



Geographic Variations in Real-World Uptake of Oral Pre-Exposure Prophylaxis Prescription Claims in ‘Ending the HIV Epidemic in the US’ Regions

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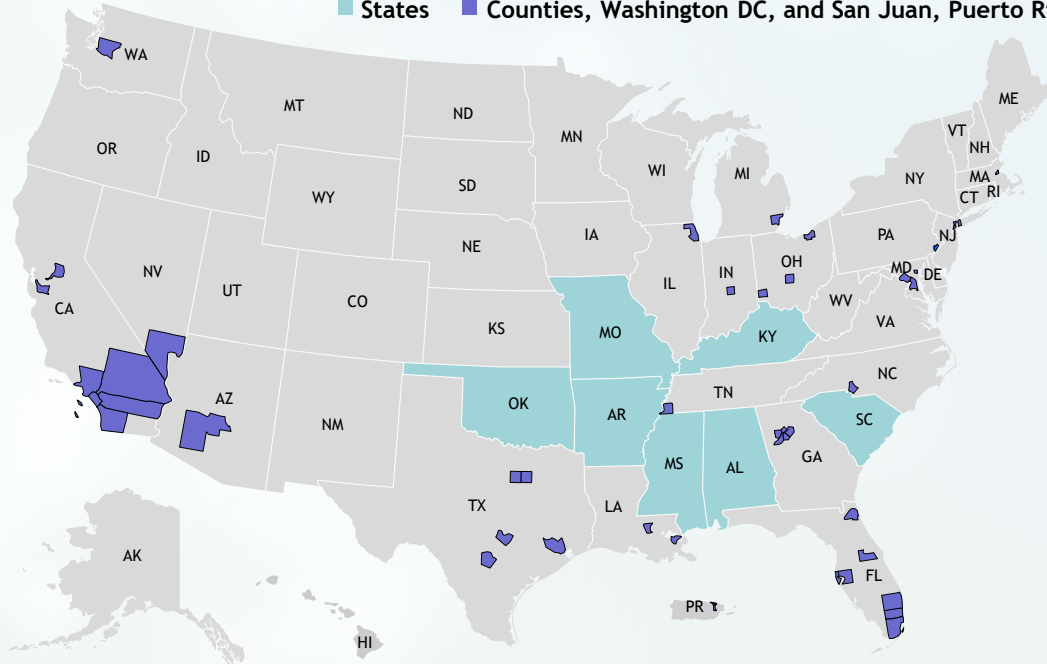
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- The Ending the HIV Epidemic (EHE) initiative, introduced by the United States Department of Health and Human Services in 2019, targets the reduction of new cases of HIV in the USA by 90%, by the year 2030¹
- EHE focuses on jurisdictions where new HIV infections are most concentrated, including:¹
 - 48 counties in which >50% of new HIV diagnoses occurred in 2016 and 2017
 - Seven states with a disproportionate occurrence of HIV in rural areas

