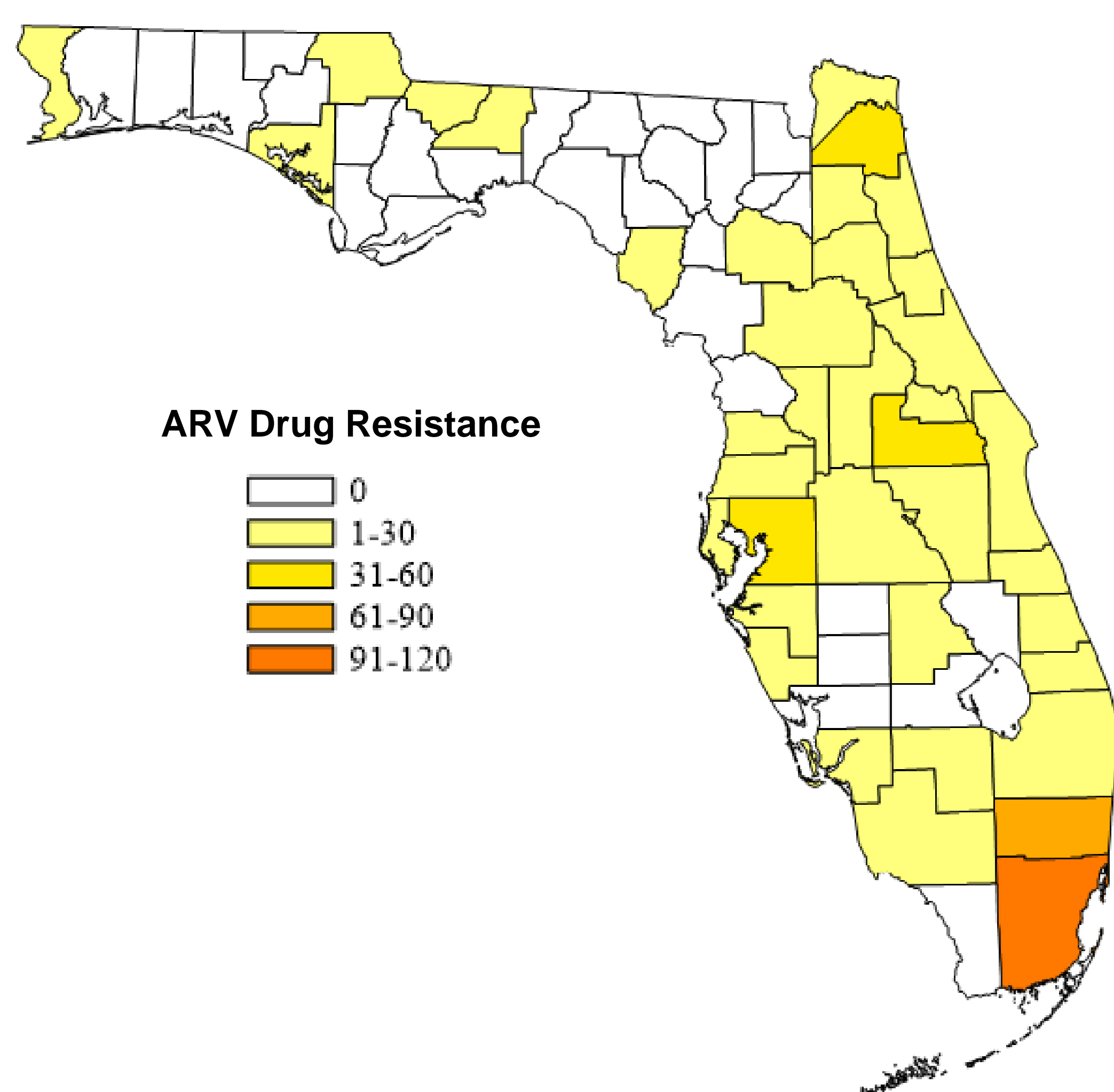


## BACKGROUND

- In 2016, there were 4,972 diagnoses of HIV in Florida,<sup>1</sup> ranking third in the United States<sup>2</sup> for rate of HIV diagnoses per 100,000 population (24.0 per 100,000).
- With 114,772 persons living with HIV in Florida,<sup>1</sup> antiretroviral (ARV) drug use is pivotal in the treatment and prevention of HIV.
- Continued use of ARV drugs has led to resistance to certain drug classes, reducing drug efficacy for patients to achieve viral load (VL) suppression (<200 copies/ml).
- Surveillance of HIV-1 ARV drug resistance in Florida's population is essential for the development of local and statewide treatment and prevention programs.

