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## Temporal trends of population viral suppression in the context of Universal Test and Treat: results from the ANRS 12249 TasP trial in rural South Africa

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# Temporal trends of population viral suppression in the context of Universal Test and Treat: results from the ANRS 12249 TasP trial in rural South Africa

ANRS 12249  
TasP trial

Joseph Larmarange, Mamadou Hassimiou Diallo, Nuala McGrath, Collins Iwuji, Mélanie Plazy, Rodolphe Thiébaud, Frank Tanser, Till Bärninghausen, Joanna Orne-Gliemann, Deenan Pillay, François Dabis for the ANRS 12249 TasP Study Group



TUAC0103 • 24 July May 2018

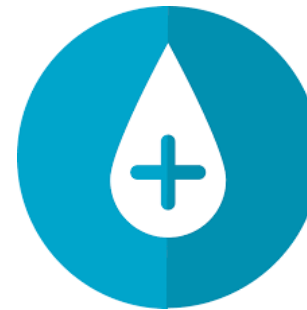


# SCIENTIFIC CONTEXT

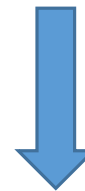
- › **Universal Test and Treat (UTT)** aims to maximize PLWHIV on ART and virally suppressed in a community.
- › According to mathematical modelling, UTT would lead to **reduction in HIV incidence**.



↗ ART coverage  
(% of PLWHIV on ART)



↗ Population Viral Suppression  
(% being virally suppressed)



↘ HIV incidence  
(new infections at population level)

# THE ANRS 12249 TASP TRIAL

- › One of 5 international trials aiming at evaluating UTT approaches
- › *Design*: cluster-randomised trial
- › *Timeline*: March 2012-June 2016
- › *Study setting*: Hlabisa sub-district
  - › ~28 000 individuals aged 16+
  - › isiZulu speaking
  - › HIV prevalence ~30%
  - › frequent migration
  - › low marital rates & late marriage
  - › only 10% are employed



# TASP TRIAL PROCEDURES



**Homestead Identification**



**Homestead visit**

1. Registration of resident adults
2. Update of resident members list
3. Exit forms



**Homestead procedures**

1. Individual questionnaires
2. DBS sample (lab tests)
3. Rapid HIV testing

repeated every ~six months



## Local governmental clinics

- › Matching between trial and governmental database at individual level
- › CD4 and viral load results / clinic visits
- › ART according to national guidelines



