

Investigating HIV Viral Suppression Rates at Varying Proportion of Days Covered Ranges within a Medical Home Model

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Background

- Vivent Health is an HIV medical home, where PLWH have access to comprehensive, high-quality, patient-centered, and affordable health care services in an integrated setting.
- The Joint United Nations Programme on HIV/AIDS (UNAIDS) has a goal for 95% of people on antiretroviral therapy (ART) to have a **suppressed HIV viral load (<200 copies/mL)** by 2030 in effort to end the global HIV epidemic.¹
- Poor adherence is a known risk factor for virologic failure.²
- The Pharmacy Quality Alliance (PQA) recommends using Proportion of Days Covered (PDC) to measure medication adherence.³
- Byrd, et al. found that a PDC threshold of 82% was necessary for 90% of participants to achieve HIV viral suppression.⁴
- The PDC threshold necessary for 95% of people on ART to achieve viral suppression is not known.

Purpose

To investigate HIV viral suppression rates and the breakdown of virologic control (HIV RNA <20 copies/mL, 20-199 copies/mL, and >200 copies/mL) at different PDC ranges and explore characteristics associated with suppressed and unsuppressed HIV viral loads

Methods

Study Design:

- Retrospective analysis of pharmacy and medical data across five pharmacies in medical home clinics across four states
- Utilized univariate logistic regression models and descriptive statistics for the study endpoints and exploratory analysis

Inclusion Criteria:

- Filled ART prescribed by an internal provider at one of the integrated pharmacies (365-day look-back)
- HIV diagnosis
- HIV viral load within the study time frame

Exclusion Criteria:

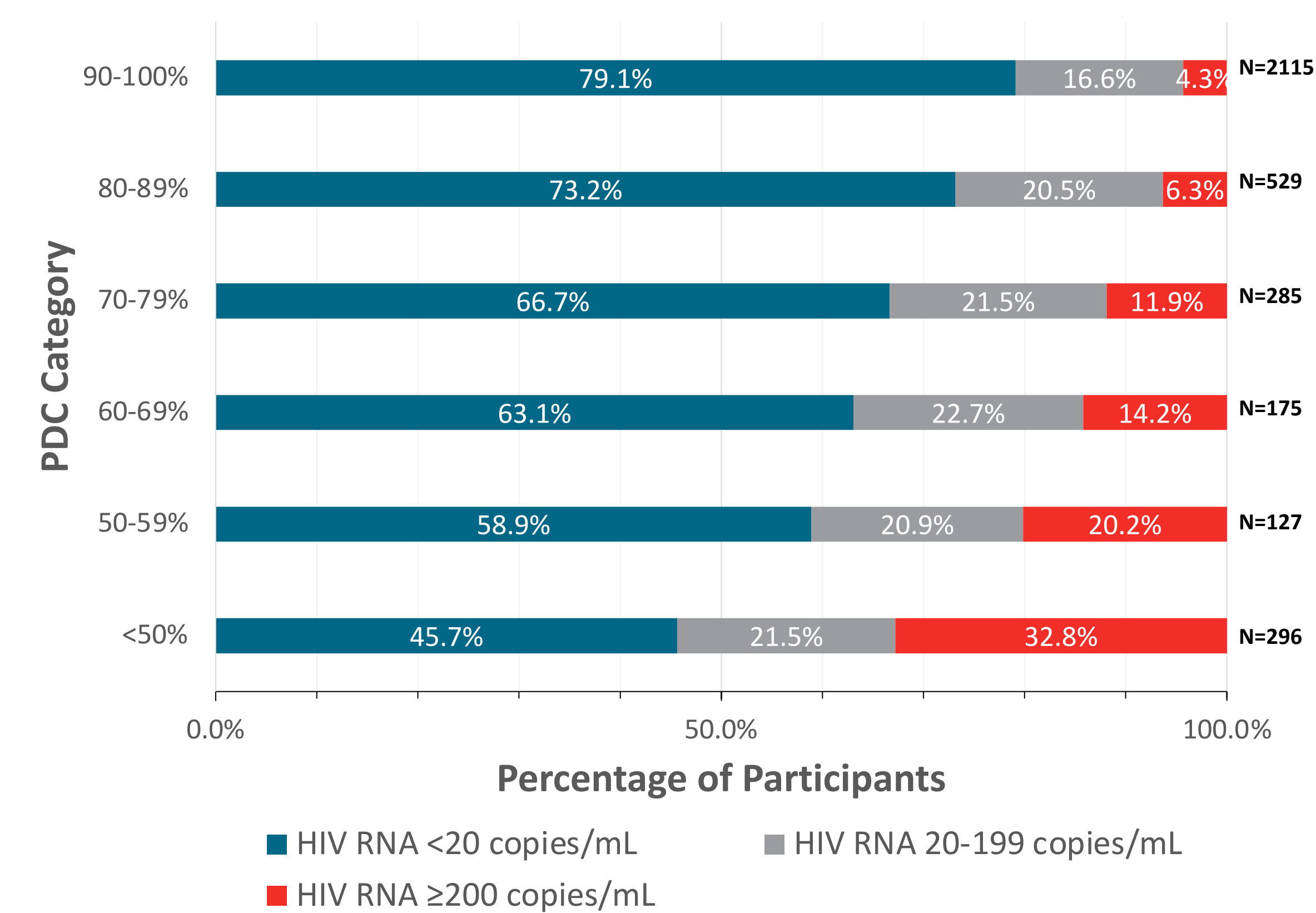
IRB approval through an external entity
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Results