Figure 1: ARV Drug Resistance Among Persons with Diagnosed HIV in 2015–2016 by County, Florida



## RESULTS

Table 1: ARV Drug Resistance Among Persons with Diagnosed HIV in Florida by Demographics, 2015–2016

		2015 ARV Drug Class Resistance (%)						2016 ARV Drug Class Resistance (%)						
		Any Resistance	PI	NRTI	NNRTI	IN	Multi-drug Resistance	Any Resistance	PI	NRTI	NNRTI	IN	Multi-drug Resistance	
Sex	Female (n=405)	13.3	0.9	0.9	10.6	1.2	0.4	Female (n=377)	10.6	1.3	2.6	7.9	2.9	3.4**
	Male (n=1,666)	12.6	0.8	1.2	10.2	1.4	0.9	Male (n=1,576)	11.1	0.7	1.4	7.8	2.1	1.0
Race/Ethnicity	White (n=529)	13.0	1.5	0.5	10.0	1.1	0.1	White (n=448)	10.9	1.5	1.5	7.1	1.3	0.6
	Black (n=899)	13.5	0.4	0.8	11.6	1.5	0.8	Black (n=821)	12.0	0.7	1.8	9.0	2.8	2.0
	Hispanic (n=594)	11.6	1.0	2.1*	8.5	1.3	1.5	Hispanic (n=636)	10.0	0.4	1.7	7.0	2.3	1.2
	Other (n=49)	10.2	0.0	0.0	8.1	2.0	0.0	Other (n=48)	8.3	2.0	0.0	6.2	2.0	2.0
Transmission Category	MSM (n=1,271)	12.6	0.7	1.0	10.2	1.4	0.7	MSM (n=1,203)	10.8	0.8	1.3	7.3	2.2	0.9
	IDU (n=76)	19.7	3.9	1.3	14.4	1.3	1.3	IDU (n=45)	13.3	4.4	0.0	8.8	2.2	2.2
	MSM/IDU (n=39)	12.8	2.5	2.5	7.6	2.5	2.5	MSM/IDU (n=30)	16.6	0.0	0.0	16.6	0.0	0.0
	Heterosexual (n=595)	12.4	0.5	1.0	10.0	1.3	0.5	Heterosexual (n=571)	11.9	0.8	2.6	9.1	2.8	2.9*
	Other risk (n=90)	11.1	1.1	3.3	10.0	1.1	3.3	Other risk (n=104)	6.7	0.0	1.9	3.8	0.9	0.0
	Total (n=2,071)	12.7	0.8	1.1	10.2	1.4	0.8	Total (n=1,953)	11.0	0.8	1.6	7.8	2.3	1.4

\*p <0.05 \*\*p <0.001

PI = Protease Inhibitors; NRTI = Nucleoside Reverse Transcriptase Inhibitors; NNRTI = Non-nucleoside Reverse Transcriptase Inhibitors; IN = Integrase Inhibitors

