	17%	-	-	-
Age at HIV Diagnosis																		
13-24	570	(405-735)	25%	283	(170-395)	19%	-	-	-	623	(464-782)	29%	253	(157-350)	23%	-	-	-
25-34	655	(466-843)	29%	407	(257-558)	27%	-	-	-	618	(445-791)	29%	276	(171-382)	25%	-	-	-
35-44	604	(385-823)	27%	417	(244-591)	27%	-	-	-	536	(358-714)	25%	303	(180-425)	27%	-	-	-
45+	-	-	-	412	(222-603)	27%	-	-	-	349	(208-490)	16%	276	(171-382)	25%	-	-	-



Table 3. Estimated incidence, percentage and rate of HIV infection, by race/ethnicity and selected characteristics for persons aged 13 and older at HIV infection, 2007-2010 - Florida												
2007	White				Black				Hispanic			
	No. ¹	95% CI	% ²	Rate ³	No. ¹	95% CI	% ²	Rate ³	No. ¹	95% CI	% ²	Rate ³
Sex												
Male	1329	(927-1731)	75%	28	1179	(846-1513)	59%	114	857	(575-1139)	82%	55
Female	432	(269-595)	25%	9	815	(571-1059)	41%	71	189	(71-307)	18%	12
Age at HIV Diagnosis												
13-24	216	(106-325)	12%	15	586	(397-775)	29%	101	169	(72-265)	16%	25
25-34	441	(272-609)	25%	39	602	(407-796)	30%	150	320	(179-462)	31%	52
35-44	579	(369-789)	33%	41	391	(228-554)	20%	99	346	(197-495)	33%	55
45+	-	-	-		415	(234-597)	21%	51	211	(89-334)	20%	17
2008												
Sex												
Male	1174	(832-1517)	83%	25	1531	(1051-2011)	61%	146	995	(662-1329)	83%	62
Female	244	(118-370)	17%	5	968	(669-1267)	39%	83	208	(89-326)	17%	13
Age at HIV Diagnosis												
13-24	183	(81-285)	13%	13	691	(468-913)	28%	119	232	(114-350)	19%	33
25-34	398	(231-565)	28%	35	637	(412-862)	25%	156	390	(222-558)	32%	62
35-44	434	(257-610)	31%	32	495	(287-702)	20%	126	306	(151-461)	25%	48
45+					676	(384-969)	27%	81	275	(122-428)	23%	21
2009												
Sex												
Male	958	(656-1260)	82%	21	1082	(799-1364)	61%	102	834	(604-1064)	83%	51
Female	204	(95-313)	18%	4	686	(464-907)	39%	58	167	(71-264)	17%	10
Age at HIV Diagnosis												
13-24	160	(80-240)	14%	11	549	(387-712)	31%	95	162	(81-243)	16%	23
25-34	281	(162-400)	24%	25	482	(318-645)	27%	117	339	(209-468)	34%	54
35-44	362	(193-531)	31%	28	398	(234-562)	23%	102	304	(162-445)	30%	47
45+	-	-	-	-	338	(175-501)	19%	39	197	(86-309)	20%	15
2010												
Sex												
Male	957	(712-1202)	91%	20	939	(714-1164)	64%	86	745	(540-950)	84%	44
Female	97	(34-160)	9%	2	528	(358-698)	36%	44	146	(65-227)	16%	8
Age at HIV Diagnosis												
13-24	195	(111-278)	19%	14	496	(357-636)	34%	84	196	(115-278)	22%	26
25-34	293	(178-408)	28%	26	392	(259-525)	27%	95	269	(163-376)	30%	44
35-44	301	(176-427)	29%	24	317	(188-446)	22%	83	262	(139-386)	29%	40
45+	265	(154-376)	25%	5	262	(154-369)	18%	29	163	(81-245)	18%	11



Table 4. Estimated incidence of HIV infection, by year, sex and age, 2007-2010 – Florida																
	2007								2008							
Category	Female				Male				Female				Male			
Age at HIV Diagnosis	No. ¹	95% CI	% ²	Rate ³	No. ¹	95% CI	% ²	Rate ³	No. ¹	95% CI	% ²	Rate ³	No. ¹	95% CI	% ²	Rate ³
13-24	317	(182-452)	22%	23	672	(452-893)	20%	46	301	(171-431)	21%	21	829	(584-1074)	22%	57
25-34	419	(264-575)	29%	38	968	(677-1258)	28%	84	410	(242-578)	29%	37	1062	(584-1074)	28%	72
35-44	358	(217-499)	25%	28	987	(667-1307)	29%	78	316	(172-459)	22%	26	952	(634-1270)	25%	77
45+	364	(200-528)	25%	9	-	-	-	-	408	(227-588)	28%	9	968	(587-1349)	25%	26
	2009								2010							
Age at HIV Diagnosis	No. ¹	95% CI	% ²	Rate ³	No. ¹	95% CI	% ²	Rate ³	No. ¹	95% CI	% ²	Rate ³	No. ¹	95% CI	% ²	Rate ³
13-24	207	(110-303)	19%	15	685	(499-870)	23%	47	192	(106-278)	24%	14	711	(539-884)	27%	48
25-34	315	(185-445)	29%	28	821	(598-1044)	28%	71	199	(109-288)	25%	18	765	(565-964)	29%	67
35-44	325	(177-473)	30%	27	768	(5050-1032)	26%	63	212	(470-881)	27%	55	675	(470-881)	25%	56
45+	236	(85-387)	22%	5	693	(472-915)	23%	18	184	(98-271)	23%	4	515	(340-690)	19%	13



