

# Association between Physical Activity and Alcohol Use

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## Background

- Only 26% of US Men and 19% of US Women meet recommended aerobic and muscle-strengthening physical activity (PA) guidelines<sup>1-2</sup>.
- Evidence suggests PA as a promising alternative to reduce alcohol use and misuse<sup>3</sup>.
- People living with HIV (PLWH) have low PA rates and higher drinking rates than the general population.
  - PLWH are 2-4 times more likely to use alcohol than the general population<sup>4</sup>.
- Among PLWH, alcohol misuse can cause
  - a decreased function of the immune system<sup>4</sup>,
  - increased susceptibility to comorbid diseases<sup>4</sup>
  - interference with antiretroviral adherence, leading to exacerbation of HIV symptoms<sup>4</sup>

## Objectives

- To measure the association of PA and alcohol use in a national cohort, among people without and those living with HIV

## Methodology

- Design:** Cross sectional analysis of data from the National Health and Nutrition Examination Survey (NHANES), a surveillance program designed to assess the health and nutritional status of adults in the U.S.
- Participants:** U.S. adults (≥ 18) with and without an HIV diagnosis
  - HIV-negative participant data came from the 2017-2018 survey (n= 5,839)
  - PLWH data came from 2013-2018 surveys (n=54).

### Variables

Physical Activity	Alcohol Use Outcome
PA Guidelines (Y/N)	Average number of drinks/drinking day
Vigorous recreational activities in a typical week (Y/N)	Total number of times binged in past 30 days
Total vigorous minutes of PA in a typical week	Binging (Y/N)
Moderate recreational activities in a typical week (Y/N)	Heavy Drinking (Y/N)
Total moderate minutes of PA	

- Analysis:** Weighted linear and logistic regression models were used to analyze the associations between PA and alcohol use. Models were adjusted for Race/Ethnicity, BMI, Sex, Smoking Status, hypertension, age, calories. HIV- data was stratified by age to further analyze the association.

- All analyses were conducted using SAS.

