

The Impact of Age and Age-related Factors on Viral Suppression Among People Living with HIV

Mark Brennan Ing¹, Jennifer E. Kaufman¹, Jasmine Manalel¹, & Jerome Ernst²

1. Brookdale Center for Healthy Aging at Hunter College, New York, NY, USA
2. Amida Care Inc., New York, NY, USA

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<https://brookdale.org/>  @HunterBrookdale

Background

Adults 50 and older are a majority of people living with HIV (PLWH) in the U.S. and in other high-income countries.

Undetectable HIV viral load is associated with better clinical health outcomes and nearly zero risk of HIV transmission through sex.

We have little information about how the challenges of aging with HIV (multimorbidity, polypharmacy) affect maintaining viral suppression among older PLWH 50.

Study Aims

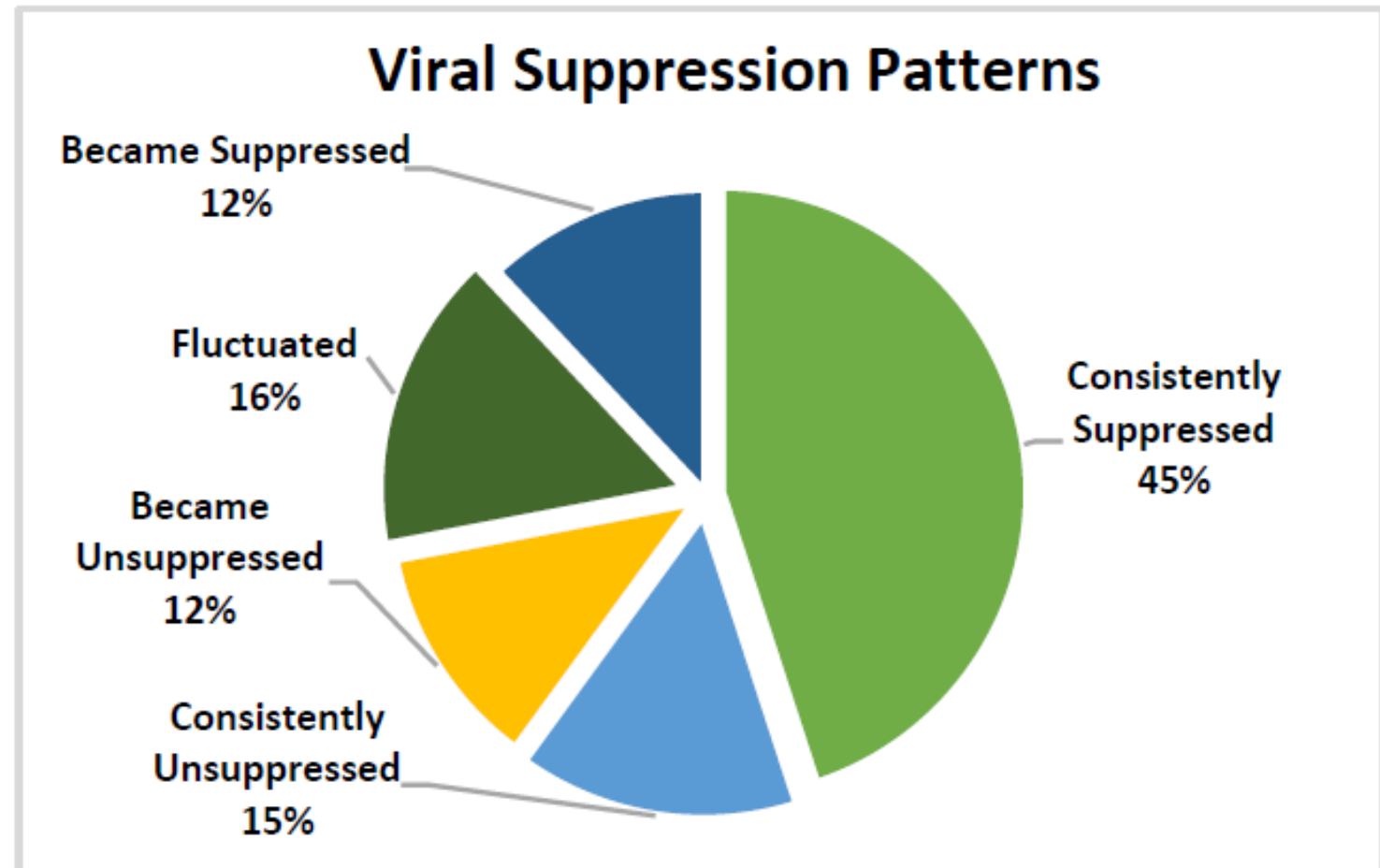
Examine the association of age and other demographic indicators, factors associated with aging (multimorbidity, polypharmacy) and those associated with anti-retroviral utilization (number pharmacies used, proportion of days covered [PDC] adherence) with unsuppressed HIV viral load.