Table 5. Factors that may impact estimates over time, 2007-2010 – Florida

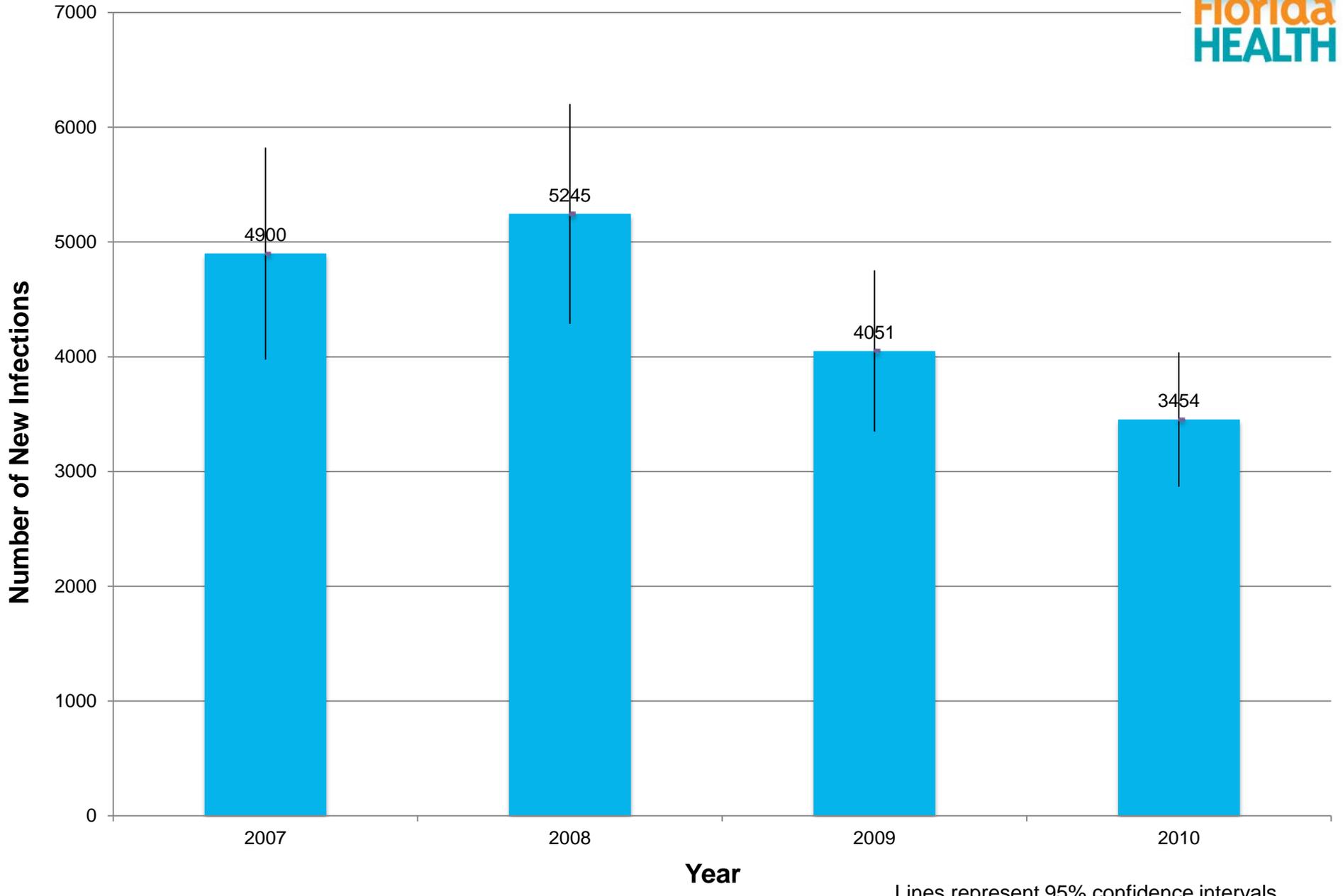
	2007		2008		2009		2010	
	N	%	N	%	N	%	N	%
Incidence Estimates								
Total	4900	.	5245	.	4051	.	3454	.
New Testers	2201	.	2527	.	1546	.	1009	.
Repeat Testers	2699	.	2718	.	2505	.	2445	.
Possible Contributing Factors								
All New Diagnoses	6517	.	6130	.	5241	.	4728	.
New Testers	1851	28	1841	30	1523	29	1073	23
Repeat Testers	4666	72	4289	70	3718	71	3655	77
AIDS at Diagnosis	1168	18	1111	18	929	18	831	18
With STARHS Results	5349	82	5019	82	4312	82	3897	82
BED-Recent [#]	1311	25	1217	24	1087	25	1057	27
New Testers								
AIDS at Diagnosis	439	24	561	31	421	28	211	20
With STARHS Results	1412	76	1280	70	1101	72	862	80
BED-Recent [#]	244	17	250	20	176	16	135	16
Repeat Testers								
AIDS at Diagnosis	729	16	550	13	508	14	620	17
With STARHS Results	3937	84	3739	87	3211	86	3035	83
BED-Recent [#]	1067	27	967	26	911	28	922	30
Average T* (in months)	31	.	33	.	35	.	36	.
Median T* (in months)	12	.	17	.	17	.	17	.

[#] BED-Recent = categorized as recent infection based on BED assay results

* T = Inter-test interval



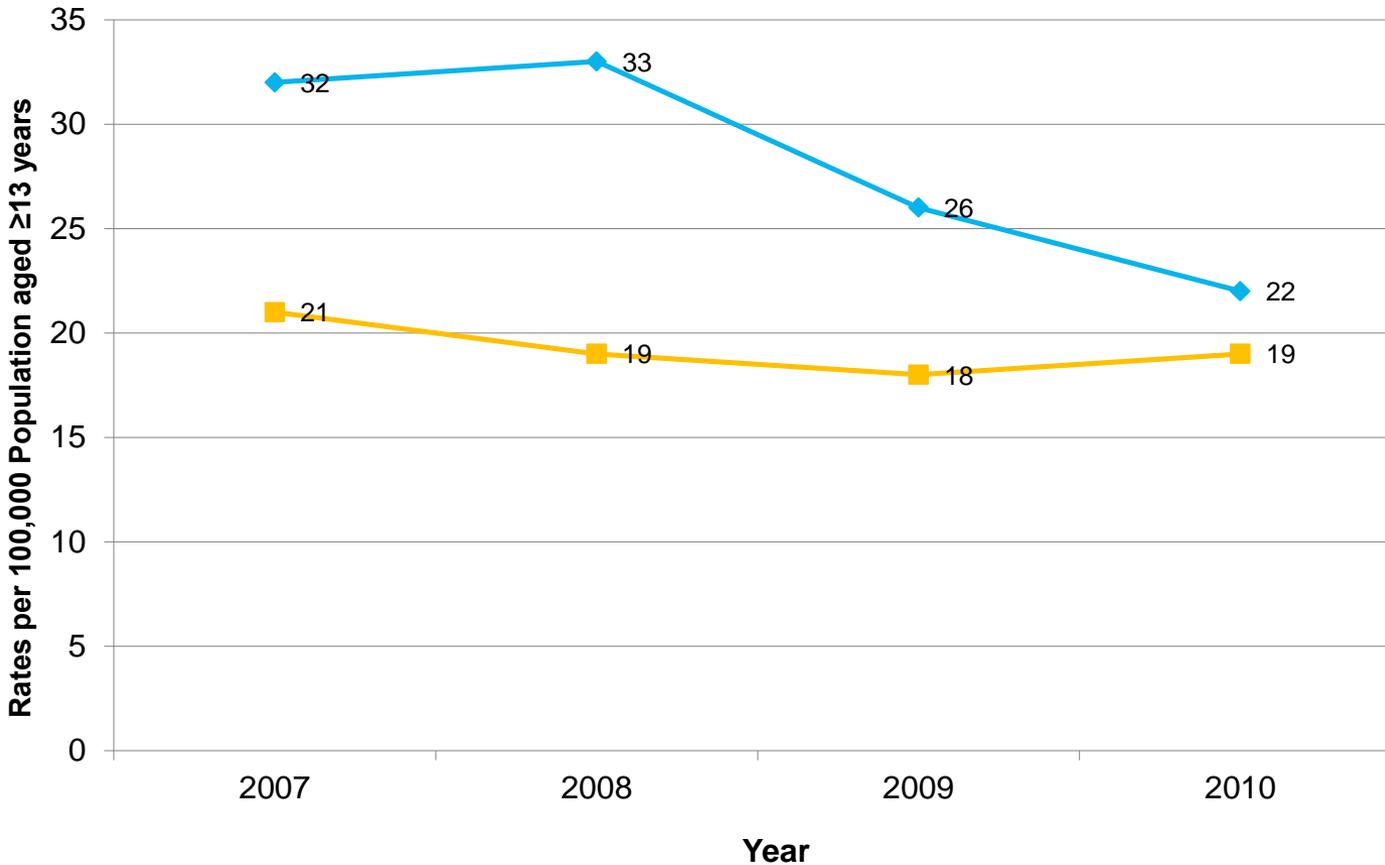
Florida HIV Incidence Estimates, 2007-2010



Incidence Estimates

- Comparing 2007 to 2010, there was a 29.5% decrease in new HIV infections.
- The incidence estimate for 2008 is higher than previous and subsequent years. This may represent a real or artificial increase in incidence.
 - The number of reported (prevalent) cases in Florida also increased in 2008.