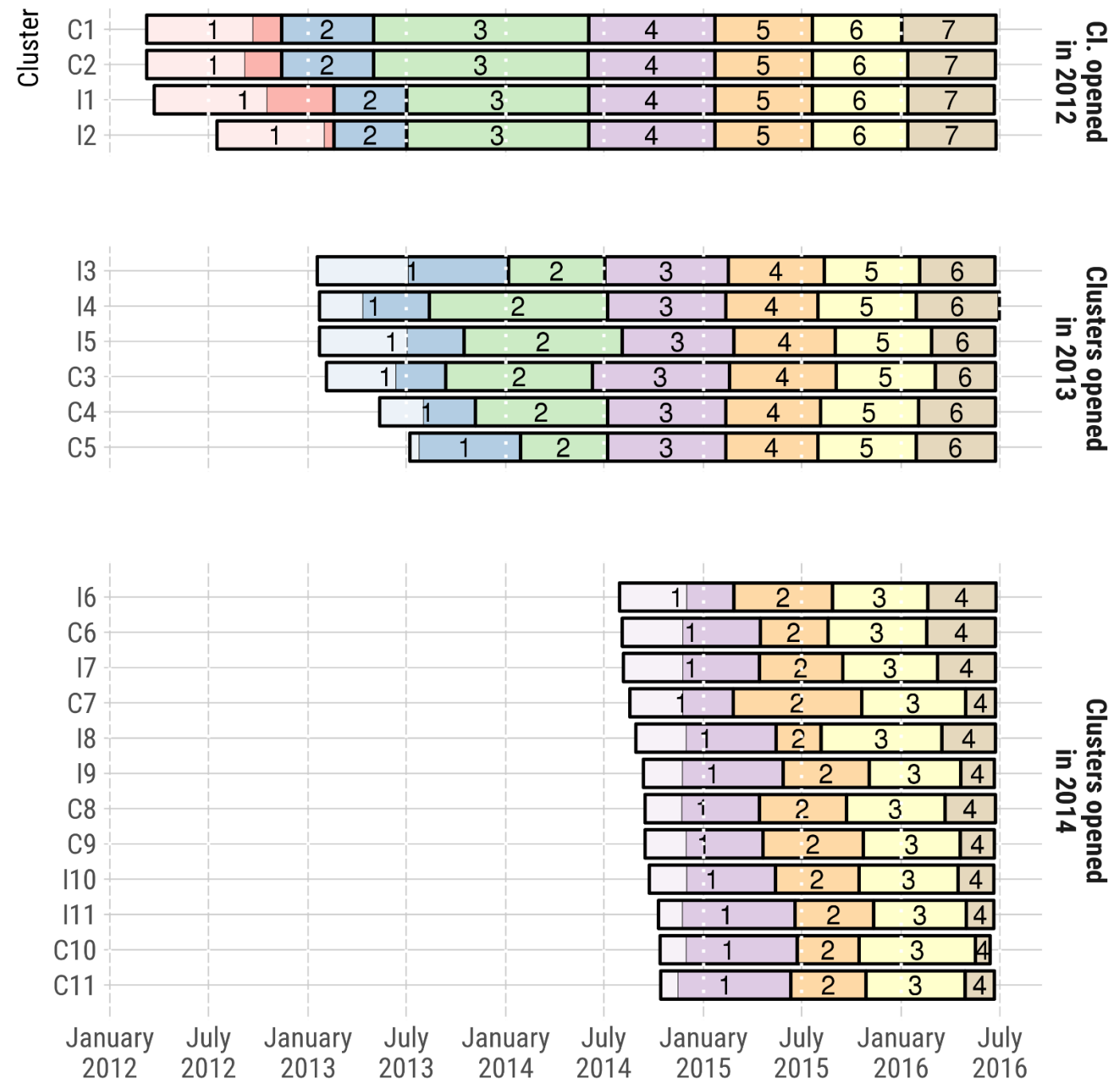
## Trial clinics

- › *Intervention arm*: immediate ART
- › *Control arm*: ART according to national guidelines

**if ascertained HIV+**  
(rapid test or self-report)  
**referred to trial clinic**

# TIMING OF FIELDWORK

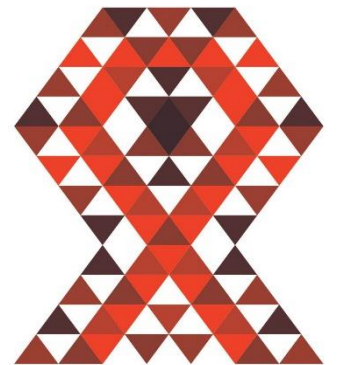
- › 4 clusters (opened in 2012)
- › 6 clusters (opened in 2013)
- › 12 clusters (opened in 2014)



*Light areas indicate the time required to complete the initial census of the population*

# PREVIOUS RESULTS

- › Main results were presented in Durban in 2016  
(Iwuji et al. *Lancet HIV* 2017)
- › **No significant difference** in HIV incidence between trial arms