Methods

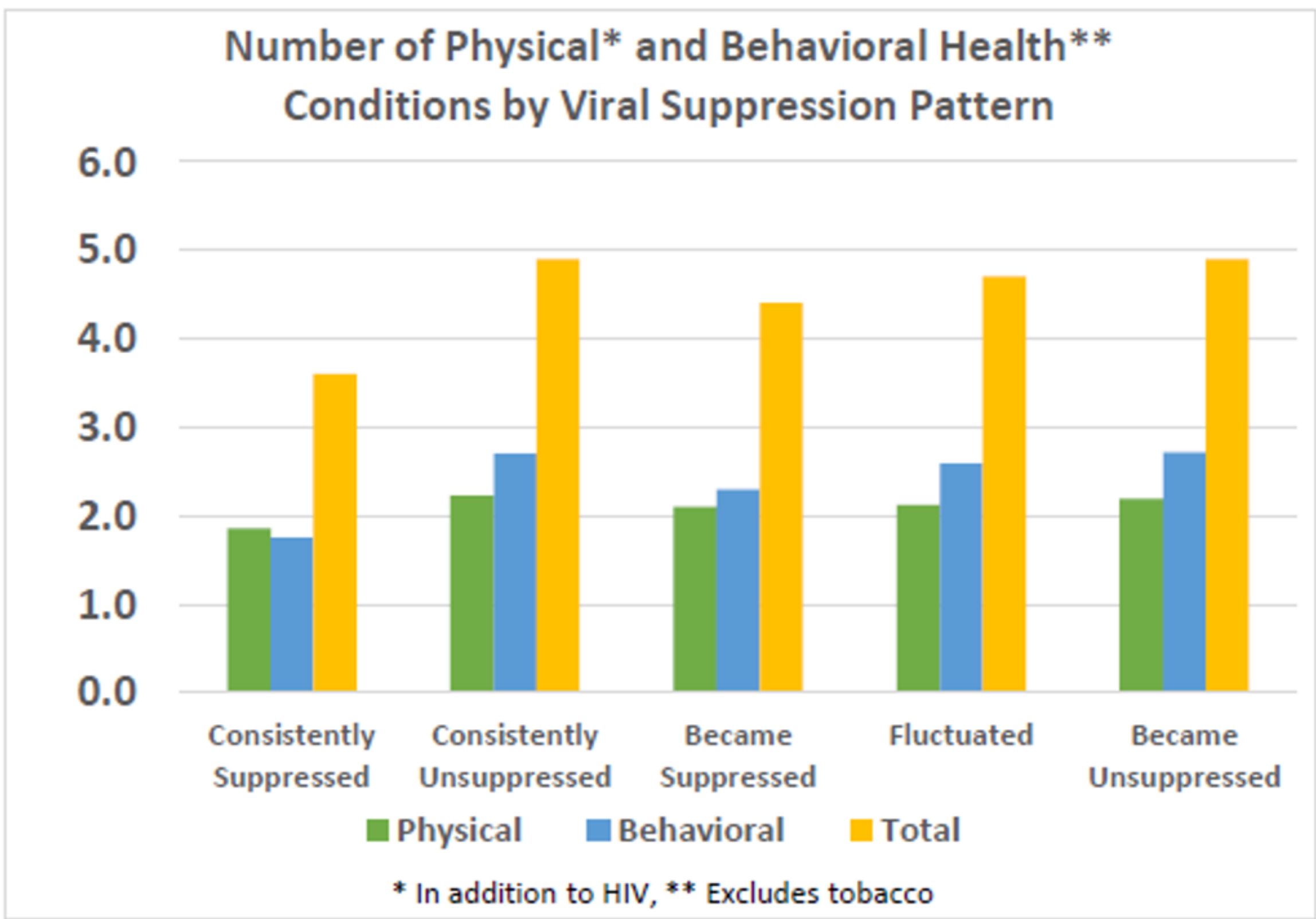
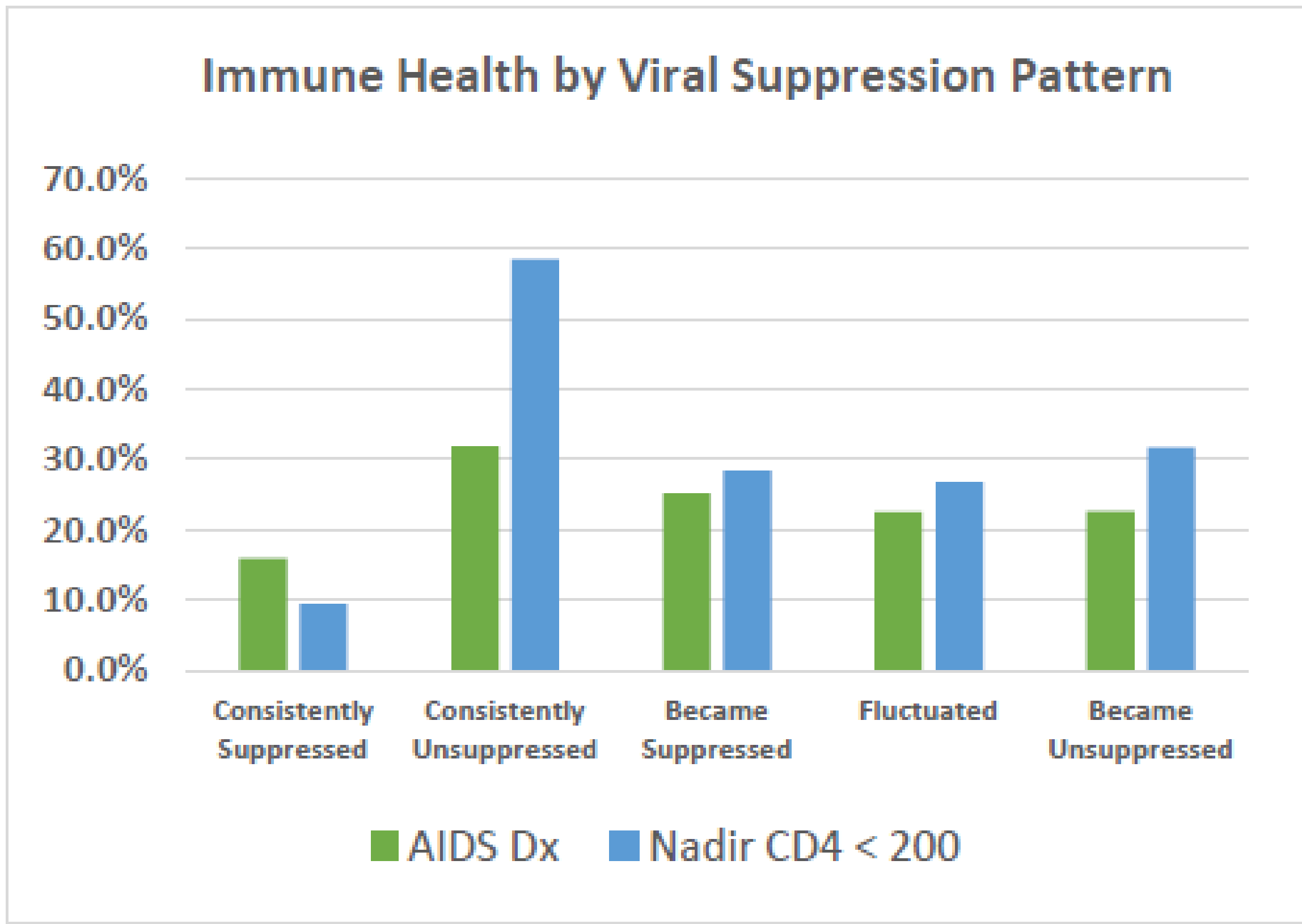