Table 1. Baseline Characteristics (N=3527)

| PDC Range | N (%) | Problem Count | N (%) |
|------------|------------|--|-------------|
| <50% | 296 (8.4) | 1 to 5 | 1273 (36.1) |
| 50 to 79% | 587 (16.6) | 6 to 10 | 1231 (34.9) |
| 80 to 84% | 193 (5.5) | ≥11 | 1023 (29) |
| 85 to <90% | 336 (9.5) | | |
| ≥90% | 2115 (60) | | |
| | | Psychiatric Comorbidity | |
| | | Bipolar disorder (BD)/Major depressive disorder (MDD) | 1331 (37.7) |
| | | Schizophrenia (SCZ) | 96 (2.7) |
| | | Anxiety disorder | 967 (27.4) |
| | | Substance use disorder (SUD) | 980 (27.8) |
| | | Last PHQ9 Result in the Last 365 Days (N=2750) | |
| | | 0 to 4 | 1503 (42.6) |
| | | 5 to 9 | 603 (17.1) |
| | | 10 to 14 | 341 (9.7) |
| | | 15 to 27 | 303 (8.6) |
| | | Medication Count | |
| | | 1 to 5 | 1508 (42.8) |
| | | 6 to 10 | 1021 (28.9) |
| | | 11 to 20 | 787 (22.3) |
| | | ≥21 | 211 (6) |
| | | Smoking status | |
| | | Current | 1376 (39) |
| | | Never | 1264 (35.8) |
| | | Former | 698 (19.8) |
| | | Unknown | 189 (5.4) |
| | | Average CD4 count (cells/mm³) (N=3051) | |
| | | | 668 |

Chart 1. Percentage of Participants by HIV RNA Range within Different PDC Categories