Florida and US Incidence Rates, 2007-2010



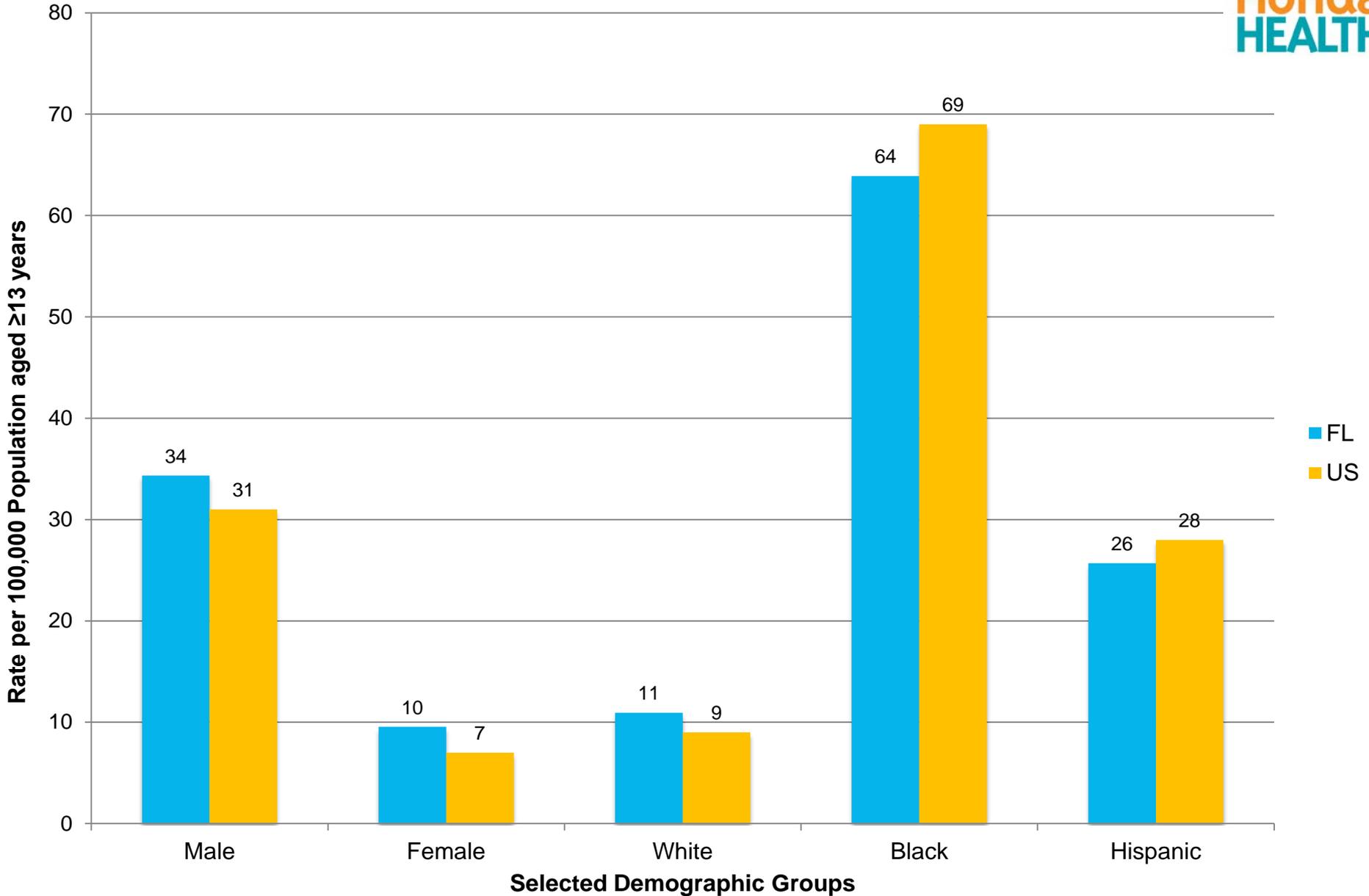
—◆— FL
—■— US

Though Florida rates remain higher than the national, Florida's rates have decreased significantly. National rates have remained fairly stable over the four years. §

§Centers for Disease Control and Prevention. Estimated HIV Incidence in the United States, 2007-2010. HIV Surveillance Supplemental Report 2012;17(No. 4). <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/#supplemental>. Published December 2012. Accessed February 4, 2013.



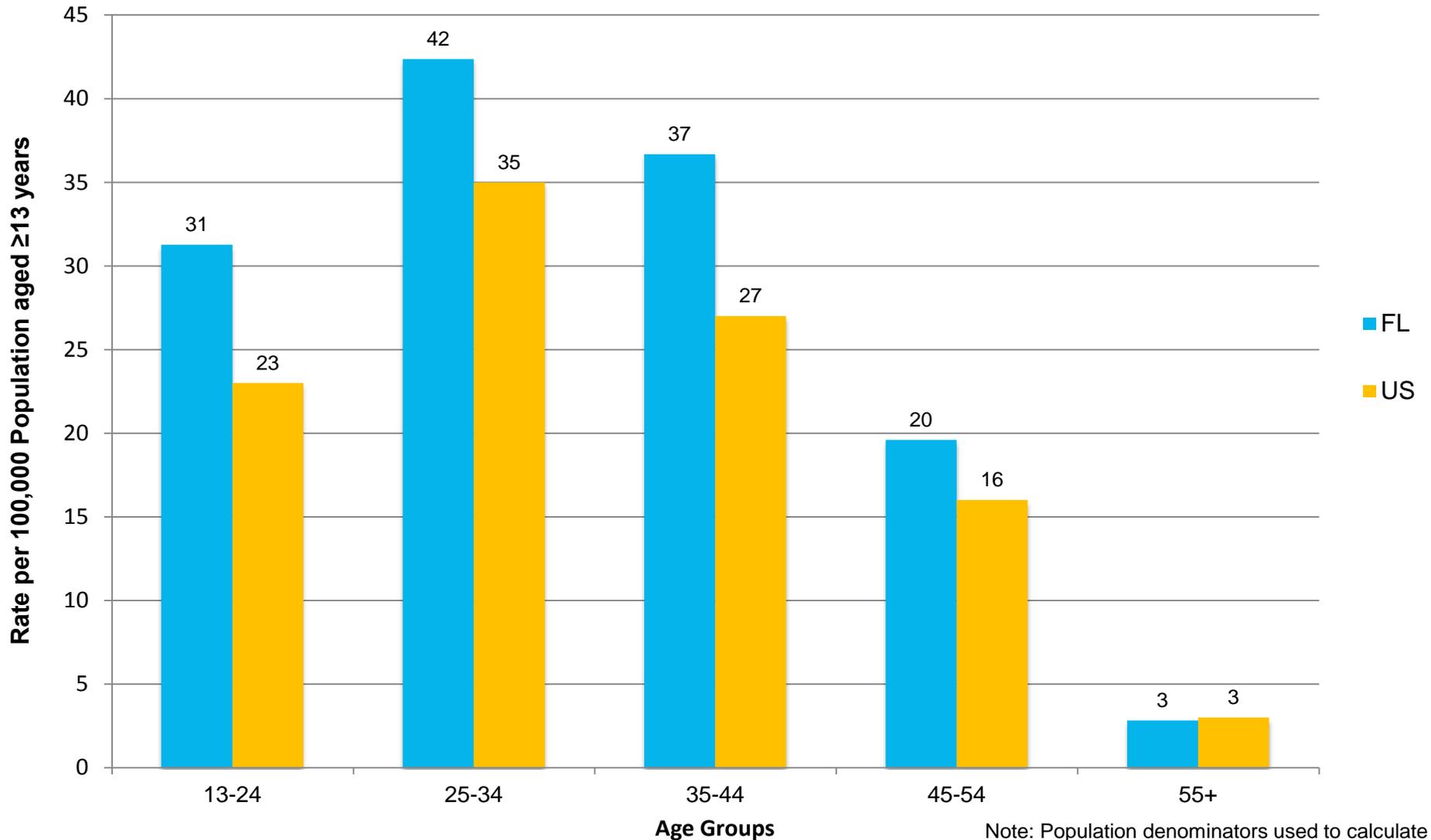
Estimated HIV Incidence Rates in Florida and the US by Demographic Categories, 2010



Incidence Estimates in Florida and US, 2010

- Rates are highest among Black/African American populations both in Florida and the US.
- Florida surpassed national estimates in all categories with the exception of Black/African American and Hispanic categories.