**AIDS 2016**

DURBAN, SOUTH AFRICA JULY 18–22, 2016

#AIDS2016 | @AIDS\_CONFERENCE

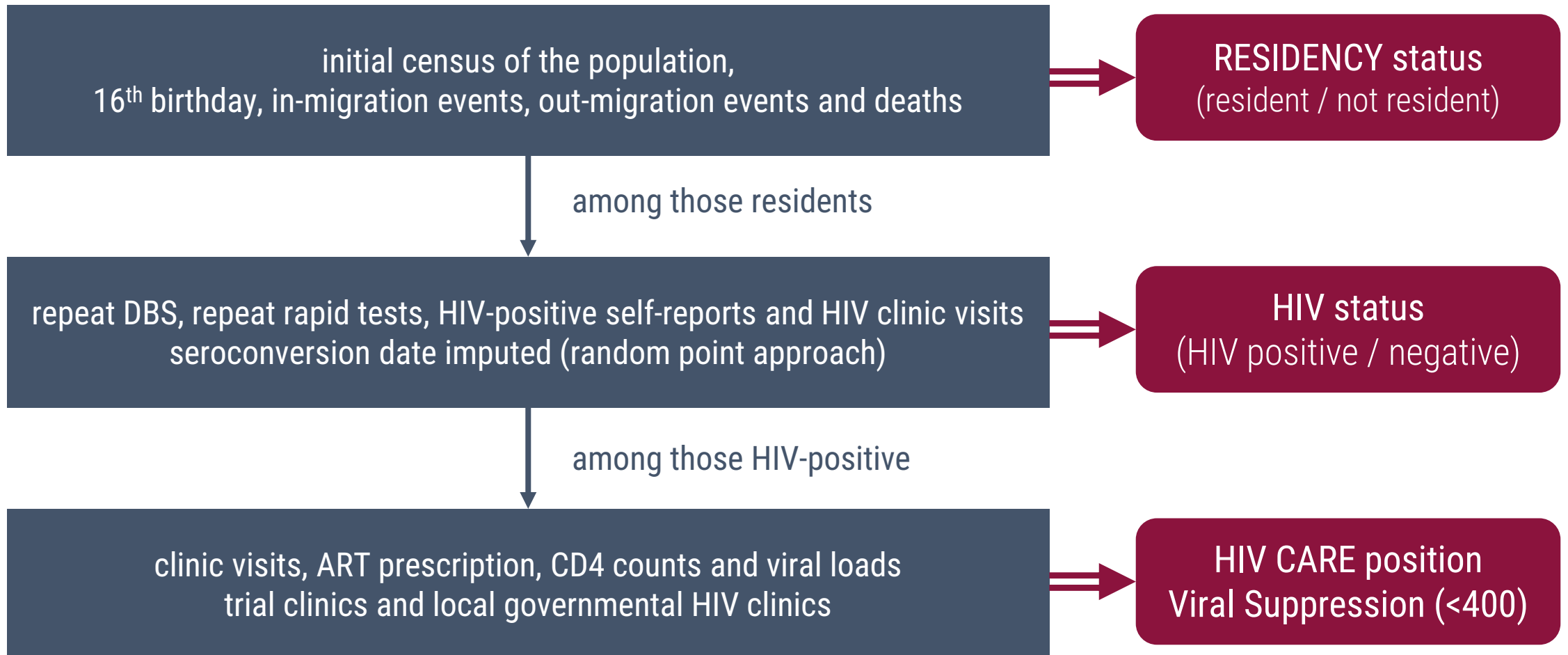
# RESEARCH QUESTION

- › Did population viral suppression improve during the course of the trial?
- › Differentially by arm?
- › According to trial interventions or contextual changes?