Figure 2: Continuum of HIV Care by HIV Genotype Status in Florida, 2015–2016

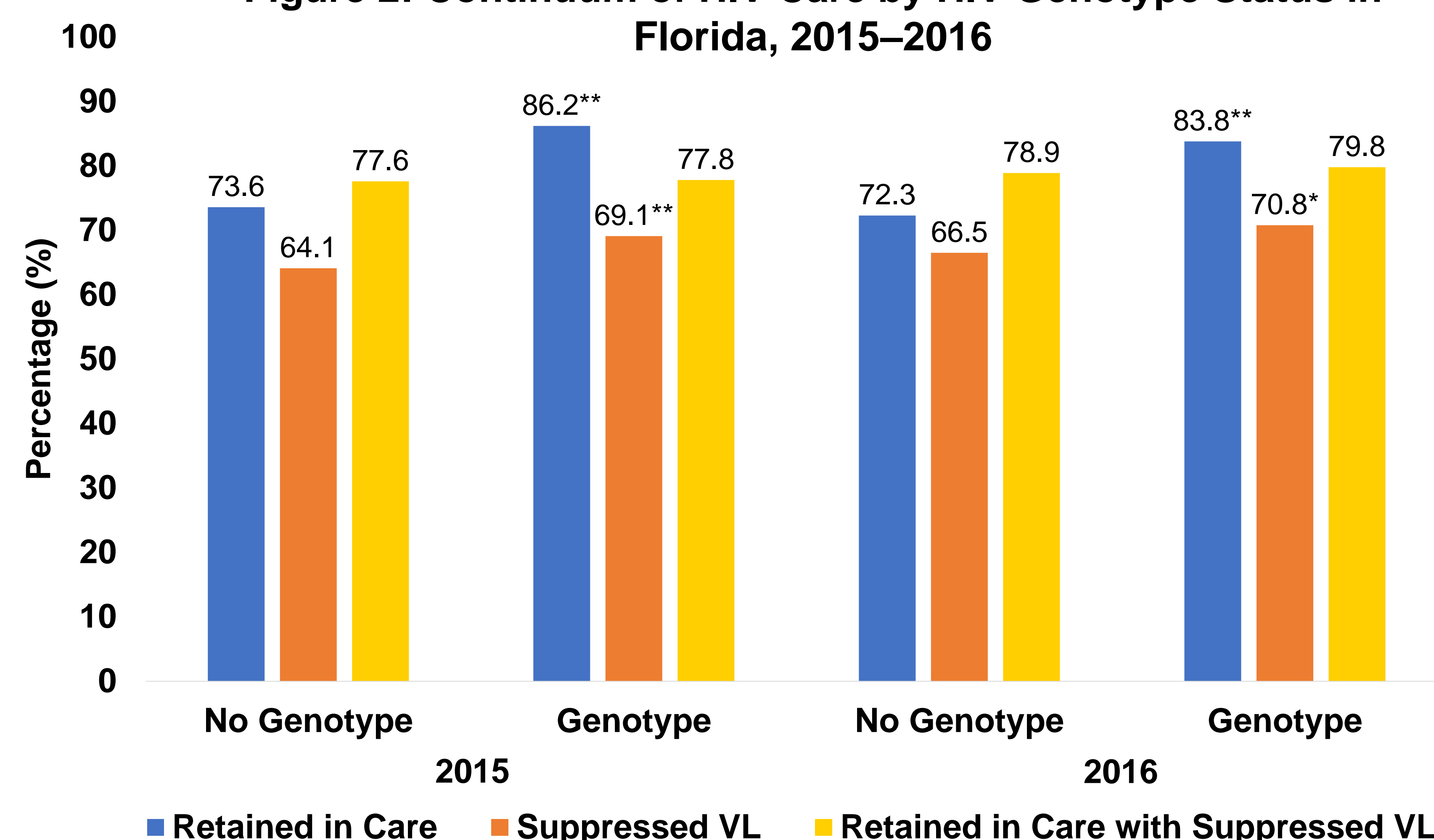
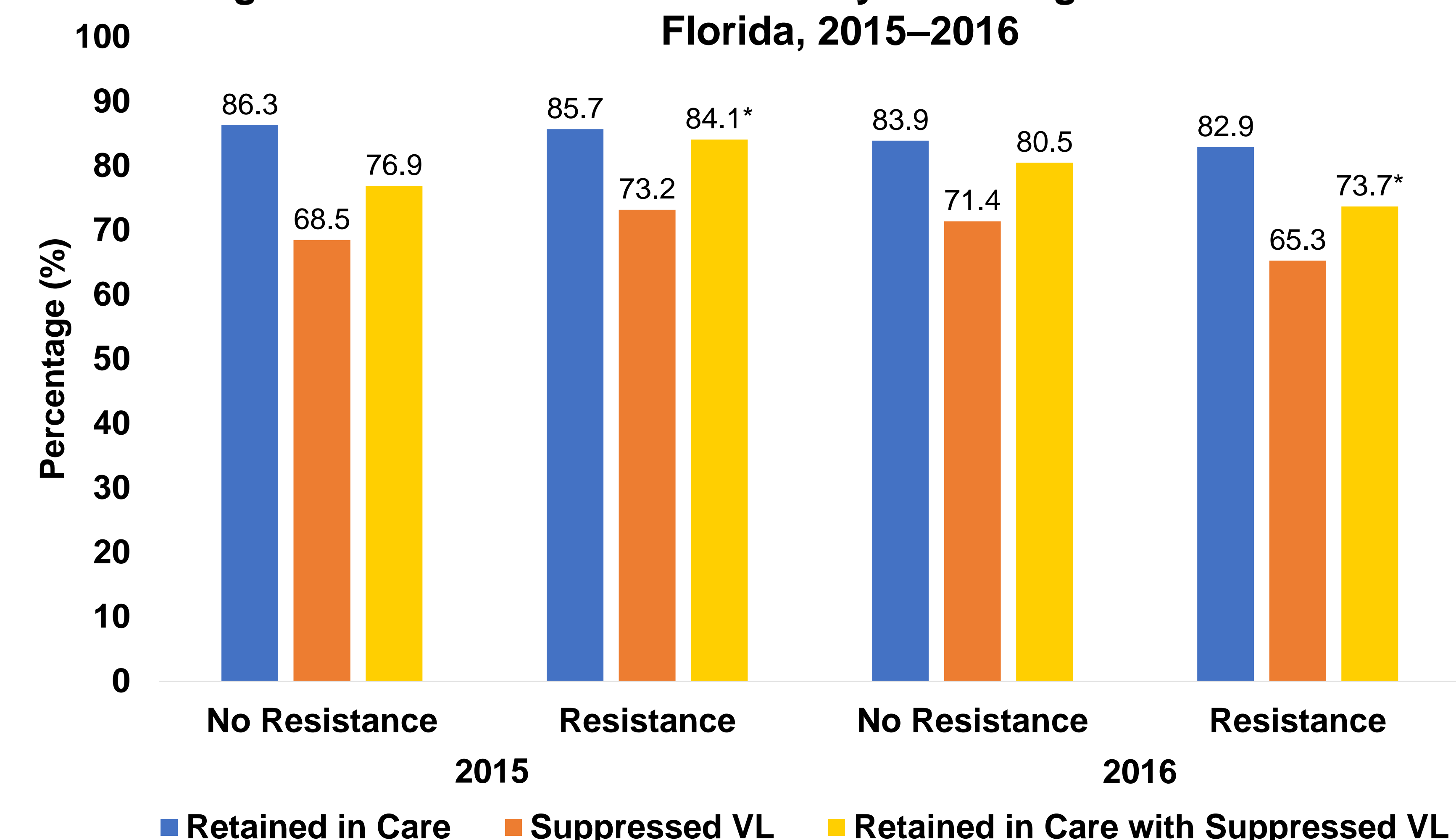