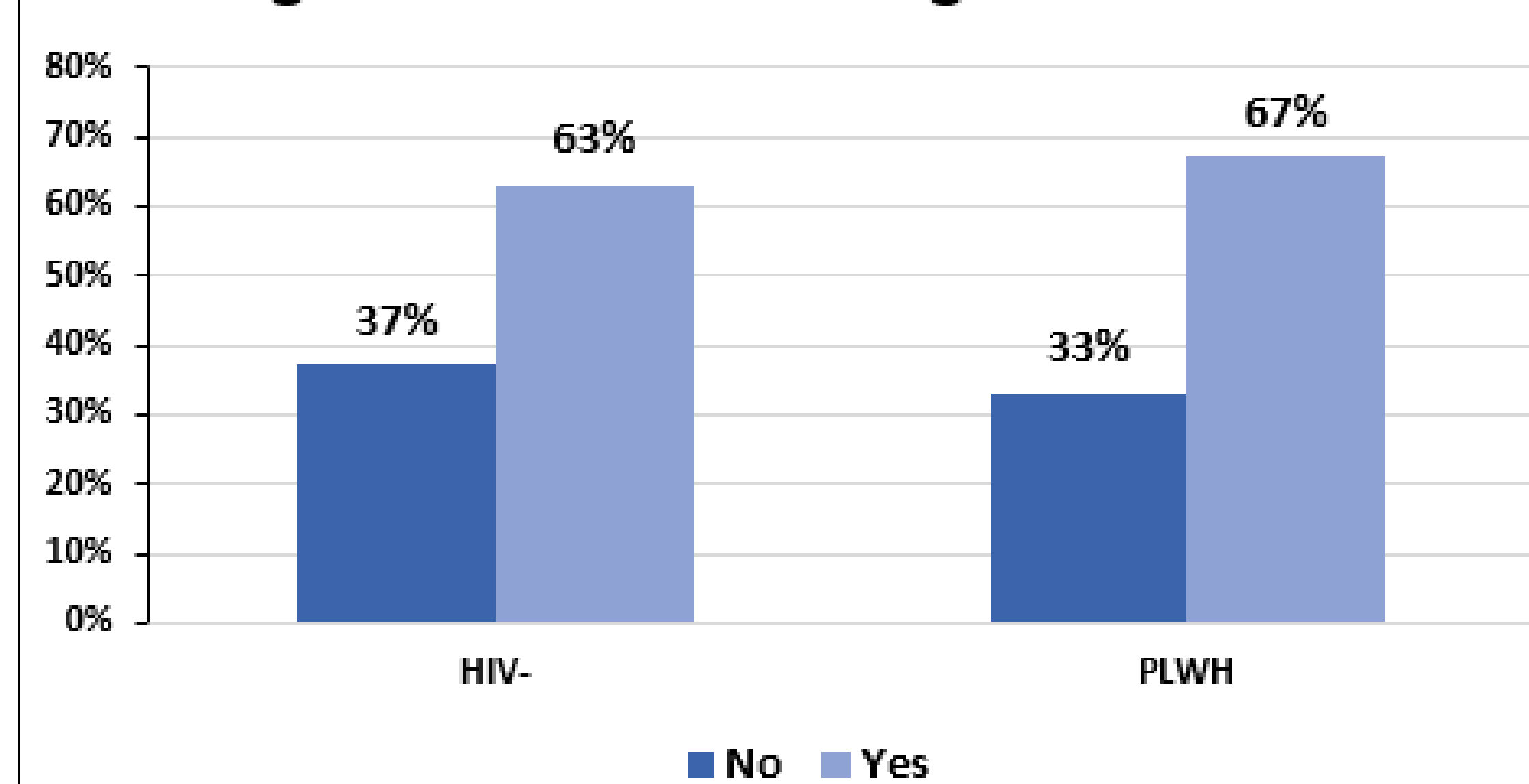


## Results

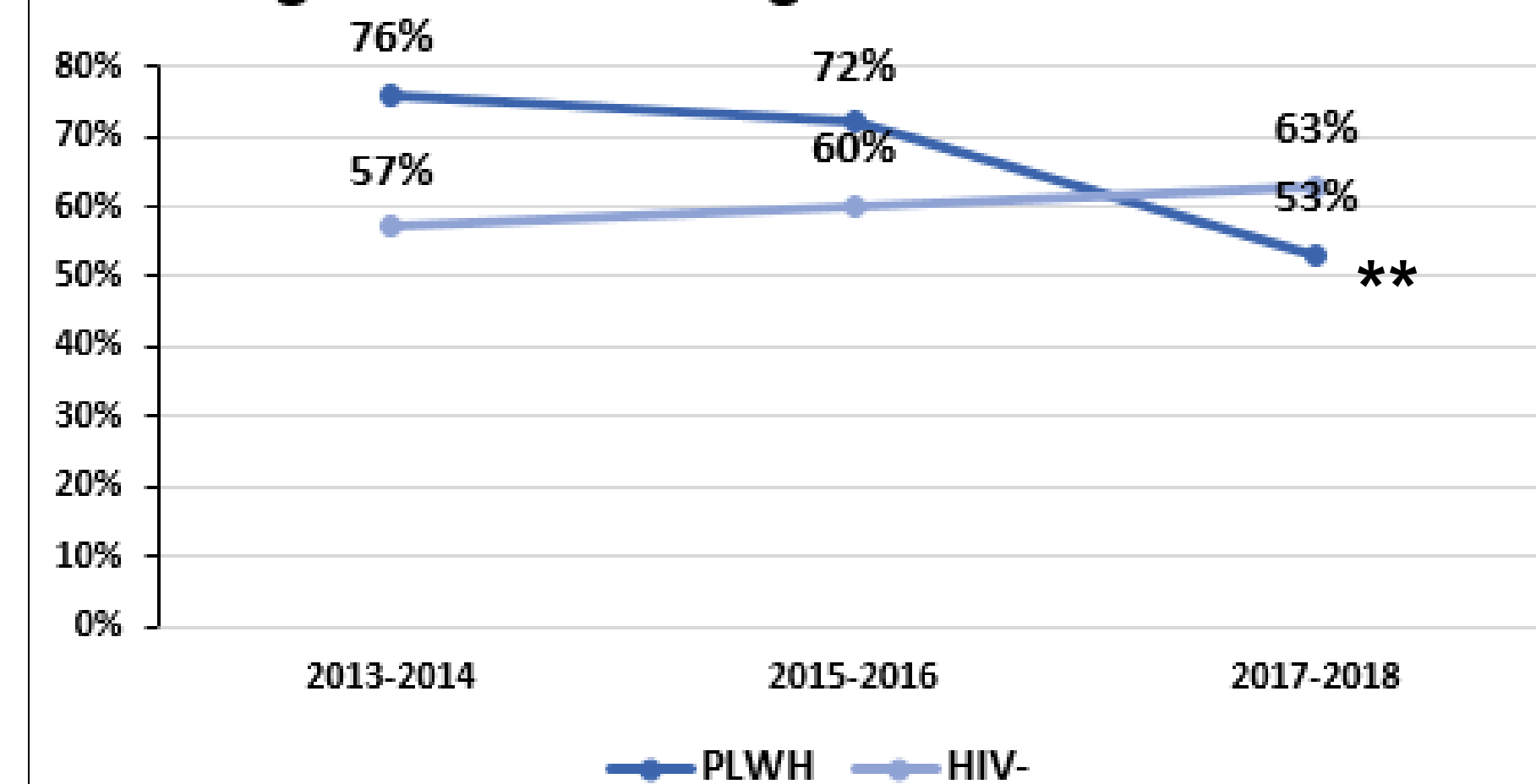
**Table 1: Participant Demographics**

	