EHE Priority Jurisdictions¹

■ States ■ Counties, Washington DC, and San Juan, Puerto Rico





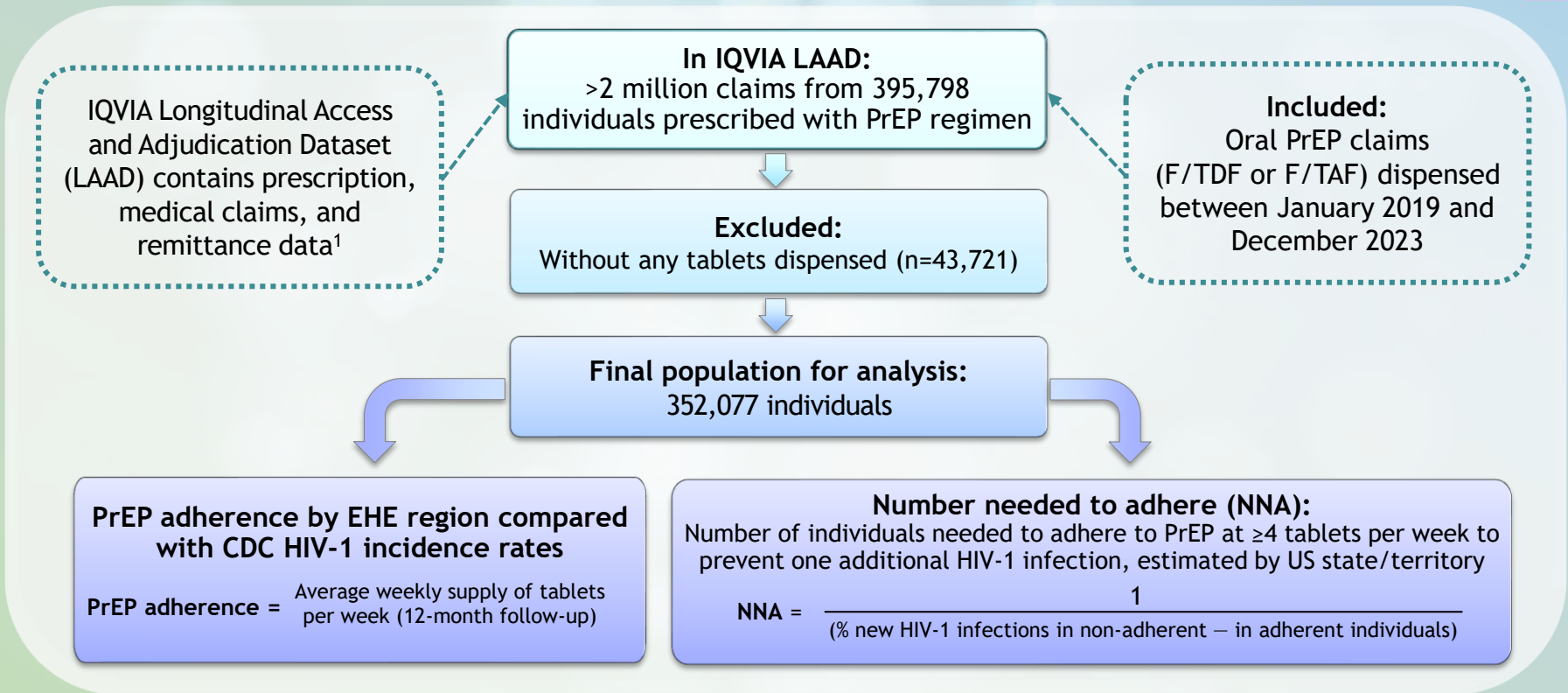
- Pre-exposure prophylaxis (PrEP) is highly effective at preventing HIV-1 infection when taken as prescribed¹
- Daily oral PrEP options approved by the Food and Drug Administration include emtricitabine/tenofovir disoproxil fumarate (F/TDF) and emtricitabine/tenofovir alafenamide (F/TAF)²
- In a study in men who have sex with men, an average of at least four doses per week of F/TDF was associated with a 96% or greater reduction in risk in HIV-1 acquisition³
- Improving PrEP adherence is a critical tool in achieving EHE HIV-1 prevention goals;⁴ however, approximately only 36% of eligible people in the USA received PrEP in 2022⁵
- Disparities in access to PrEP exist among EHE jurisdictions: in 2018, the number of PrEP-providing clinics per 100,000 population was 20x higher in San Francisco County, CA, than in Cobb County, GA⁶

Objective

- To describe geographic variations in uptake of oral PrEP in EHE regions in the USA

EHE, Ending the HIV Epidemic in the US.

1. PrEP Effectiveness. Available at: <https://www.cdc.gov/hiv/basics/prep/prep-effectiveness.html> (Accessed April 2024). 2. Pre-Exposure Prophylaxis. Available at: <https://hivinfo.nih.gov/understanding-hiv/fact-sheets/pre-exposure-prophylaxis-prep> (Accessed April 2024). 3. Anderson PL, et al. *Sci Transl Med.* 2012;4(151):151ra125. 4. Morchu EO, et al. *BMJ Open*; 2022; 2(5):e048478. 5. HIV Surveillance Data Tables. Available at: <https://www.cdc.gov/hiv/library/reports/surveillance-data-tables> (Accessed March 2024). 6. PrEP Use Across the U.S. at the County-Level. Available at: <https://aidsvu.org/news-updates/prep-use-across-the-u-s-at-the-county-level> (Accessed May 2024).





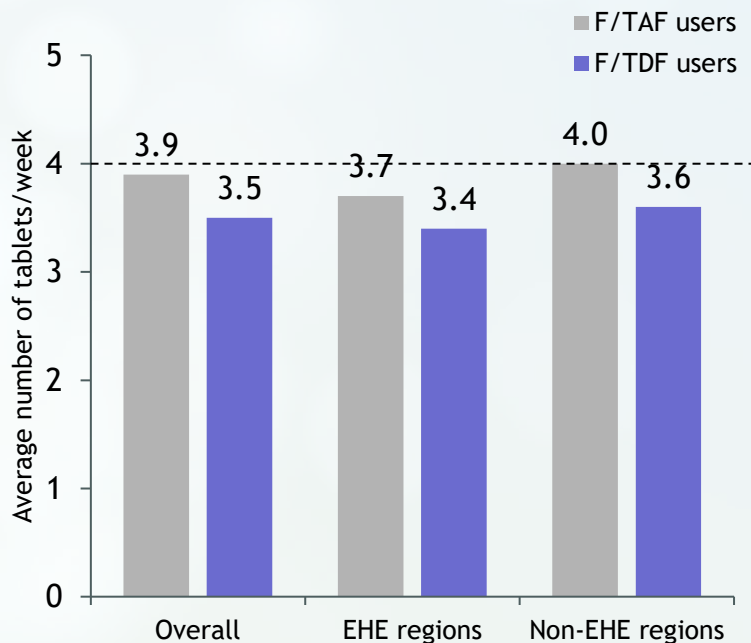
Study population characteristics

- 352,077 individuals were identified from >2 million PrEP claims
 - Median age: 35 years (interquartile range, 26–42 years)

PrEP Adherence

- The majority (55%) of individuals averaged <4 tablets per week
 - Weekly average PrEP adherence was lower in F/TDF users compared with F/TAF users
 - Weekly average PrEP adherence was lower in EHE compared with non-EHE regions for both regimens

Weekly PrEP Adherence



Dotted line indicates an average supply of four tablets per week.