91.1% of all participants were virally suppressed

95.8% of participants with a PDC ≥90% were virally suppressed

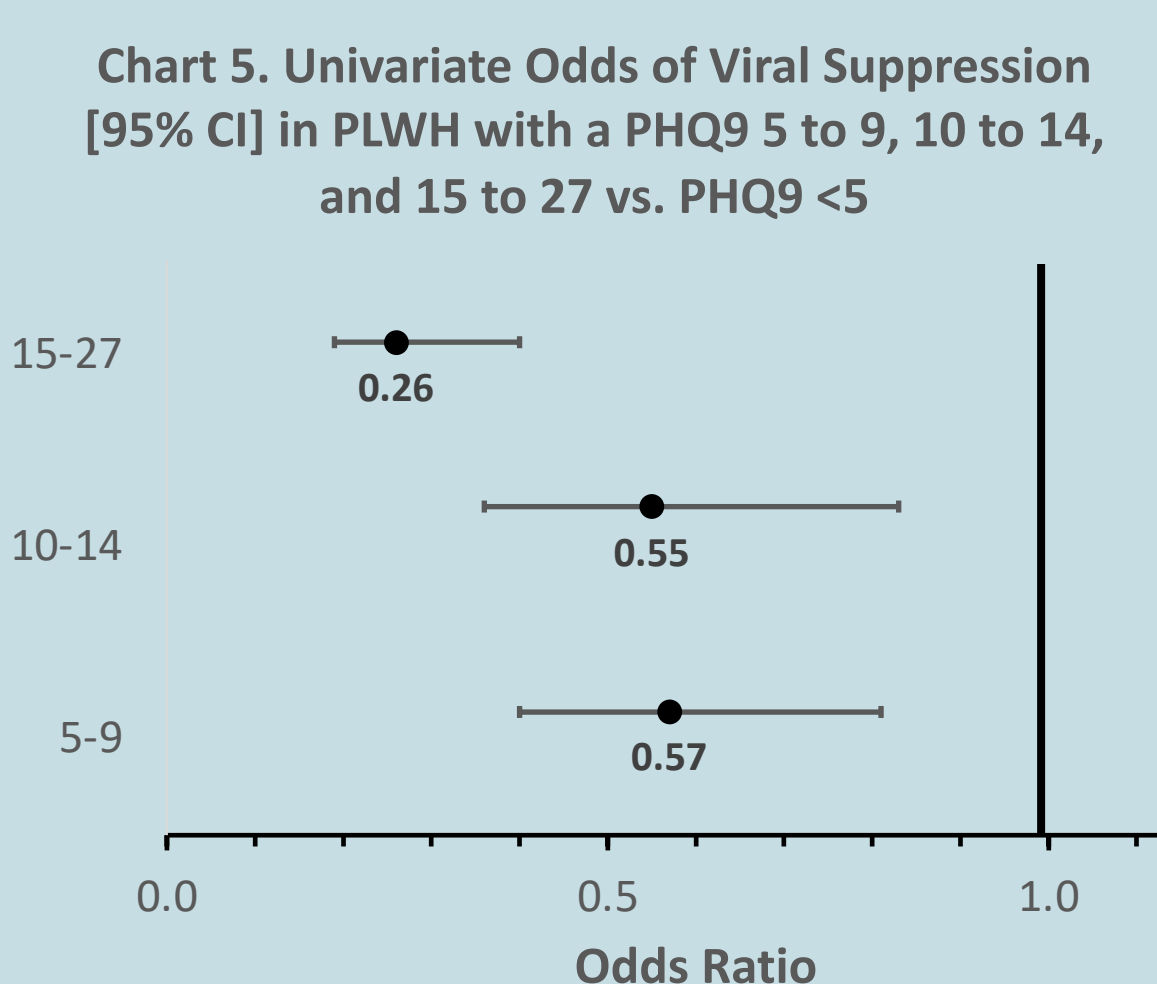