Figure 3: Continuum of HIV Care by ARV Drug Resistance Status in Florida, 2015–2016



## METHODS

- HIV-1 nucleotide genotype sequences reported to the Florida Department of Health HIV/AIDS Surveillance System were analyzed for persons whose HIV was diagnosed in Florida with a sequence obtained within three months of diagnosis in 2015 (n=2,071), and 2016 (n=1,953).
- Persons who reported taking ARV drugs before the date of the genotype or with a suppressed VL within 14 days of the date of the genotype were excluded from the analysis.
- ARV drug resistance was determined using the Stanford HIV Drug Resistance Database.<sup>3</sup>

## CONCLUSIONS

- ARV drug resistance within a population is dynamic in nature and changes with geography (Figure 1), time and demographics (Table 1) of persons living with HIV.
- Resistance to NNRTI drugs significantly decreased from 2015 to 2016 (p=0.008), specifically for drugs *efavirenz* (p=0.009) and *nevirapine* (p=0.008). Resistance to IN drugs increased significantly from 2015 to 2016 (p=0.033), specifically for drugs *raltegravir* (p=0.033) and *elvitravir* (p=0.033).
- As NNRTI or IN drugs are included in pre-exposure prophylaxis drugs (PrEP) (e.g. Truvada) and drug regimens used in the treatment as prevention “Test and Treat” program (e.g. Genvoya), HIV ARV drug resistance should be monitored closely to inform treatment and prevention programs, especially as new drugs are brought to market and resistance to certain drug classes becomes more prevalent.
- Persons with a baseline genotype are more likely to be retained in care (two care events at least three months apart within twelve months) and have a suppressed viral load (Figure 2). Baseline genotypes should be conducted upon initial HIV diagnosis to validate future treatment and care plans, ensure viral suppression, improve health outcomes and help reduce transmission of HIV.

**Limitations:** The data in this study represents less than 50% of persons whose HIV was diagnosed in 2015 and 2016 due to incomplete linkage to care at diagnosis, electronic laboratory reporting and ordering of genotypes at diagnosis by providers.