# APPROACH: COMPUTATION OF DAILY STATUSES

**28,419 adult residents were registered**

**for each calendar day**



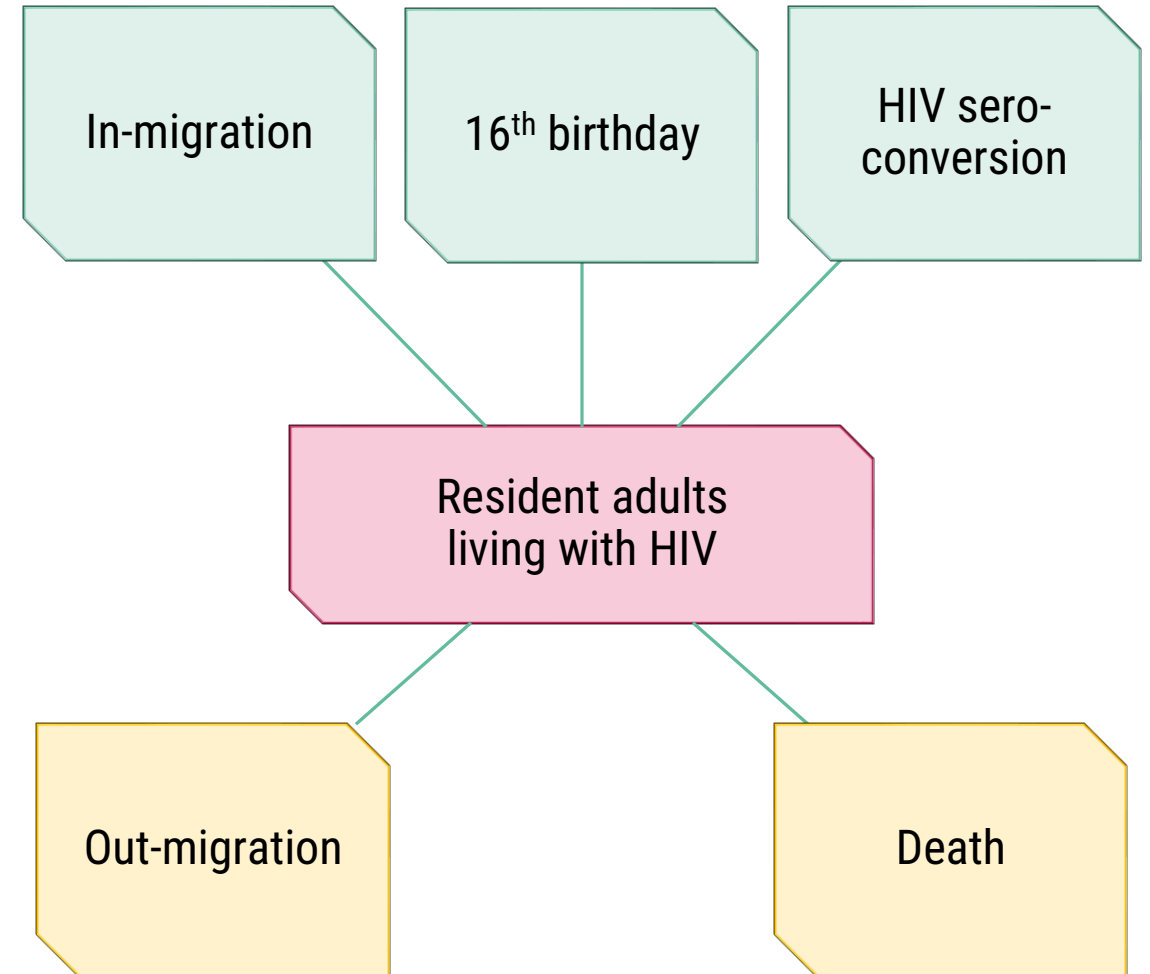