Estimated HIV Incidence Rates in Florida and the US by Age, 2010

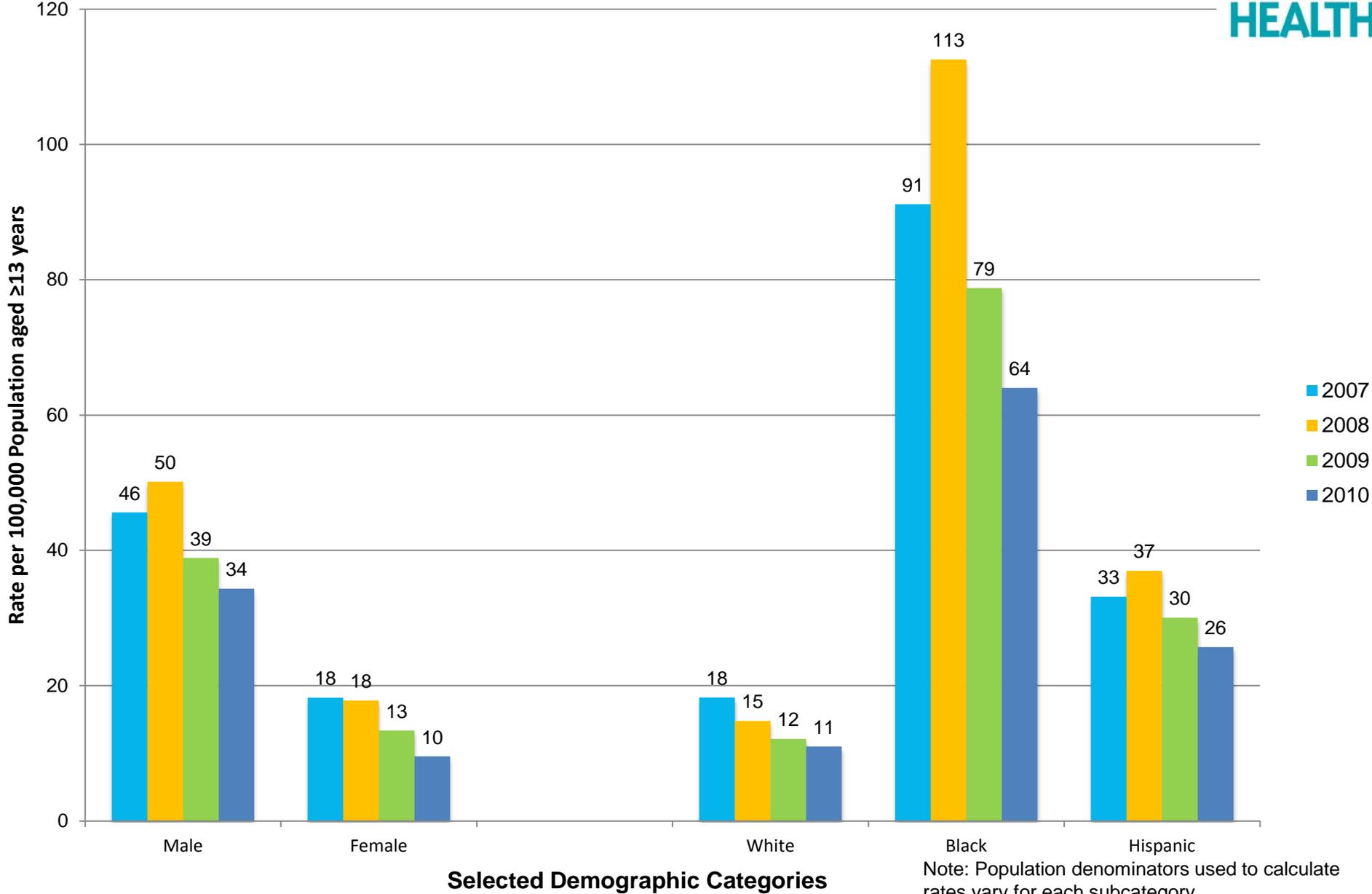


Note: Population denominators used to calculate rates vary for each subcategory.

Incidence Estimates in Florida and US by Age, 2010

- The rate was highest in the 25-34 age group in both Florida and the US in 2010.
- People aged 55+ had the lowest rate among all age groups with 3 new cases per 100,000 population aged ≥ 13 years in the US and Florida.

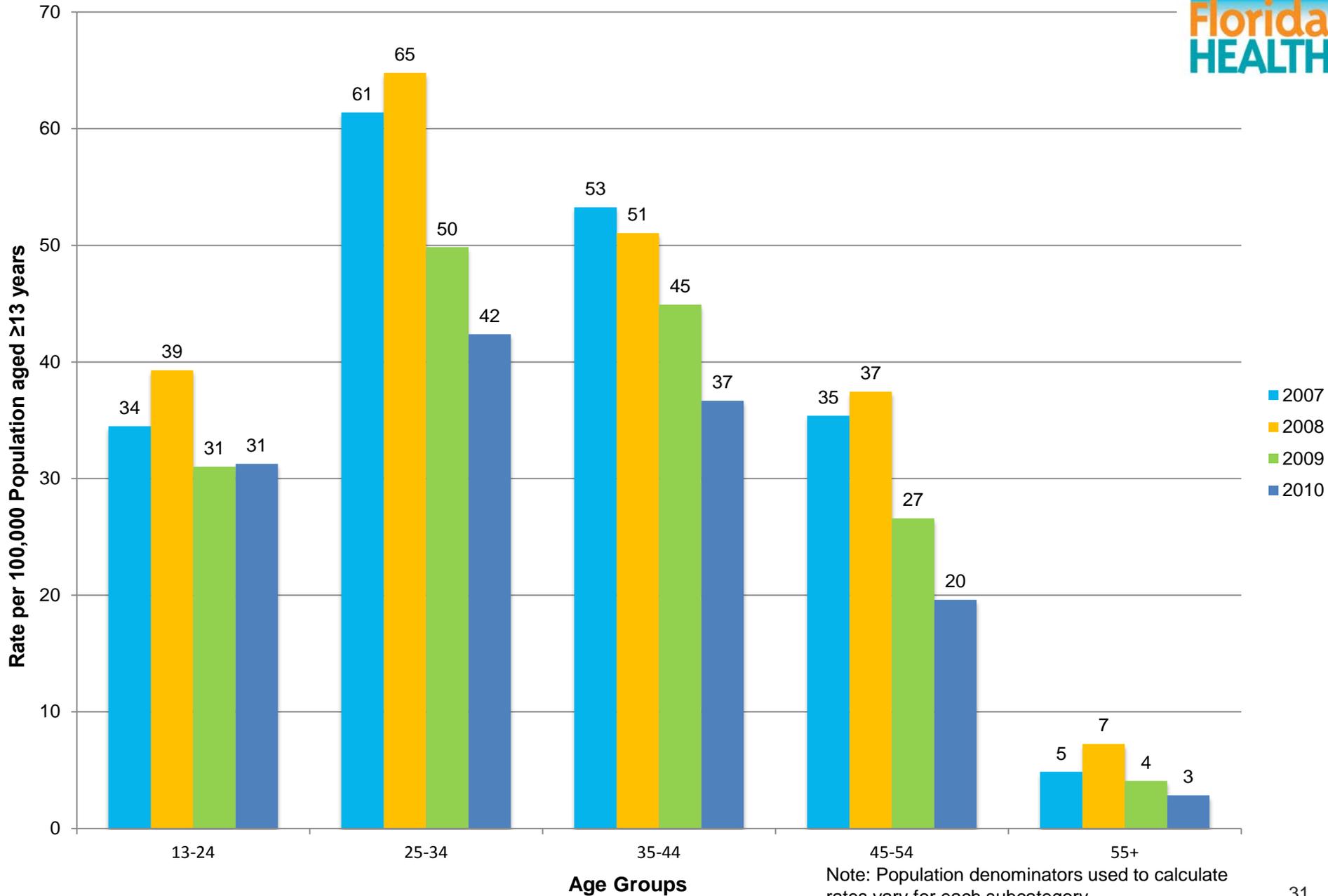
Florida HIV Incidence Rates by Selected Demographic Categories, 2007-2010