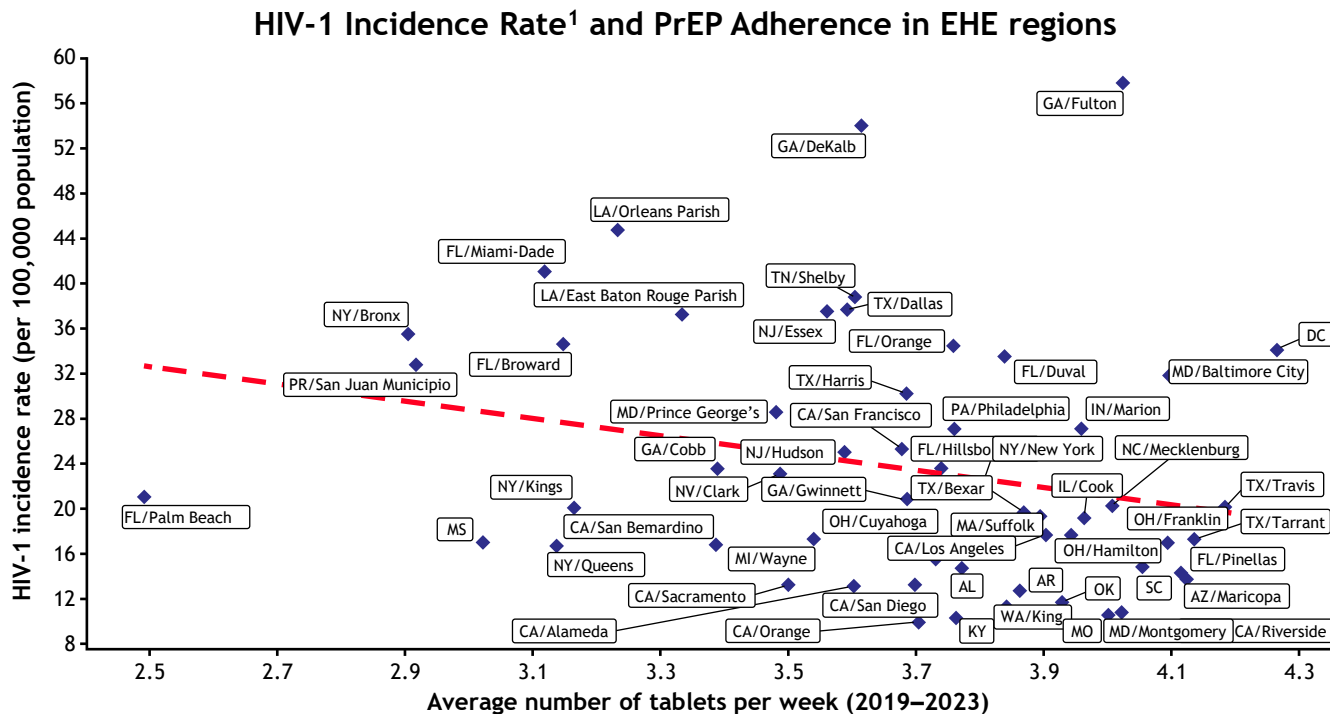
EHE, Ending the HIV Epidemic in the US; F/TAF, emtricitabine/tenofovir alafenamide; F/TDF, emtricitabine/tenofovir disoproxil fumarate; PrEP, pre-exposure prophylaxis.

PrEP Adherence in EHE Regions

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- Across EHE regions, the average PrEP supply in tablets per week ranged from 2.5 in Palm Beach County, FL, to 4.3 in Riverside County, CA
- HIV-1 incidence tended to be lower in EHE regions with higher average PrEP adherence