HIV- (n=5,839)	PLWH (n=54)
Mean Age	47.3 (0.56)	44.6 (1.29)
% <50	54%	66%
% ≥50	46%	34%
Gender		
Female	52%	13%
Male	48%	86%
Race		
Non-Hispanic Black	11%	39%
Non-Hispanic White	62%	56%
Other	27%	5%

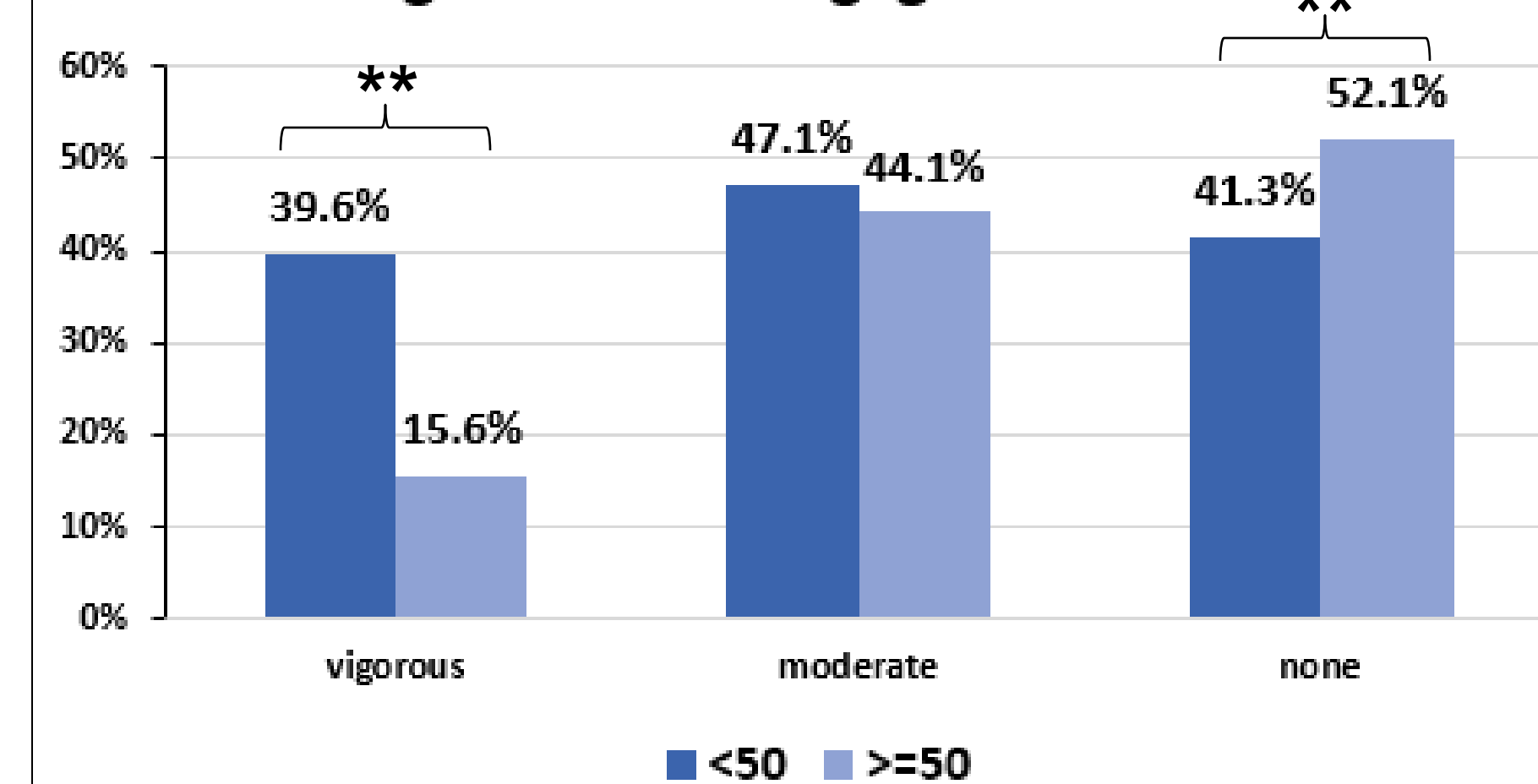
**Figure 1: Percent Meeting PA Guidelines**