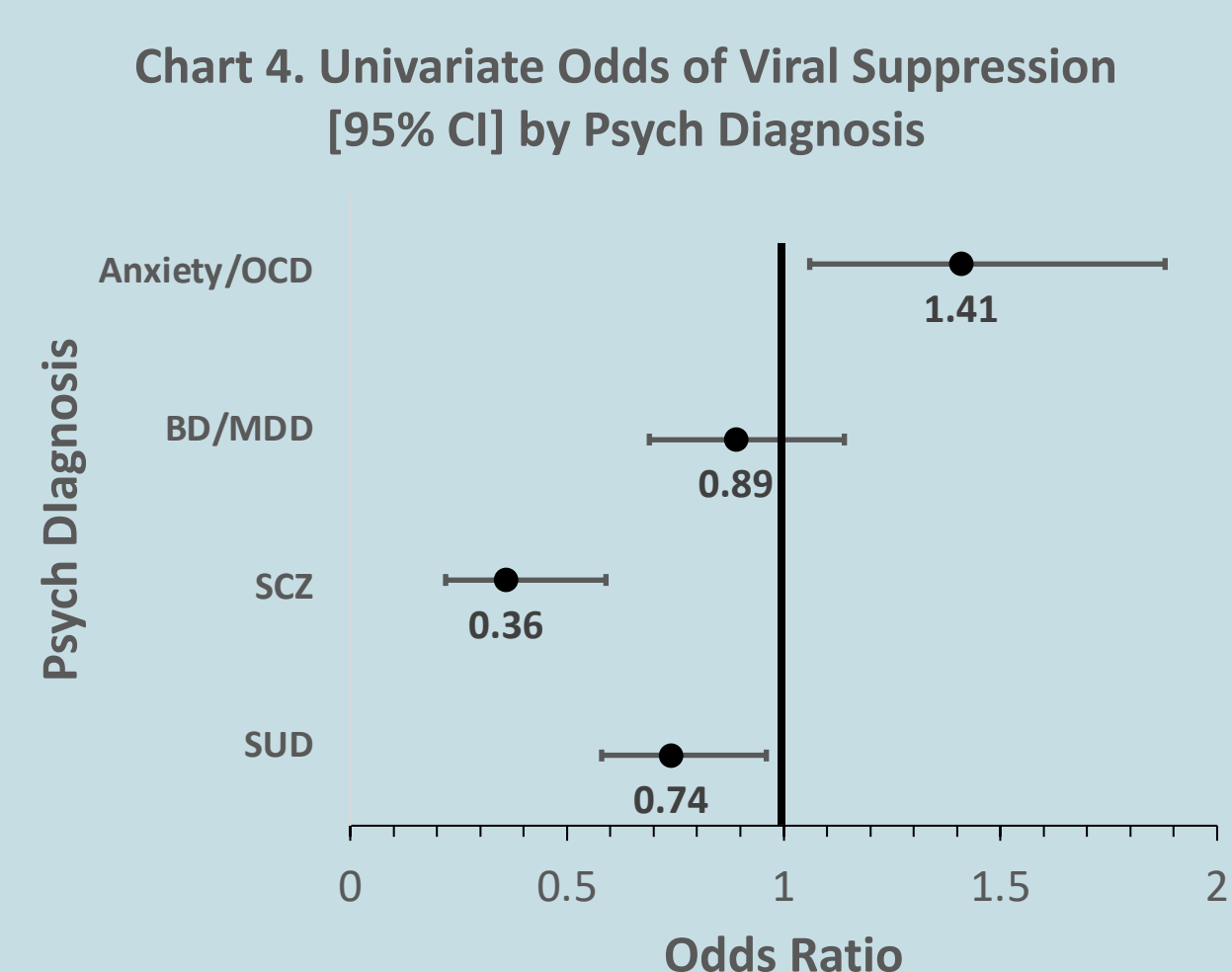