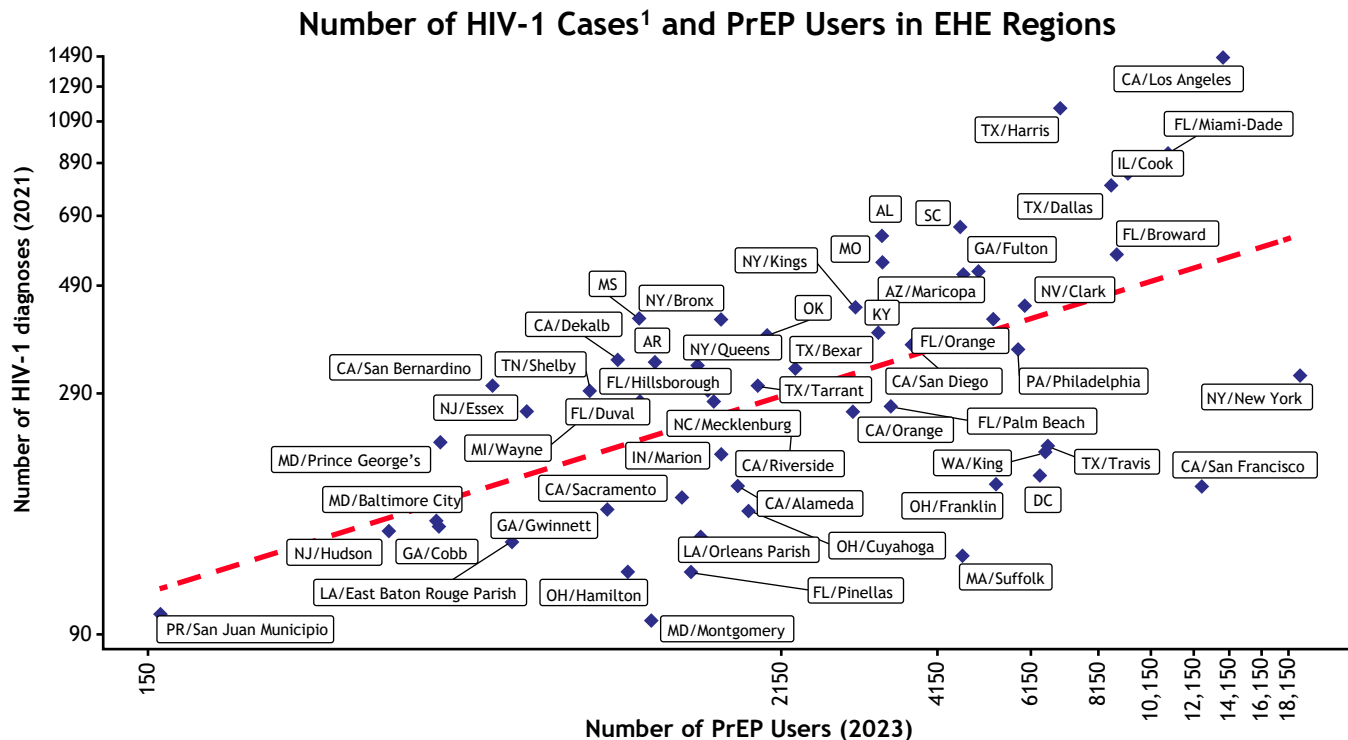
Dashed red line is the estimated linear regression line for the expected association between the number of tablets per week (2019-2023) and HIV-1 incidence (2021)¹

PrEP Uptake in EHE Regions

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- Across EHE regions, the number of PrEP users ranged from 158 in San Juan Municipio, PR, to 19,059 in New York County, NY
- The number of PrEP users tended to be higher in EHE regions with higher numbers of HIV-1 diagnoses



Dashed red is the estimated linear regression line for the expected association between the number of PrEP users (2023) and number of HIV-1 diagnoses (2021)¹

EHE, Ending the HIV Epidemic in the US; PrEP, pre-exposure prophylaxis.

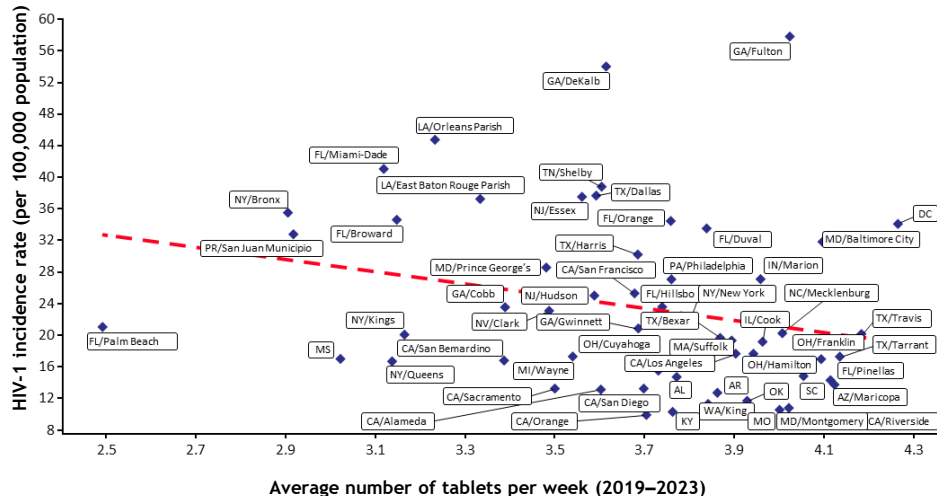
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Comparing PrEP Usage Across EHE Regions