# CLUSTER-LEVEL POPULATION VIRAL SUPPRESSION

% being in care, on ART  
and virally suppressed

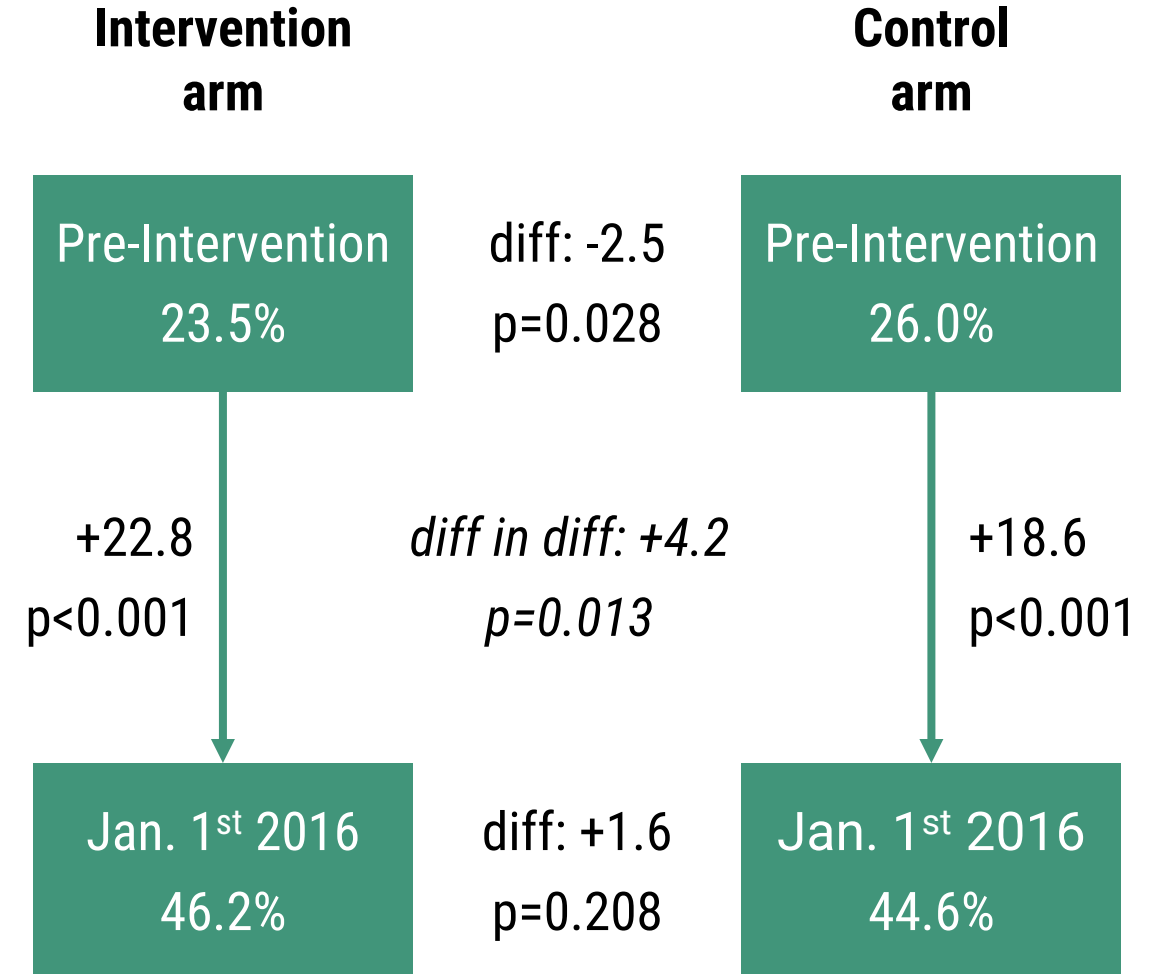
Computed at different time points  
(pre-intervention + daily)