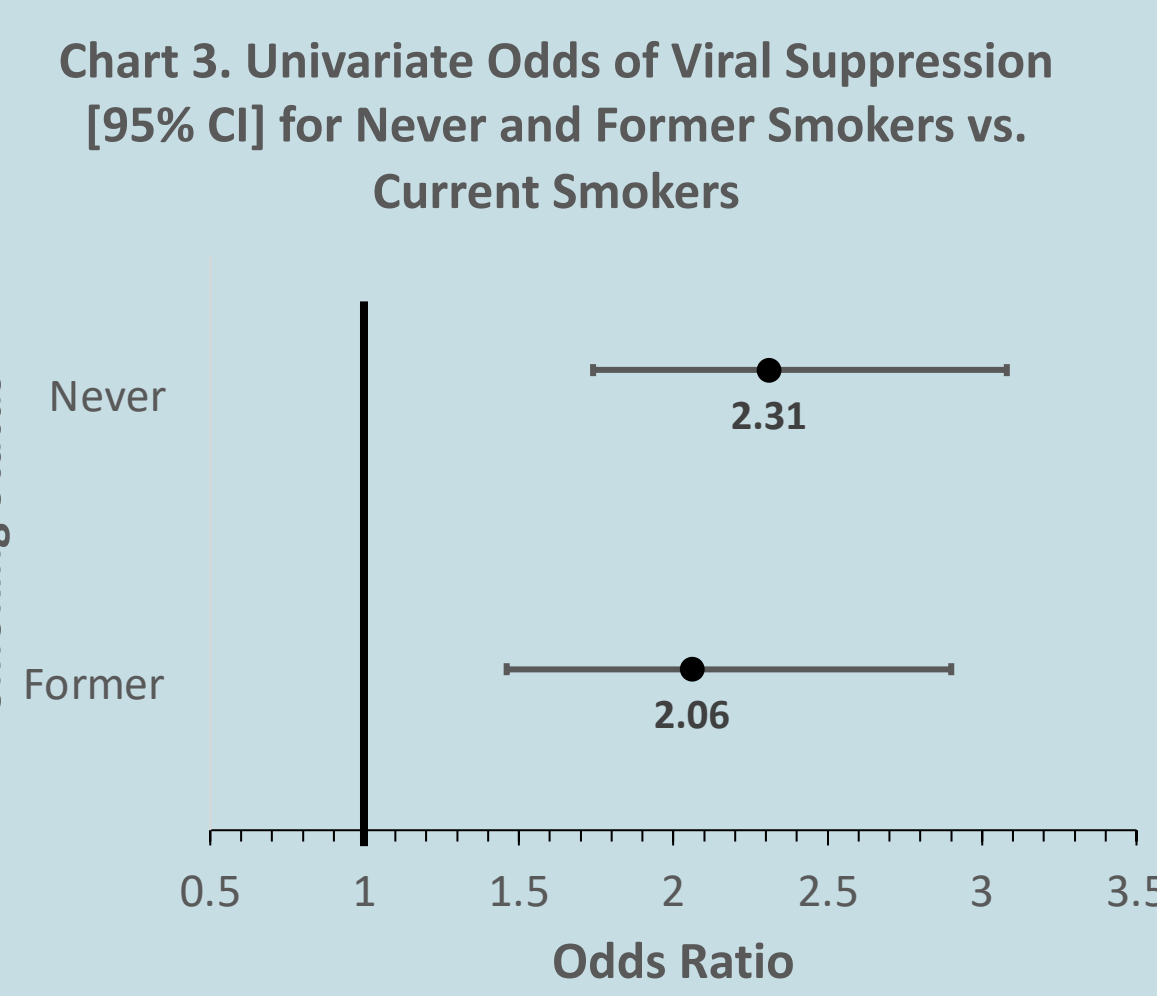
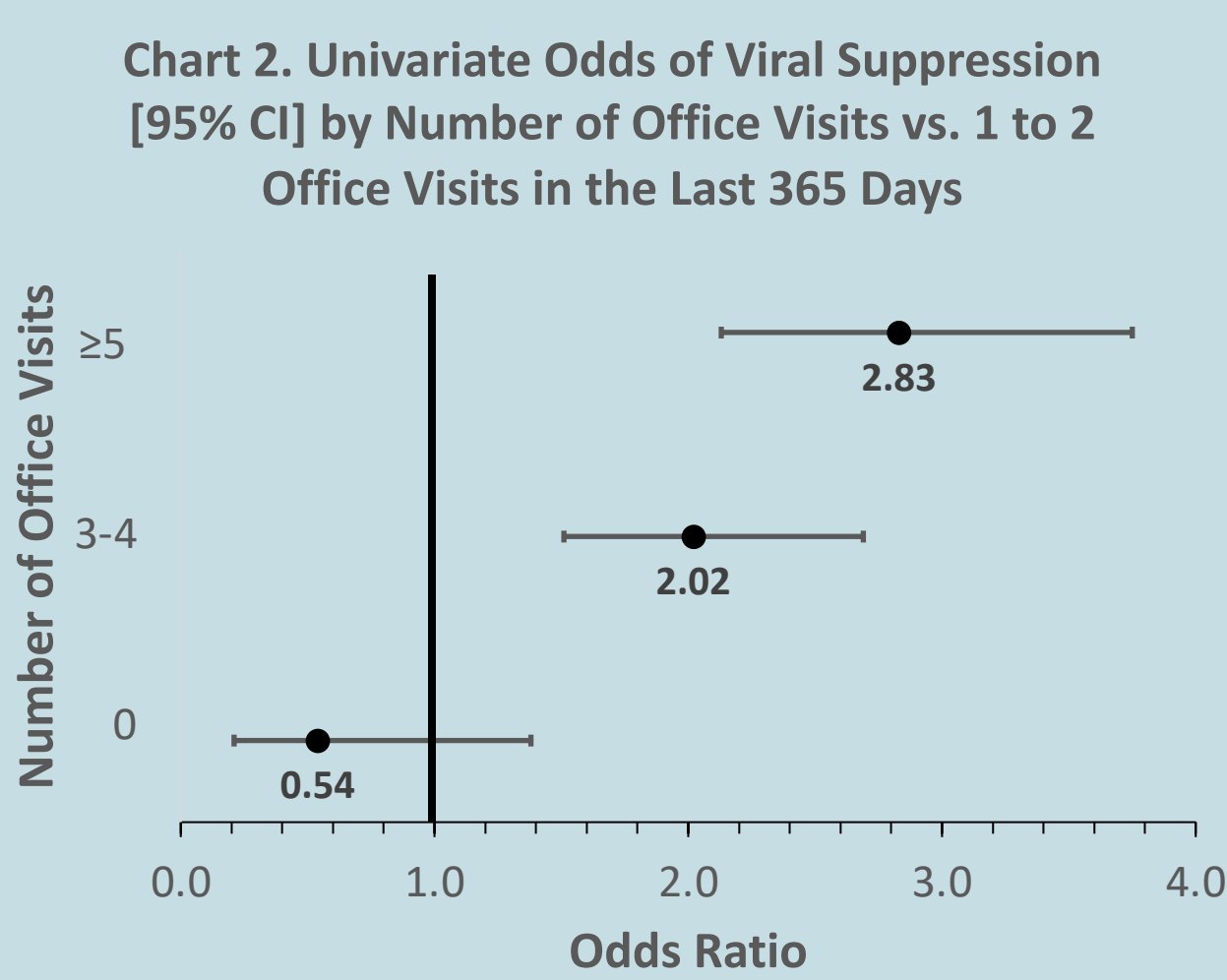