Incidence Rates across Demographic Categories

- Comparing 2007 to 2010, rates have decreased across all demographic categories.
- Blacks/African Americans have the highest rates.
 - In 2010, their rate was 64—nearly 6 times that of Whites and 2.5 times that of Hispanics.
- Rates among men are more than 3 times that of women.

Florida HIV Incidence Rates by Age Groups, 2007-2010

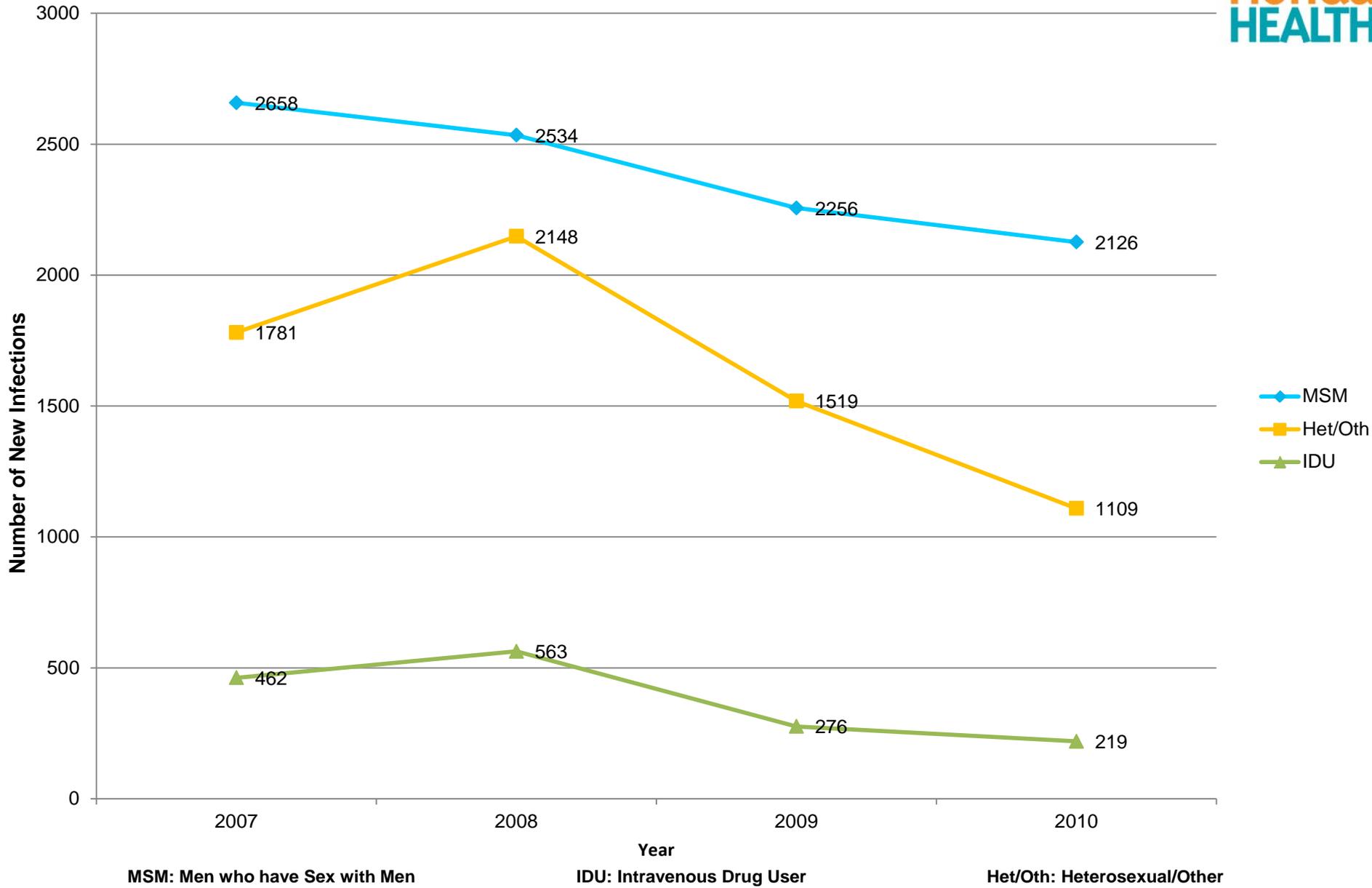


Incidence Rates across Age Groups, 2007-2010

- The highest rates were among 25-34 year olds.
- There was a decrease in all age groups over time, with the exception of 13-24 year olds, whose rate remained stable from 2009 to 2010.



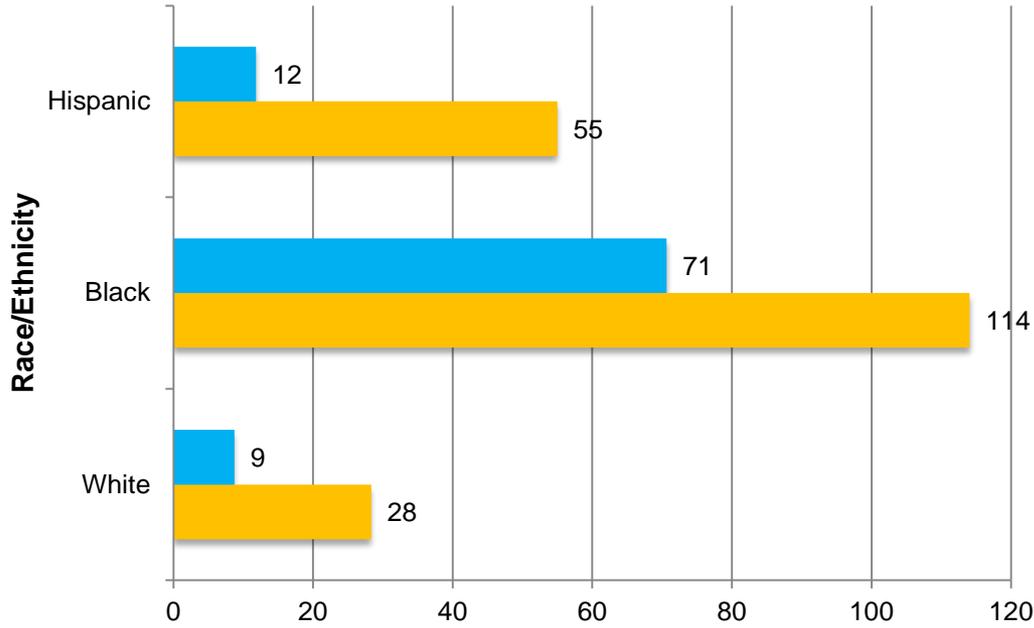
HIV Incidence by Mode of Transmission, 2007-2010 - Florida