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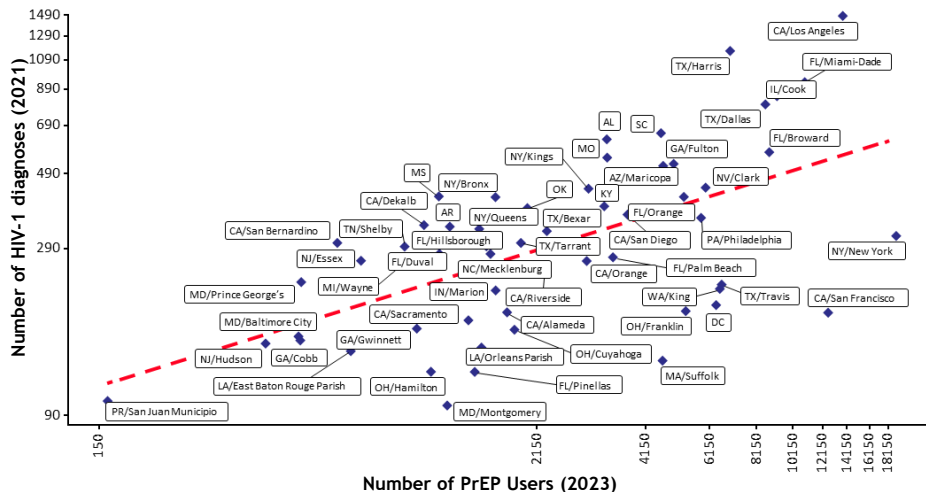


HIV-1 Incidence Rate¹ and PrEP Adherence in EHE regions



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Numbers of HIV-1 Cases¹ and PrEP Users in EHE Regions



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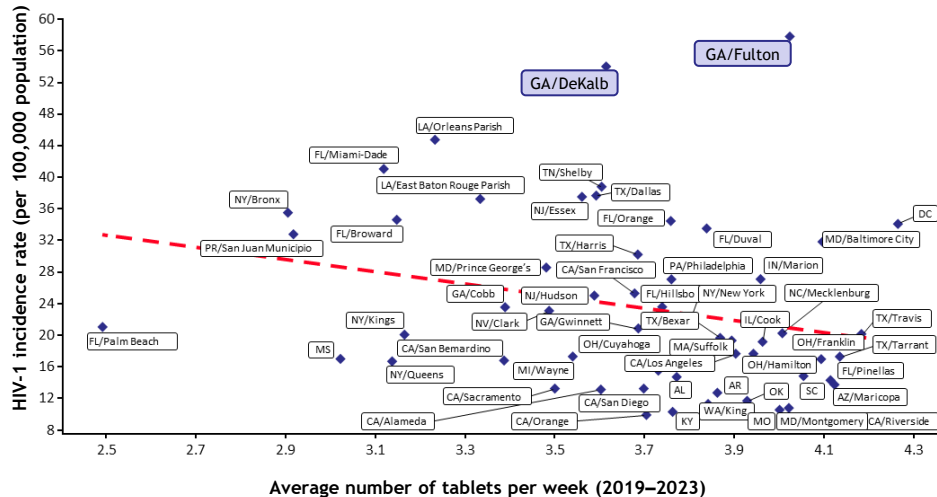
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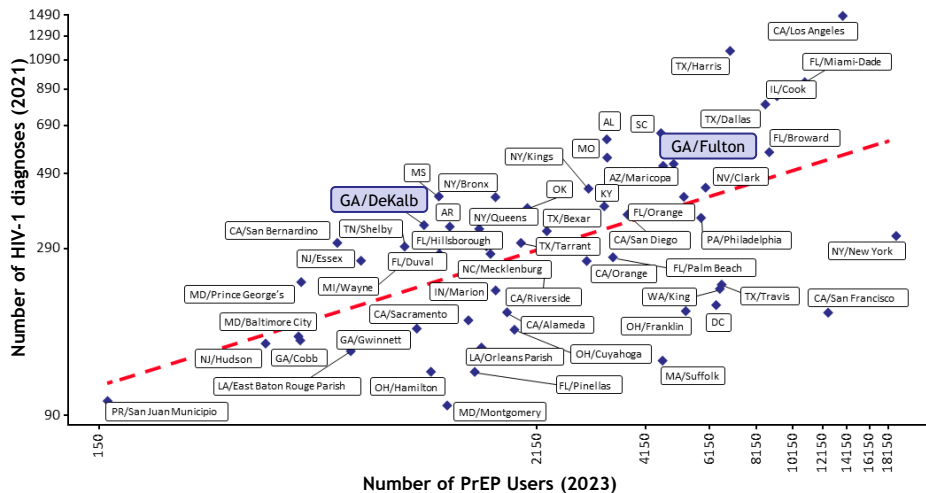