Chart 6. Odds of Viral Suppression (HIV RNA <200 copies/mL) [95% CI] Compared to a PDC ≥90%

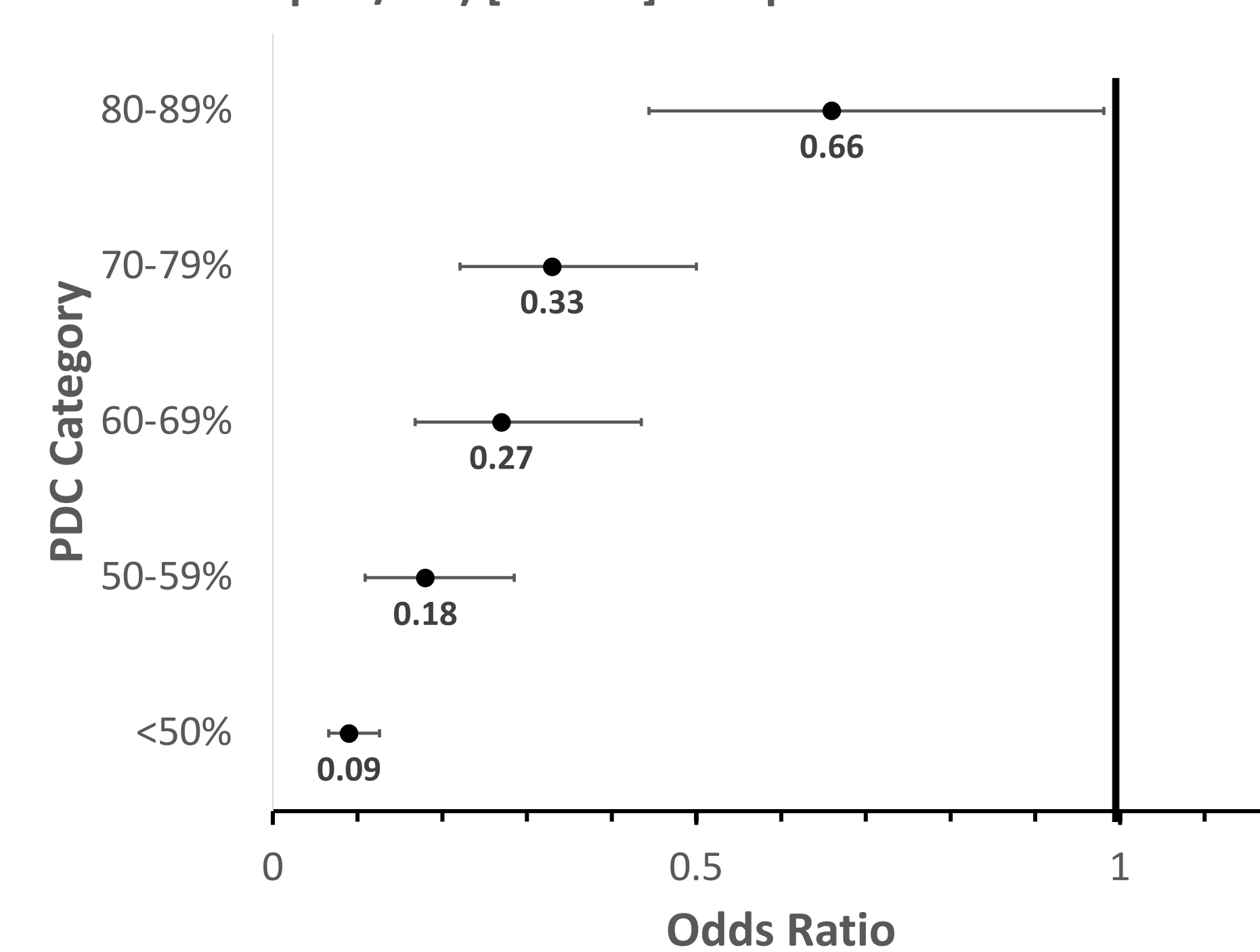


Table 2. Univariate Odds of Viral Suppression by Race and Ethnicity

| Race | Odds Ratio | 95% CI |
|--------------------------|------------|--------------|
| Black vs. White | 0.52 | [0.42, 0.69] |
| Multiple Races vs. White | 0.17 | [0.08, 0.35] |

Objectives

Primary Objective: Determine the viral suppression rate for participants with a PDC ≥90%

Secondary Objectives:

- Compare viral suppression rates for participants with a PDC <50%, 50 to 79%, 80 to 84%, and 85 to 89% to those with a PDC ≥90%
- Determine the breakdown of virologic control at the above PDC ranges

Exploratory Objective:

- Compare the viral suppression rates for participants with a PDC <50%, 50 to 59%, 60 to 69%, 70 to 79%, and 80 to 89% to those with a PDC ≥90%
- Investigate characteristics associated with an increased or decreased likelihood of viral suppression

Conclusions

- With each decreasing PDC category, there was a lower percentage of participants with an HIV RNA <20 copies/mL and a higher percentage of participants with an HIV RNA >200 copies/mL
- Compared to the PDC >90% group, there was a lower likelihood of viral suppression with each decreasing PDC category
- Zero office visits in the last year, SUD, SCZ, and having a PHQ ≥5 were associated with a decreased likelihood of viral suppression
- One or more office visits in the last year, anxiety/OCD, and non-smokers were associated with an increased likelihood of viral suppression

Future Directions

- Develop a tiered adherence outreach approach for patients based on PDC category
- Further research is needed to determine the effect of comorbidities and social determinants of health on PDC and viral load suppression

References

- UNAIDS. Fast track cities: ending the HIV epidemic. Last updated April 13, 2021. Accessed March 14, 2022. Available at: https://www.unaids.org/en/resources/documents/2014/JC2686_WAD2014report
- Panel on Antiretroviral Guidelines for Adults and Adolescents. Management of the Treatment-Experienced Patient. Guidelines for the use of antiretroviral agents in adults and adolescents with HIV. Department of Health and Human Services. Last updated June 3, 2021. Accessed April 20, 2022. [1-13]. Available at: <https://clinicalinfo.hiv.gov/en/guidelines/adult-and-adolescent-arv/virologic-failure?view=full>
- Pharmacy Quality Alliance. PQA adherence measures. Last updated March 25, 2021. Accessed November 21, 2021. <https://www.pqaalliance.org/adherence-measures>
- Byrd KK, Hou JG, Hazen R, et al. Antiretroviral adherence level necessary for HIV viral suppression using real-world data. *J Acquir Immune Defic Syndr*. 2019;82(3):245-251.