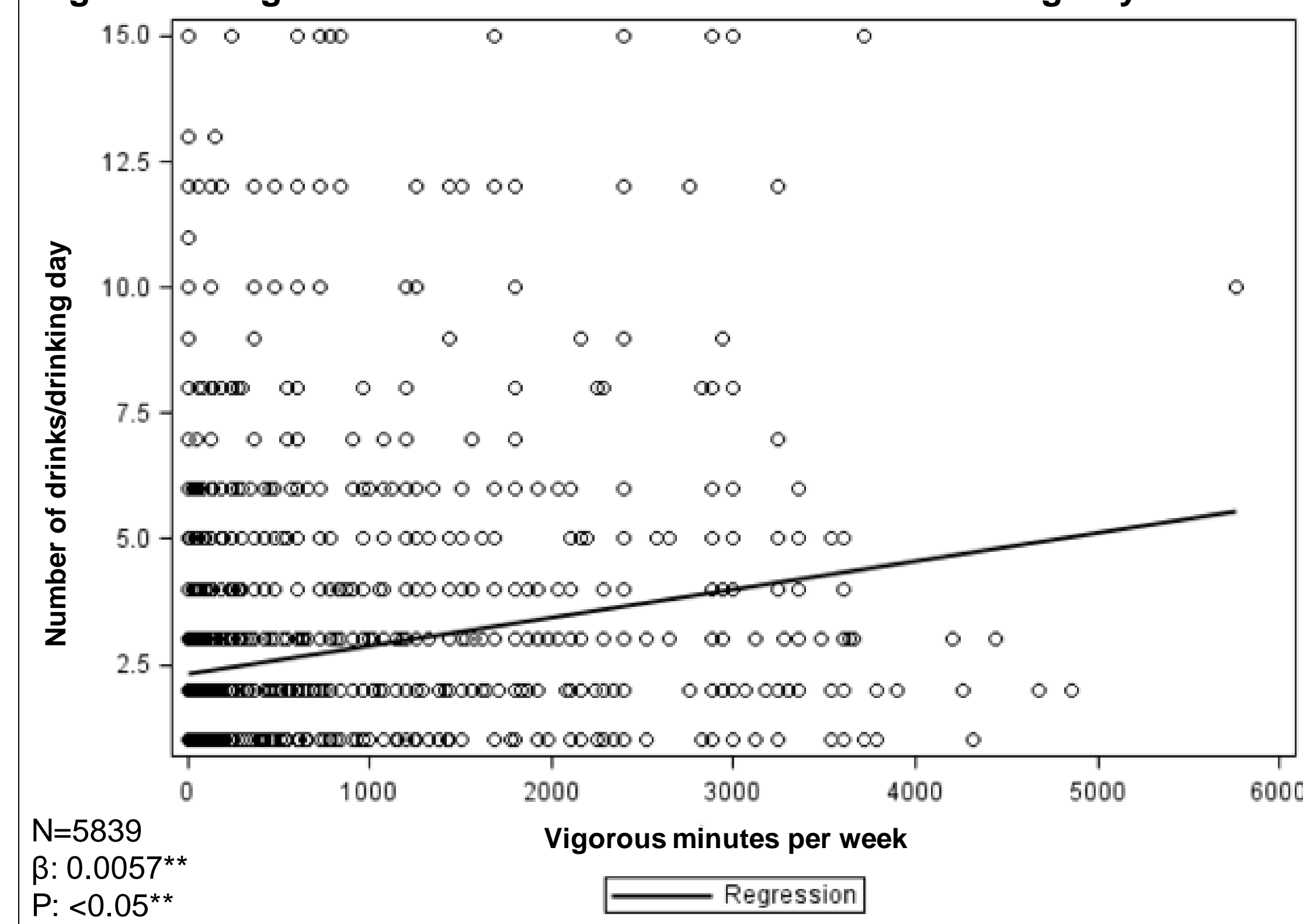
**Figure 2: % Meeting PA Guidelines Trend**