Modes of Transmission

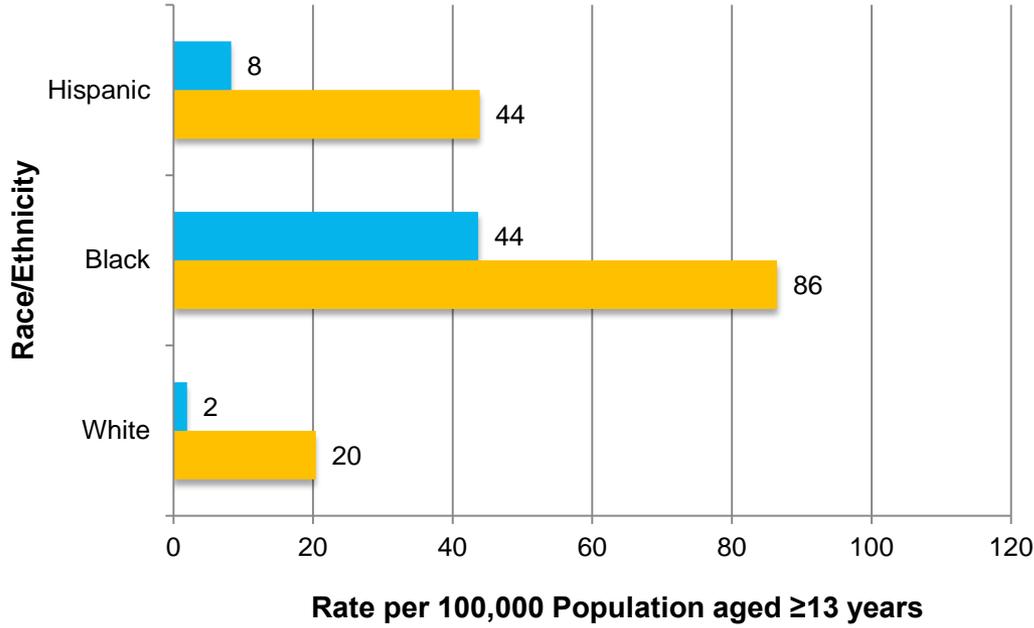
- Comparing 2007 to 2010, new infections decreased:
 - By 20% among men whose HIV infection is attributed to male-to-male sexual contact (MSM) by 20%
 - By 37.7% among Heterosexuals/Others (Het/Oth)
 - By 52.5% among Intravenous Drugs Users (IDU)

HIV Incidence Rates by Race/Ethnicity and Gender – Florida



2007

Female
Male



2010

Female
Male

Rate per 100,000 Population aged ≥13 years

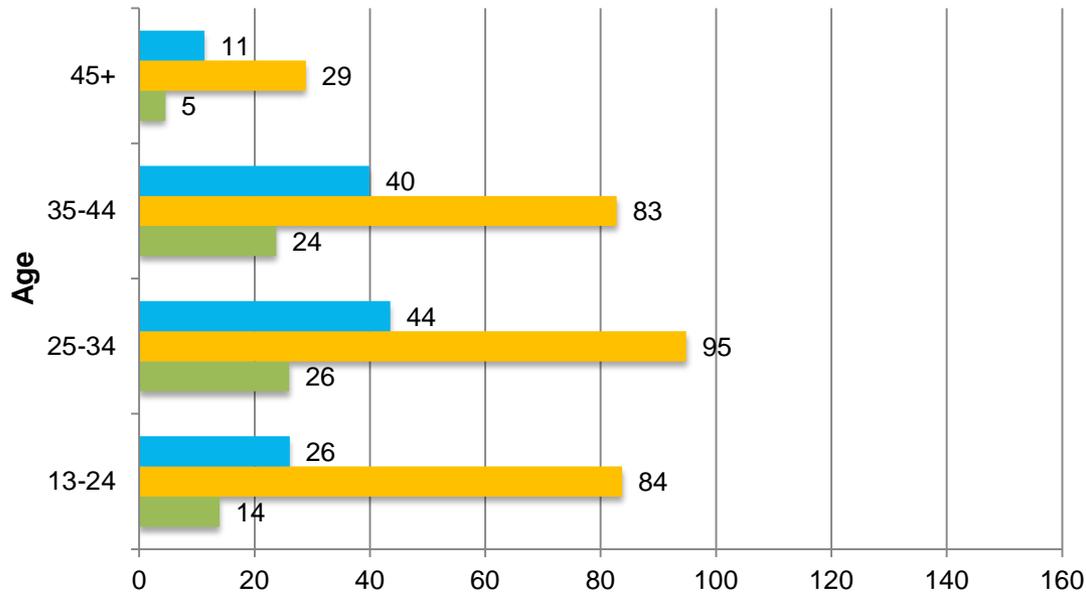
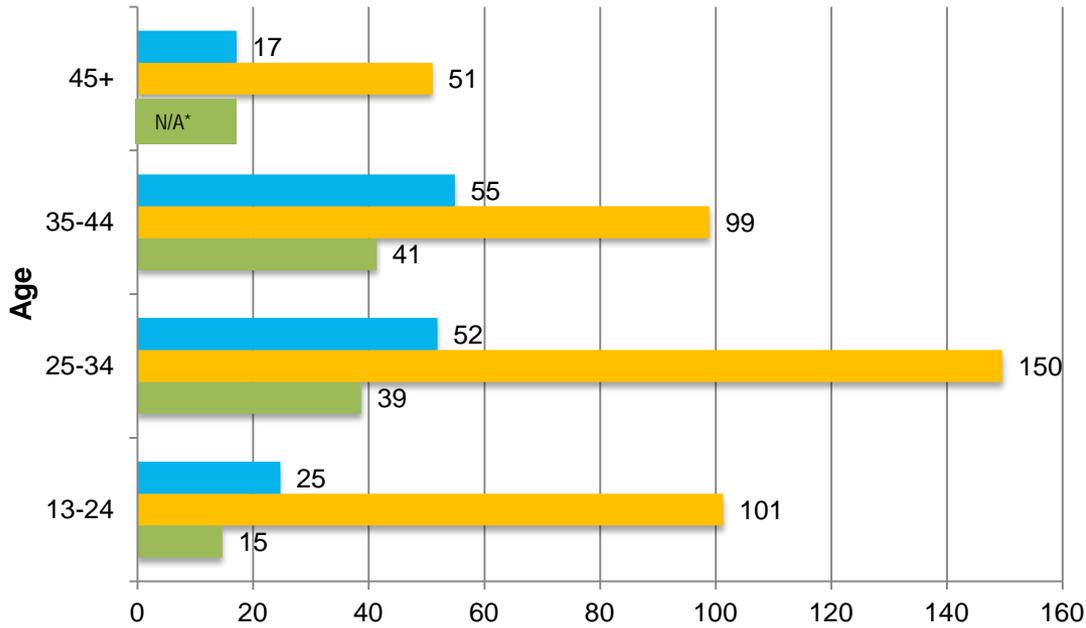
Note: Population denominators used to calculate rates vary for each subcategory.



Incidence Rates by Race/Ethnicity and Gender

- Comparing 2007 to 2010, incidence rates declined significantly for both males and females of all races/ethnicities compared.
 - Black/African American males and females still have the highest rates of new infections.
 - The change in rate among Hispanics was lower than that of Blacks/African Americans.

HIV Incidence Rates by Age and Race/Ethnicity – Florida



Rate per 100,000 Population aged ≥13 years

N/A: Estimate not stable

Note: Population denominators used to calculate rates vary for each subcategory.