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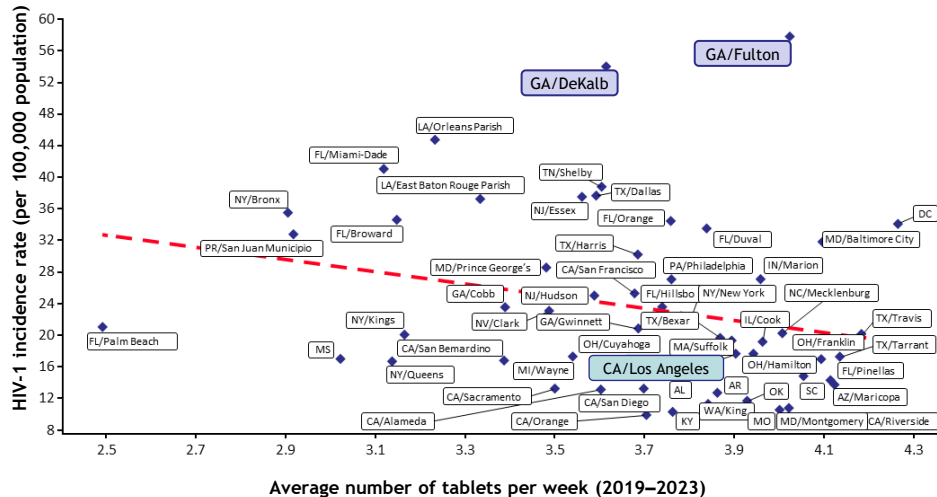
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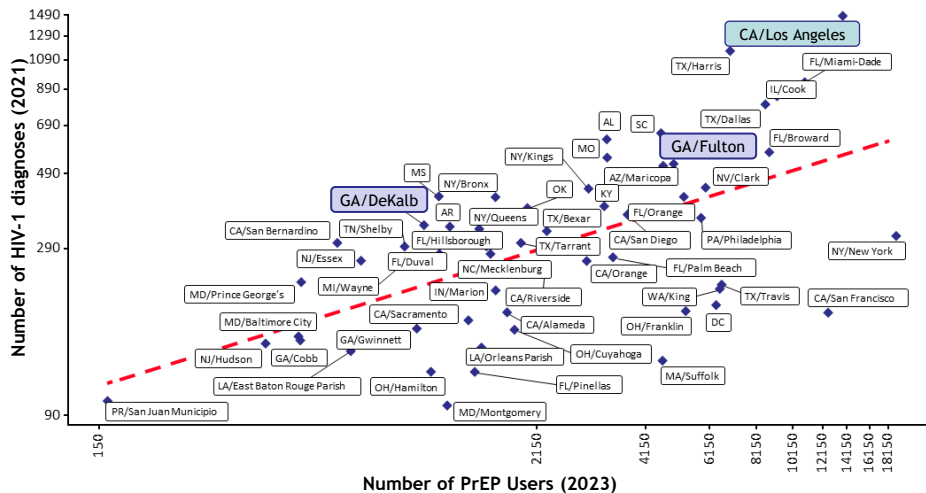


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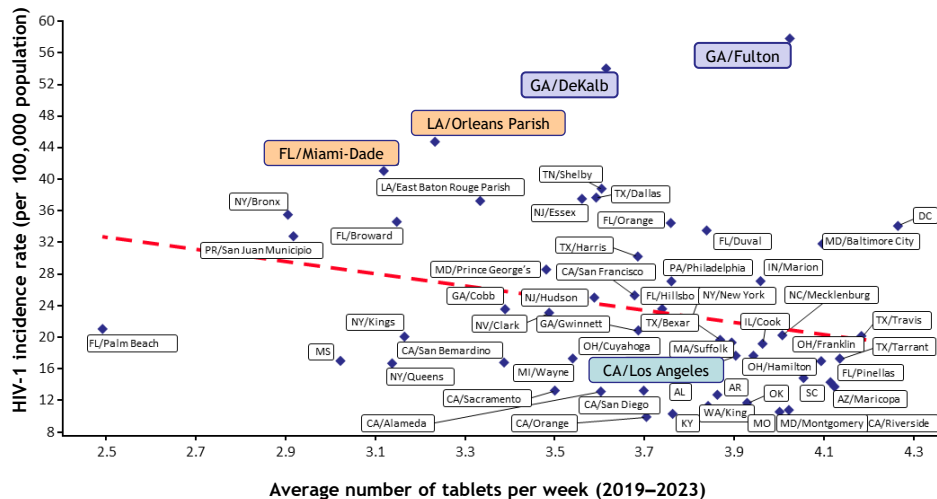
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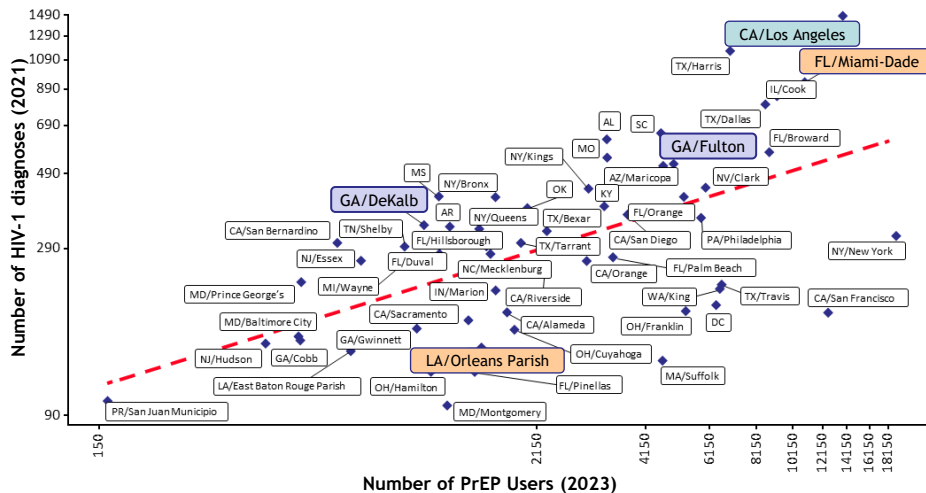