## POPULATION VIRAL SUPPRESSION DENOMINATOR



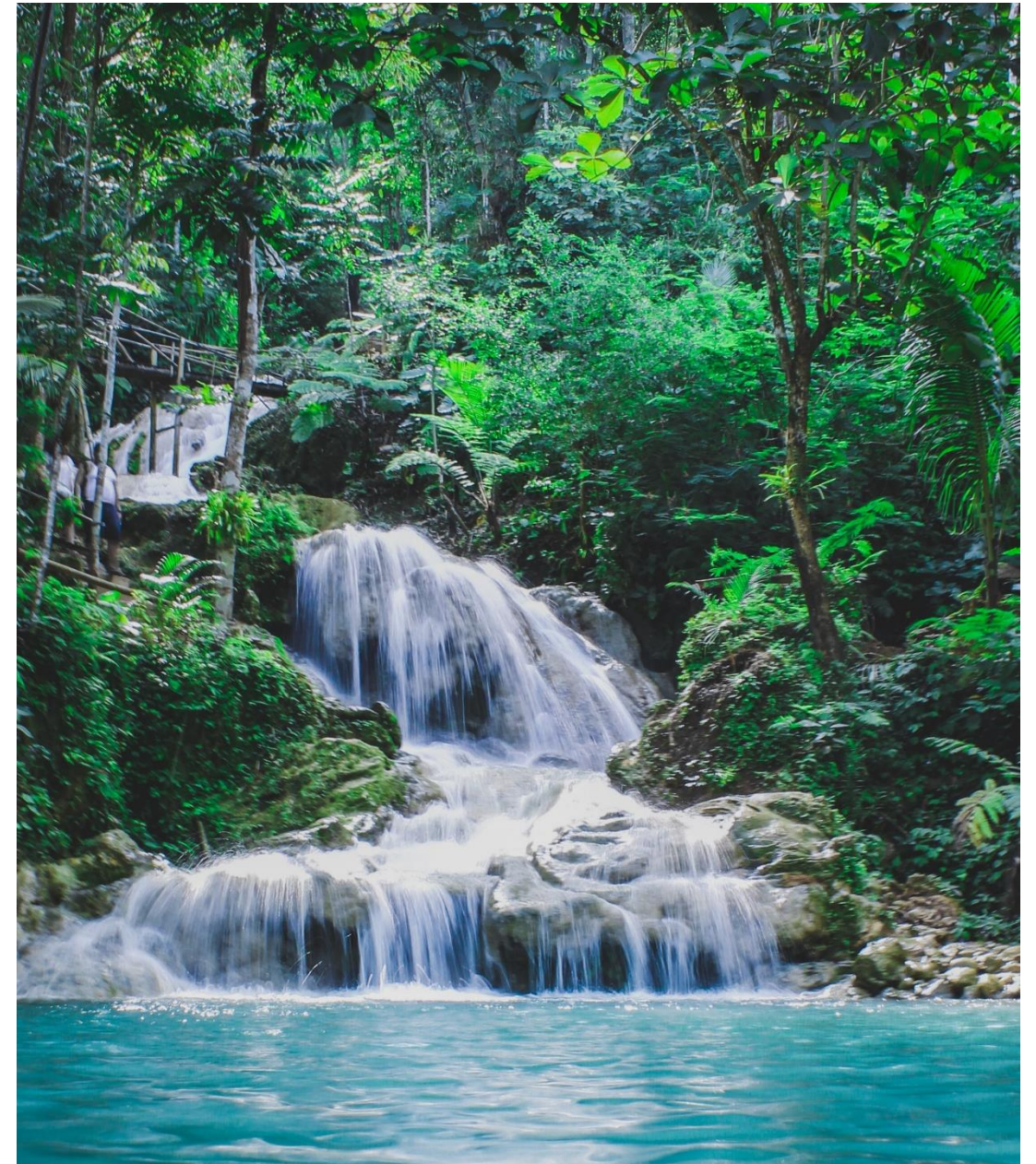
# OVERALL RESULTS

- › At baseline, population viral suppression **slightly lower** in intervention arm
- › **Significant increase** in both arms
- › A **slightly higher increase** in intervention arm
- › **No significant difference** between arms at the end of the trial