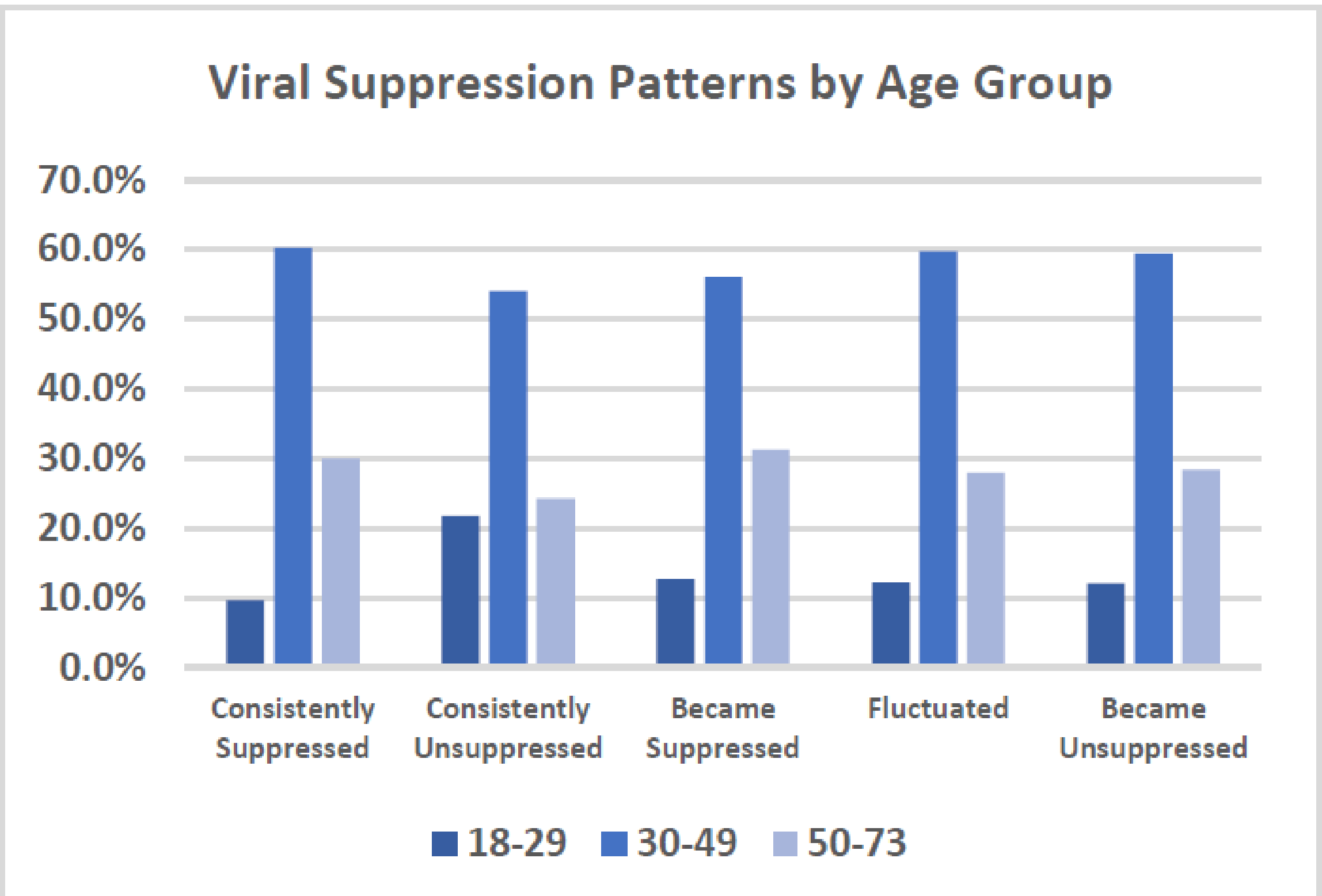
- Health claims data for 2,677 people living with HIV (PLWH) who were continuously enrolled in a managed care plan from 2016 through 2019 and had viral suppression were extracted and de-identified.