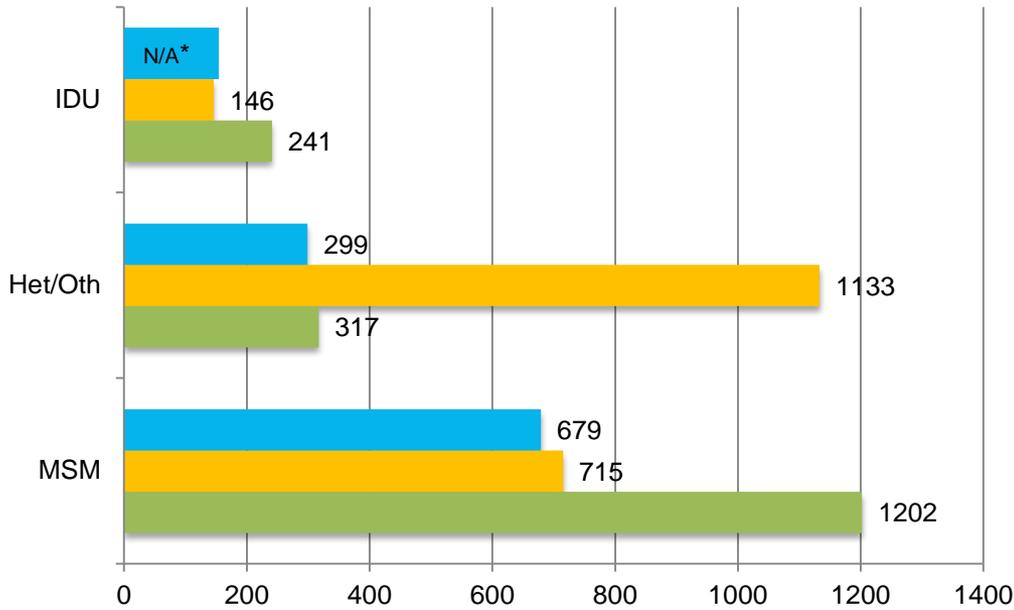


Incidence Rates by Age and Race/Ethnicity

- In 2010, the incidence rate among Black/African Americans aged 25-24 was 30% less than in 2007.
- In 2010, the rate of new infections among Black/African Americans aged 13-24 was 6 times that of their White peers; the rate for Hispanics was nearly 2 times that of Whites.
 - Rate among Black/African Americans aged 25-34 was 3.7 times greater than Whites.

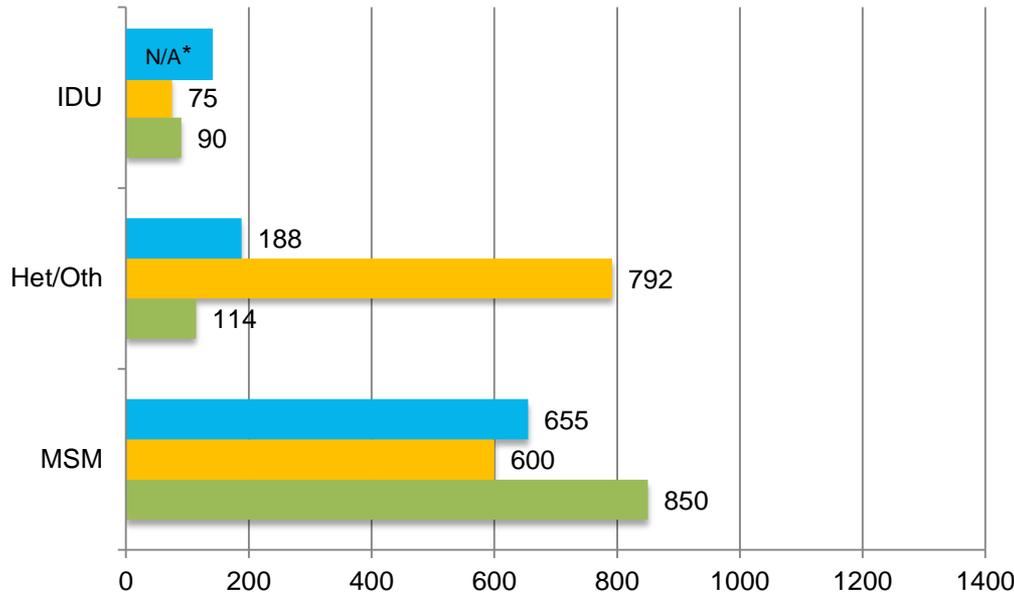
Incidence Estimates by Mode of Transmission and Race/Ethnicity- Florida

Mode of Transmission



2007

Mode of Transmission



2010

Number of New Infections

N/A: Estimate not stable

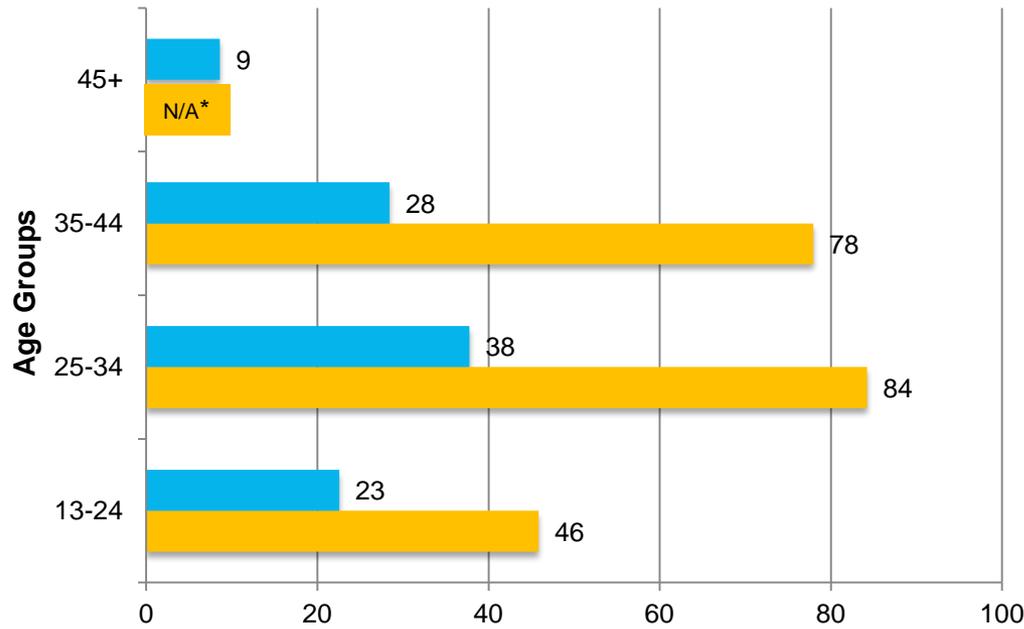
Note: Population denominators used to calculate rates vary for each subcategory.