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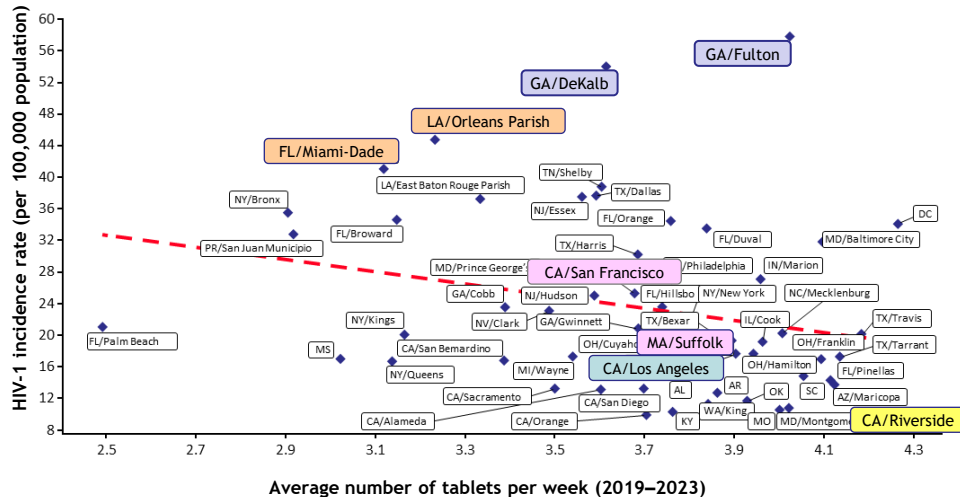
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Comparing PrEP Usage Across EHE Regions

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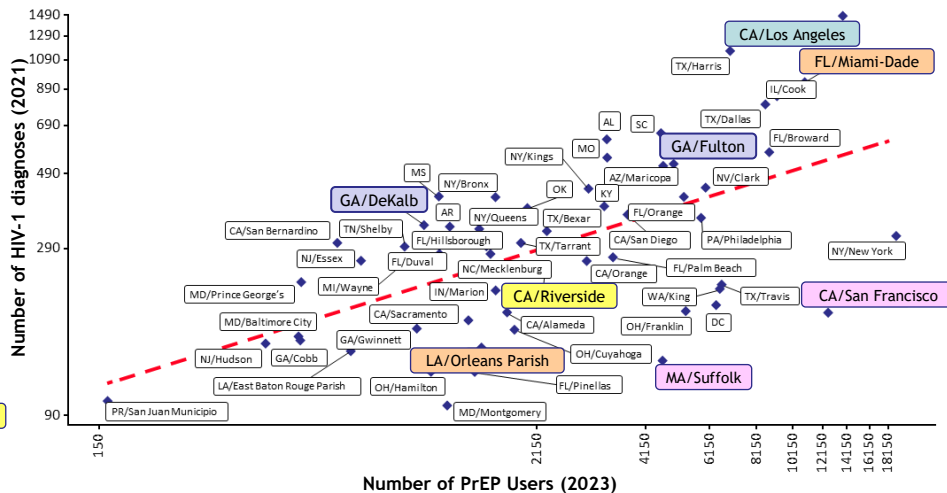