BASELINE DEMOGRAPHICS		
Gender identity	Cisgender male	61%
	Cisgender female	32%
	Transgender	7%
Race/ethnicity	Black/African American	53%
	Hispanic/Latino	37%
	Non-Hispanic White	8%
Age category	18–29 years	13%
	30–49 years	59%
	50+ years	29%

- Cluster analysis classified PLWH into five viral suppression patterns.



- Hierarchical logistic regression examined associations of age and age-related factors to consistently unsuppressed HIV viral load.



Logistic Regression on Odds of Consistently Unsuppressed HIV Viral Load

Factor	Model 1		Model 2		Model 3	
	OR	95% CI	OR	95% CI	OR	95% CI
Age 18 to 29 (REF)						
Age 30 to 49	0.484	0.362 - 0.649	0.355	0.255 - 0.494	0.449	0.319 - 0.633
Age 50 to 73	0.445	0.318 - 0.623	0.319	0.215 - 0.473	0.422	0.281 - 0.634
Non-Hispanic White/Other (REF)						
Non-Hispanic Black	3.073	1.861 - 5.075	2.446	1.456 - 4.110	2.502	1.474 - 4.246
Hispanic	1.998	1.190 - 3.355	1.502	0.876 - 2.576	1.655	0.955 - 2.868
Cisgender Male (REF)						
Cisgender Female	0.977	0.768 - 1.242	0.889	0.682 - 1.158	0.907	0.693 - 1.187
Transgender-Gender Diverse	1.071	0.707 - 1.623	1.081	0.688 - 1.697	1.089	0.691 - 1.716
Nadir CD4 ≤ 200			5.815	4.574 - 7.394	5.333	4.179 - 6.804
Num. Physical Conditions			1.123	1.000 - 1.262	1.121	0.996 - 1.262
Num. Behavioral Conditions			1.153	1.078 - 1.234	1.145	1.068 - 1.228
Number Prescriptions			0.937	0.858 - 1.023	0.928	0.846 - 1.018
Number Pharmacies Used					1.350	1.164 - 1.566
Mean ART PDC Adherence					0.110	0.054 - 0.226
Note. Listwise N=2,620 . Consistently Unsuppressed N=394 (15%). Nagelkerke R ² : Model 1=0.043; Model 2=0.215; Model 3=0.244. p< .05 p<.01 p<.001						

Results

- PLWH who were older (age 30 to 49, 50 and older) had 50% lower odds of unsuppressed viral load (viremia) compared to young adults.
- Non-Hispanic Black race/ethnicity as associated 250% greater odds of consistent viremia across models. Gender identity was not associated with viremia.
- Polypharmacy was not related to odds of viremia likely due to the high number of medications used overall.
- Physical and behavioral multimorbidity increased the odds of viremia by 12%-15% for each additional condition.
- A history of nadir CD4 t-cell counts of 200/ml or less increased the odds of viremia by a factor of 5.
- PLWH who used more pharmacies for ART prescriptions (likely due to unstable housing) had 35% greater odds of viremia, while being adherent to ART medications lowered the odds of unsuppressed viral load.

Conclusions

- Older PLWH are more likely to be virally suppressed compared to younger peers, related to their greater adherence to ART ($r=.12$). But intersections of age and non-Hispanic Black race/ethnicity and higher levels of multimorbidity may mitigate this effect.
- Immune system health (nadir CD4 t-cell < 200) may have persistent negative effects on overall health as well as the ability to avoid viremia.
- Sustained HIV viral suppression targets (95%) will be difficult to meet without a substantial investment in behavioral health care to increase capacity to address these conditions.
- Providers treating older PLWH should address multimorbidity to help these patients achieve and maintain viral suppression.

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