

## Background

- Neighborhood contextual factors are drivers of HIV health outcomes, but there is inconsistent evidence on impact of neighborhood indicators on viral suppression.
- National AIDS Program in Brazil has provided universal HIV care and ART since 1996.
- HIV-related disparities remain with deep neighborhood and health inequities in Rio de Janeiro, Brazil.
- Understanding the impact of neighborhood context, using multidimensional measures such as the municipal human development index (MHDI) and social vulnerability index (SVI), may help identify opportunities to support HIV-infected adults.

## Research Question

*What is the association between individual characteristics, neighborhood socioeconomic indicators, and viral suppression after ART initiation among HIV-infected adults in the metropolitan region of Rio de Janeiro Brazil?*

## Methods

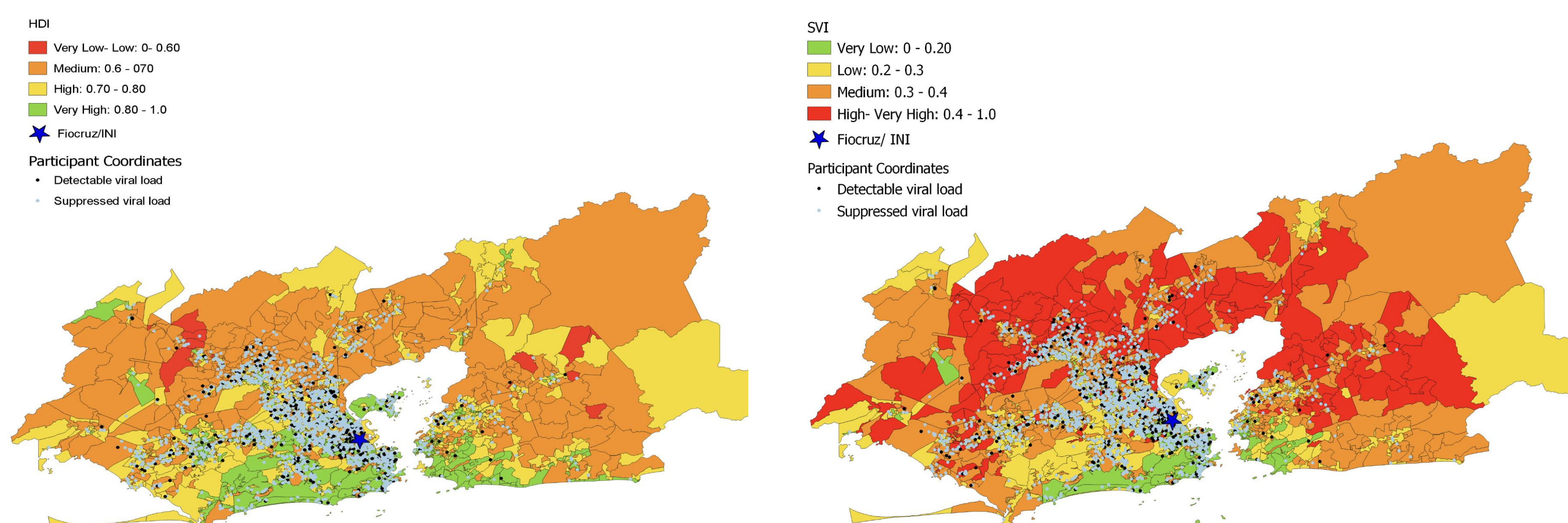
- Study population
  - Institute of Infectious Disease (INI)/Fiocruz cohort
  - Inclusion criteria: adults initiating ART between January 1, 2000 and December 31, 2017 and residing in the metropolitan region of Rio de Janeiro
  - Exclusion criteria: injection drug use, viral load <400 copies/mL at ART initiation, death within 90 days of initiation date, missing viral load six months after ART initiation
- Variables
  - Outcome: viral suppression (<400 copies/ml) six months after ART initiation
  - Individual characteristics: age, race, education, gender/sex/probable mode of HIV acquisition, HIV clinical characteristics
  - Neighborhood socioeconomic context: MHDI and SVI
- Statistical analysis: descriptive statistics, unadjusted and multilevel adjusted logistic regression