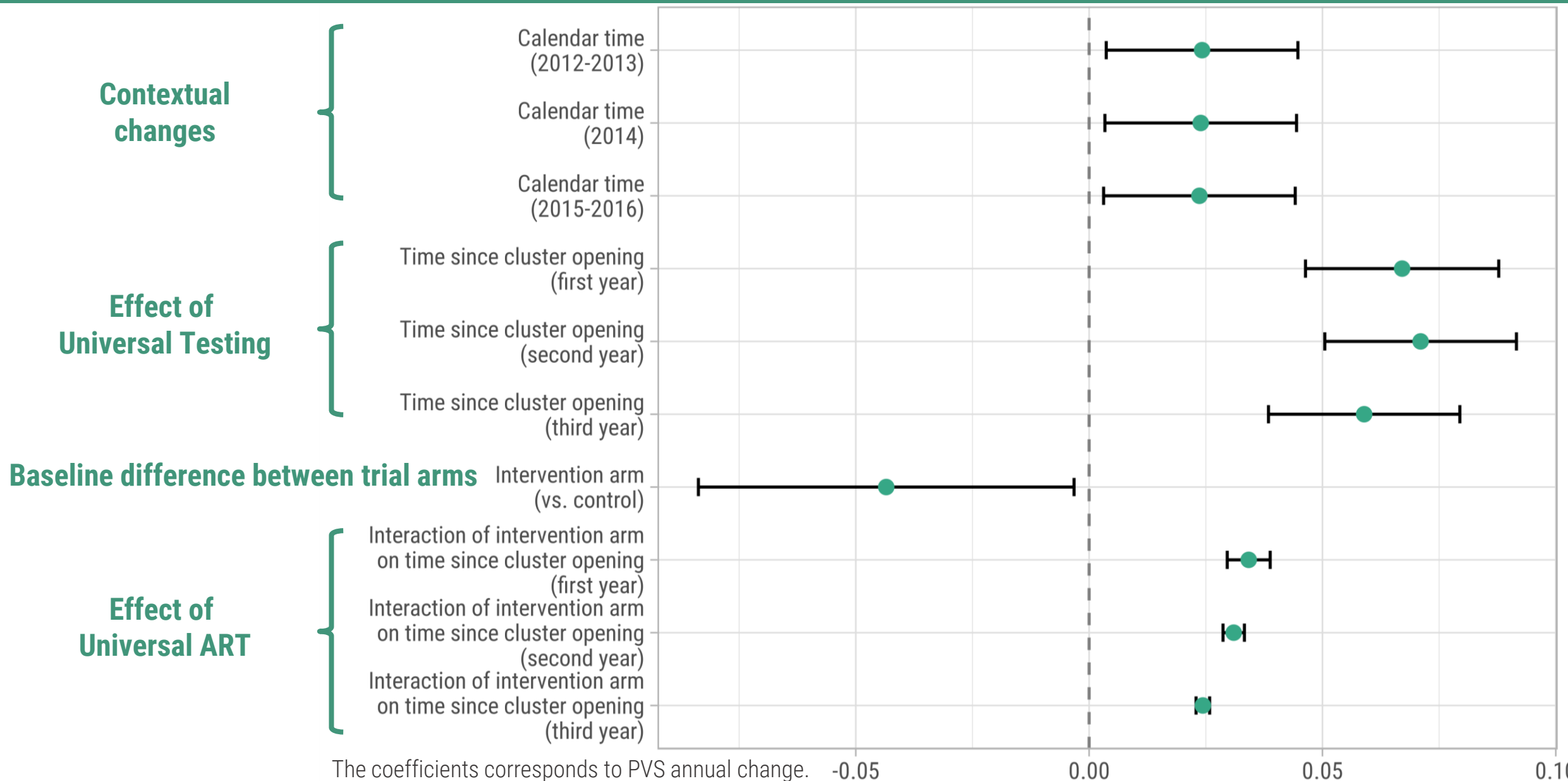


# MODELLING POPULATION VIRAL SUPPRESSION

- › Mixed linear model
- › One record per cluster and per day
- › Outcome: cluster-level population viral suppression
- › Factors:
  - › calendar time
  - › time since cluster opening
  - › trial arm
  - › interaction between trial and time since cluster opening
  - › socio-demographic characteristics (cluster-level)



# MODEL RESULTS: POPULATION VIRAL SUPPRESSION, TASP ANRS 12249



# LIMITATIONS

- › Care received in governmental clinics probably **underestimated** due to participants not matched between governmental and trial datasets
- › Care received in **private sector** or **outside the trial area** not captured
- › 9.5% of trial population with no observed HIV status and excluded from the analysis
- › Sensitivity analysis: results unchanged



# DISCUSSION

- › Although suboptimal, the TasP strategy **significantly improved** population viral suppression over time.
- › Mainly due to **universal testing** rather than **universal treatment**
- › Increase similar between arms  
→ explain the null effect of HIV incidence

*Changes in treatment guidelines not enough to increase population viral suppression*





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- Africa Centre staff
- Traditional Authorities
- Department of Health, South Africa
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ANRS 12249  
TasP trial

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