**Figure 4: HIV- Engagement in PA**



**Figure 3: # Vigorous Minutes Per Week vs. # Drinks/Drinking Day For HIV-**



**Table 2: PLWH Adjusted Odds Ratios For Binge Drinking\***

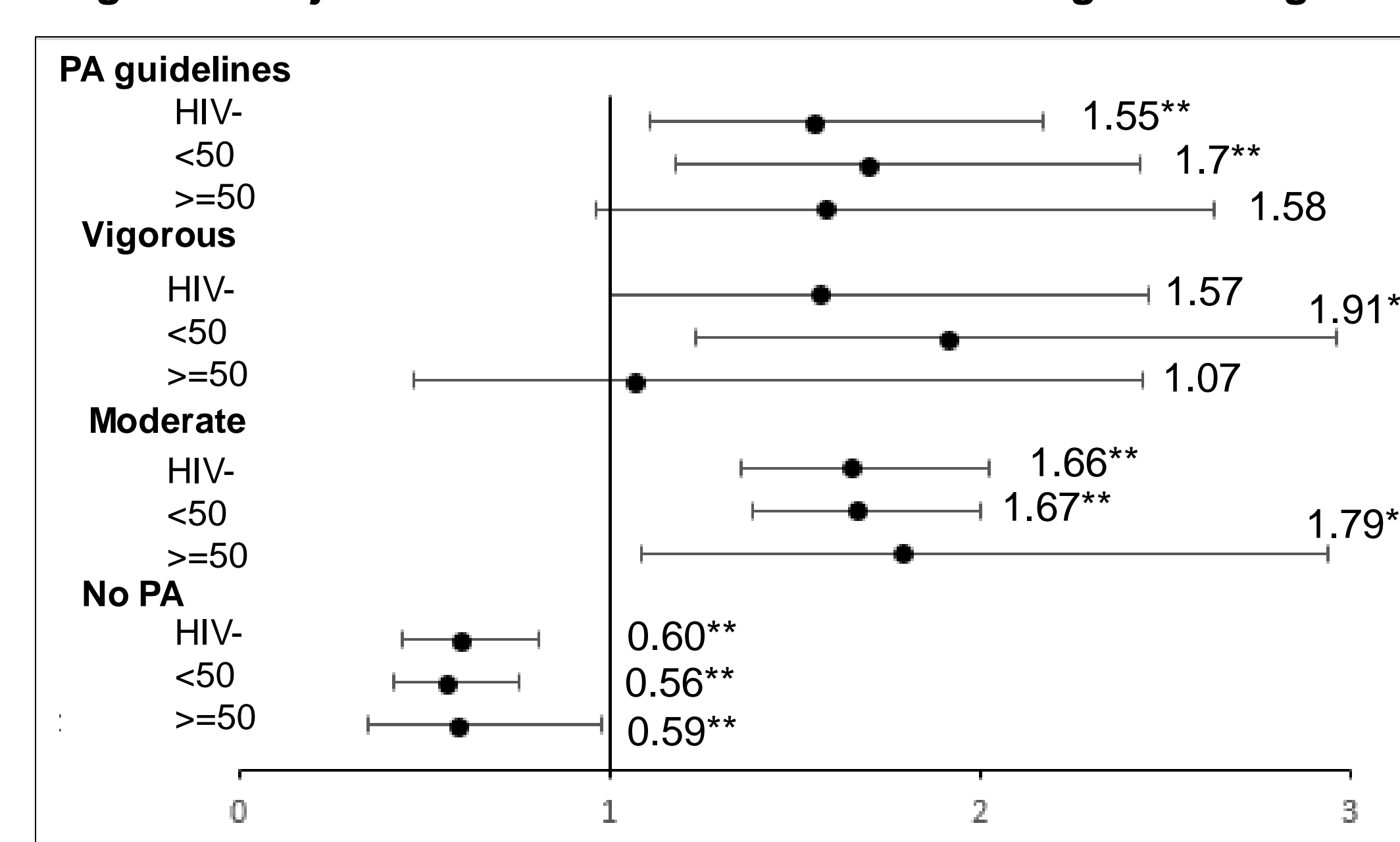
PA Guidelines	Odds Ratio (95% CI)
PA Guidelines	2.7 (0.50, 14.42)
Vigorous PA	6.8 (1.43, 32.41)**
Moderate PA	28.5 ( 2.79, 214.74)**
No PA	0.1 (0.01, 1.56)

\* Adjusted for age and sex

### References

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- Duko, B., Ayalew, M., & Ayano, G. (2019). The prevalence of alcohol use disorders among people living with HIV/AIDS: a systematic review and meta-analysis. *Substance Abuse Treatment, Prevention, and Policy*, 14(1). <https://doi.org/10.1186/s13011-019-0240-3>

**Figure 5: Adjusted Odds Ratio Estimates For Binge Drinking**



**Table 3: Odds Ratios for Binge Drinking By Race (HIV-)**

PA Guidelines	White	Black
PA Guidelines	2.26 (1.44, 3.54)**	1.22 (0.85, 1.73)
Vigorous PA	2.37 (1.33, 4.22)**	1.44 (0.99, 2.09)
Moderate PA	1.72 (1.25, 2.36)**	1.00 (0.60, 1.66)
No PA	0.52 (0.34, 0.79)**	0.93 (0.56, 1.56)

## Discussion

- Aerobic PA guideline adherence, vigorous, and moderate recreational exercise was associated with binge drinking when evaluating the associations overall.
- When stratifying by age, those over the age of 50 were significantly less likely to engage in binge drinking, meet PA guidelines, and engage in vigorous exercise than those under the age of 50.
- Those who did not typically engage in PA showed decreased likelihood for binge drinking.
- Overall, non-Hispanic white participants are more likely to meet PA Guidelines (for cardio exercise) than non-Hispanic Black and Other race participants (both Hispanic and non-Hispanic).
- White participants are significantly more likely to engage in physical activity and binge drink than Black participants
- Limitations: The sample size of PLWH was low even after 3 years of data were combined.

## Conclusions

- The stratified age results suggest that intervening to increase PA may be of benefit among the older adults. When considering race, the results suggest intervening on Black adults may be of benefit. However, we continue to explore the data to provide additional insight for PLWH.