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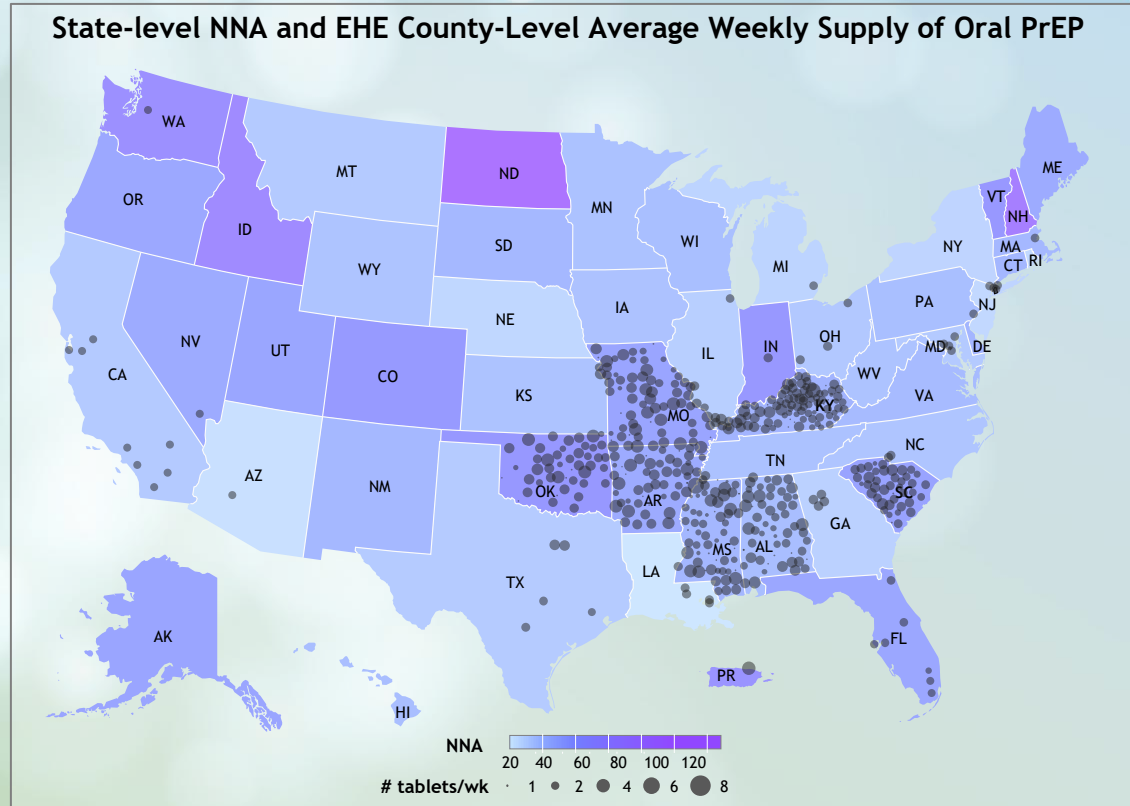
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Oral PrEP Adherence by County and NNA by State

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- The median weekly PrEP supply across 48 EHE counties was 3.5 tablets per week
- The median NNA was 40 individuals; NNA was lowest in Louisiana (20.7) and highest in New Hampshire (90.6)
 - The high NNA in North Dakota (122) was based on a very small sample size
- Efforts to increase adherence are more likely to reduce HIV-1 incidence in states with low NNA than in states with high NNA



NNA was calculated by $1 / (\text{percent of new HIV-1 infections for individuals with } <4 \text{ tablets average weekly supply} - \text{percent of new HIV-1 infections for individuals with } \geq 4 \text{ tablets average weekly supply})$. Individuals were observed over 12 months from index date (first submitted PrEP claim) for new HIV-1 infections. EHE, Ending the HIV Epidemic in the US; NNA, numbers needed to adhere; PrEP, pre-exposure prophylaxis.

Limitations

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- Adherence was assessed as the number of tablets supplied per week as a surrogate; number of tablets taken each week and use patterns relative to windows or risk were not directly measured
- Event-driven/on-demand use of oral PrEP was not considered due to limitations in identifying it in claims data
- No individual-level PrEP-use data were available
- The analysis was based on pharmacy claims and may have omitted clinically-relevant data
- Causal inferences cannot be drawn from this descriptive study, as many factors may contribute to geographic variations



- Overall, the majority (55%) of individuals had an average PrEP supply of <4 tablets per week, with lower average weekly PrEP supplies in EHE versus non-EHE regions
- Comparing average weekly PrEP supplies across EHE regions with CDC-published HIV-1 rates revealed disparities in PrEP usage, suggesting the need for more regionally-targeted strategies to improve PrEP uptake and adherence
 - EHE regions with low average weekly PrEP supplies, high HIV-1 incidence, and low NNA values should consider focusing on efforts to improving adherence among PrEP users
 - EHE regions with high numbers of new HIV-1 diagnoses and low numbers of PrEP users should consider extending PrEP coverage through enhanced PrEP awareness and by addressing coverage barriers
- In addition to efforts aiming to improve oral PrEP adherence, the availability of new PrEP modalities with higher adherence and persistence may also help address unmet needs in these populations

Disclosures and Acknowledgments

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- Li Tao, Juan Yang, Dylan Mezzio, Joshua Gruber, and Woodie Zachry are all employees and shareholders of Gilead Sciences, Inc.
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