Incidence by Race/Ethnicity and Mode of Transmission

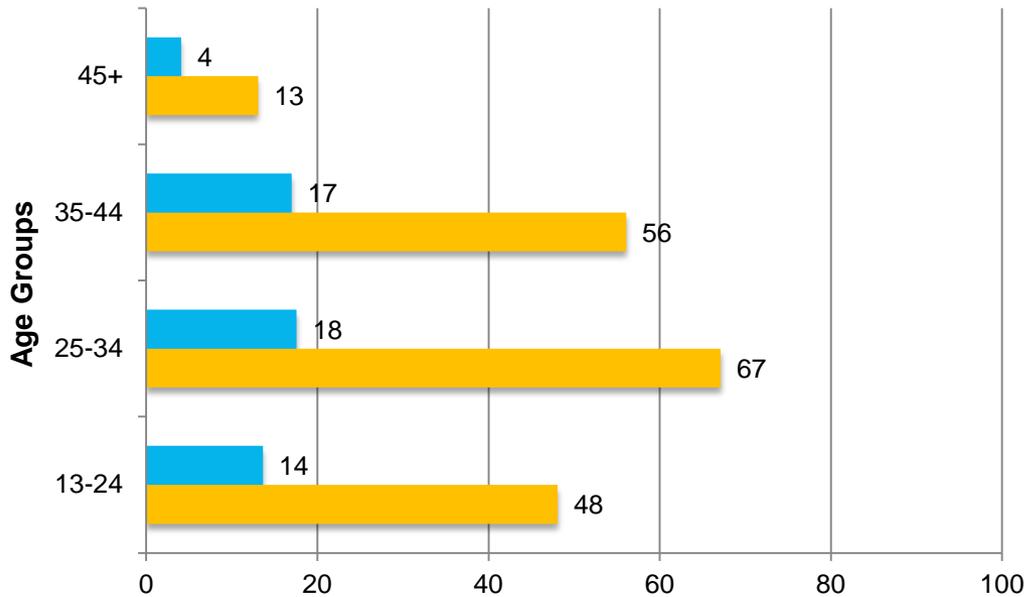
- Comparing 2007 and 2010, new cases of HIV among heterosexual Black/African Americans and White MSMs decreased by 30%.
 - New cases among heterosexual Whites and Hispanics decreased by 64% and 37%, respectively.

HIV Incidence Rates by Age and Gender – Florida



2007

Female
Male



2010

Female
Male

Rate per 100,000 Population aged ≥13 years

N/A: Estimate not stable

Note: Population denominators used to calculate rates vary for each subcategory.



Incidence Rates by Age and Gender

- Comparing 2007 and 2010, rates for most male and female age groups decreased.
 - Rate for males aged 13-24 years increased slightly.

Men who have Sex with Men

- Nationally, MSM remain the population with the greatest incidence of HIV infection.
- Young MSMs are of particular importance in HIV prevention and treatment efforts as they represent the largest proportion of new infections among MSM.[§]

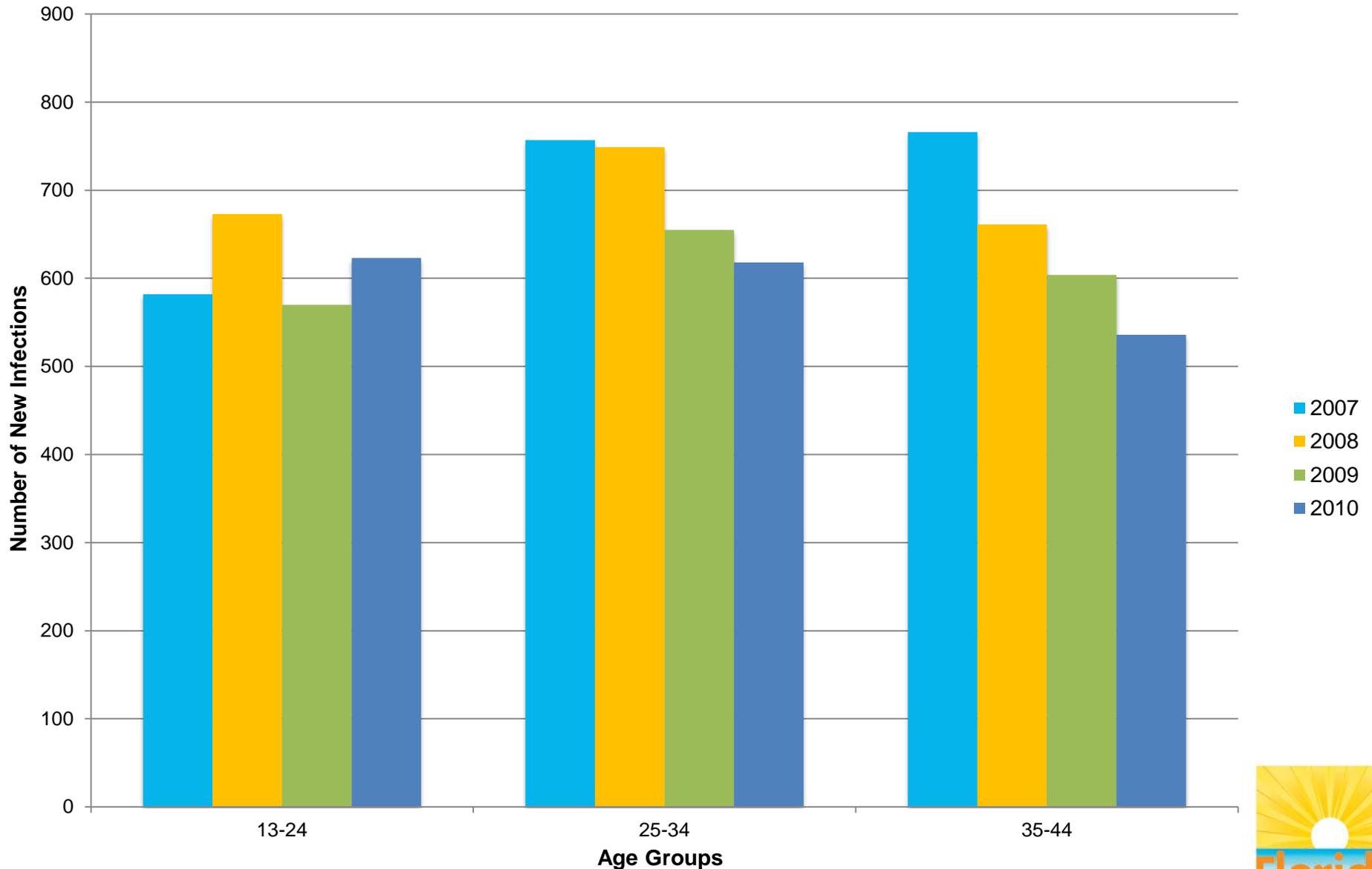
§Centers for Disease Control and Prevention. Estimated HIV Incidence in the United States, 2007-2010. HIV Surveillance Supplemental Report 2012;17(No. 4). <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/#supplemental>. Published December 2012. Accessed February 4, 2013.

Men who have Sex with Men

- In the US, the estimated number of new infections among MSM increased 12%, with a 22% increase among MSM aged 13-24 years.[§]
 - Nationally, young Black/African American MSM accounted for 45% of new HIV infections among Black/African Americans and 55% of new infections among MSM overall.

§Centers for Disease Control and Prevention. Estimated HIV Incidence in the United States, 2007-2010. HIV Surveillance Supplemental Report 2012;17(No. 4). <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/#supplemental>. Published December 2012. Accessed February 4, 2013.

MSM: Incidence Estimate by Age 2007-2010 - Florida



Note: MSM aged 44+ not represented as the subgroup did not meet minimum data criteria for a stable estimate



MSM Incidence Estimate by Age

Comparing 2007 to 2010, MSM aged 13-24 years experienced a 7% increase in incidence.

- Incidence decreased by 18.4% among those aged 25-34.
- Incidence decreased by 30% among those aged 35-44.

Conclusions

- The incidence of HIV decreased by 29.5% from 2007 to 2010.
- Although new MSM infections decreased by 20% from 2007 to 2010, they still represent the largest percentage of new infections.
- Prevention efforts still need to be focused on Black/African Americans, MSM and persons aged 13 to 34 years.

Online Resources

- More incidence data is available on the Incidence Surveillance website at:
http://www.doh.state.fl.us/Disease_ctrl/aids/IncidenceSurv/IncidenceSurv.html
- CDC's latest national estimate available at:
http://www.cdc.gov/hiv/pdf/statistics_hssr_vol_17_no_4.pdf
- CDC report entitled *Shifting the Paradigm: Using HIV Surveillance Data as a Foundation for Improving HIV Care and Preventing HIV Infections* available at:
[http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1468-0009/earlyview](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1468-0009/earlyview)

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