## Results

### Unadjusted and adjusted logistic regression models for viral suppression

	Unadjusted		Model 1: HDI		Model 2: SVI	
	OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
<b>Pre-treatment CD4 count (cells/mm<sup>3</sup>)</b>						
<200	Ref	Ref	Ref	Ref	Ref	Ref
200-350	1.38 (1.04, 1.82)	0.03	1.23 (0.91, 1.67)	0.18	1.23 (0.91, 1.67)	0.18
350-500	1.42 (1.00, 2.03)	0.05	1.28 (0.86, 1.90)	0.22	1.27 (0.85, 1.88)	0.24
>500	1.44 (0.98, 2.11)	0.06	1.33 (0.86, 2.05)	0.20	1.34 (0.87, 2.06)	0.19
Unknown	0.45 (0.34, 0.61)	<0.0001	0.55 (0.35, 0.84)	0.006	0.54 (0.35, 0.84)	0.006
<b>Pre-treatment viral load (copies/mL)</b>						
<100,000	Ref	Ref	Ref	Ref	Ref	Ref
≥100,000	0.69 (0.54, 0.88)	0.003	0.74 (0.56, 0.97)	0.03	0.74 (0.56, 0.97)	0.03
Unknown	0.42 (0.32, 0.54)	<0.0001	0.78 (0.52, 1.18)	0.24	0.78 (0.52, 1.17)	0.24
<b>Opportunistic illness</b>						
No	Ref	Ref				
Yes	0.99 (0.79, 1.25)	0.94				
<b>TB</b>						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	1.05 (0.79, 1.40)	0.75	1.20 (0.87, 1.65)	0.26	1.20 (0.87, 1.64)	0.26
<b>MHDI (IQR)</b>	0.72 (0.27, 1.87)	0.49				
<b>MHDI category</b>						
High- Very High	Ref	Ref	Ref	Ref		
Medium	0.95 (0.74, 1.21)	0.67	1.06 (0.81, 1.39)	0.68		
Very low- low	0.98 (0.76, 1.27)	0.88	1.12 (0.84, 1.50)	0.44		
<b>SVI median (IQR)</b>	1.71 (0.62, 4.61)	0.29				
<b>SVI category</b>						
Very Low- Low	Ref	Ref			Ref	Ref
Medium	0.99 (0.79, 1.25)	0.95			1.12 (0.87, 1.43)	0.39
High- Very High	1.05 (0.77, 1.44)	0.75			1.21 (0.85, 1.71)	0.29

### Geospatial distribution of MHDI and SVI



## Discussion

- High levels (84%) of viral suppression (VS) are achieved in a context of universal access to HIV and ART in Rio de Janeiro, Brazil.
- Neighborhood socioeconomic indicators, as measured by level of development and vulnerability, did not impact VS six months after ART initiation.
- Individual variables of older age, higher education, identifying as cis-MSM, and later calendar year of ART initiation were associated with improved VS outcomes.
  - Most recent calendar year of ART initiation is the strongest predictor.
  - Women continue to lag behind despite improvement in ART regimens.

## Limitations

- Nearly quarter of participants excluded due to missing viral load.
- Objective neighborhood socioeconomic indicators may not capture lived experiences and perspectives of neighborhood disorder, stigma, social cohesion that may drive healthcare access and outcomes.
- Only analyzed initial VS, which may not fully portray the longitudinal impact of neighborhood context on VS and opportunities to engage in care.

## Future Directions

- Longitudinal analysis of variables on HIV outcomes.
- Impact of neighborhood indicators across the HIV care continuum.

## Acknowledgements

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