

# Projections of Global AIDS Epidemiology

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Stover Tim Hallett

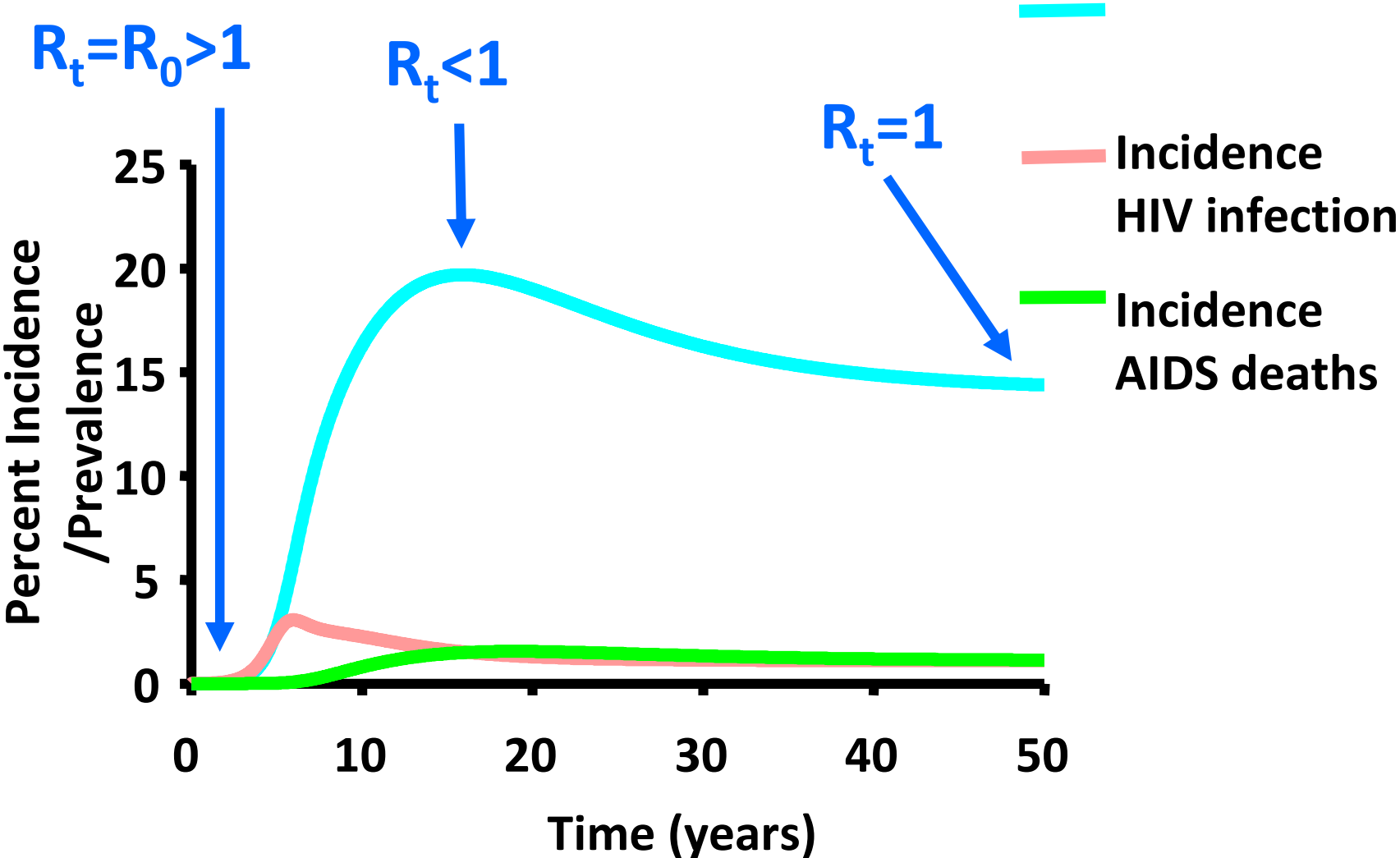
# **Issues to consider in projecting the future incidence of HIV, AIDS deaths and treatment need.**

- Behaviour change interventions
- Societal changes
- Treatment and transmission
- Strategies for patient management
- Treatment Guidelines – individual versus public health priorities

# Projections for aids2031

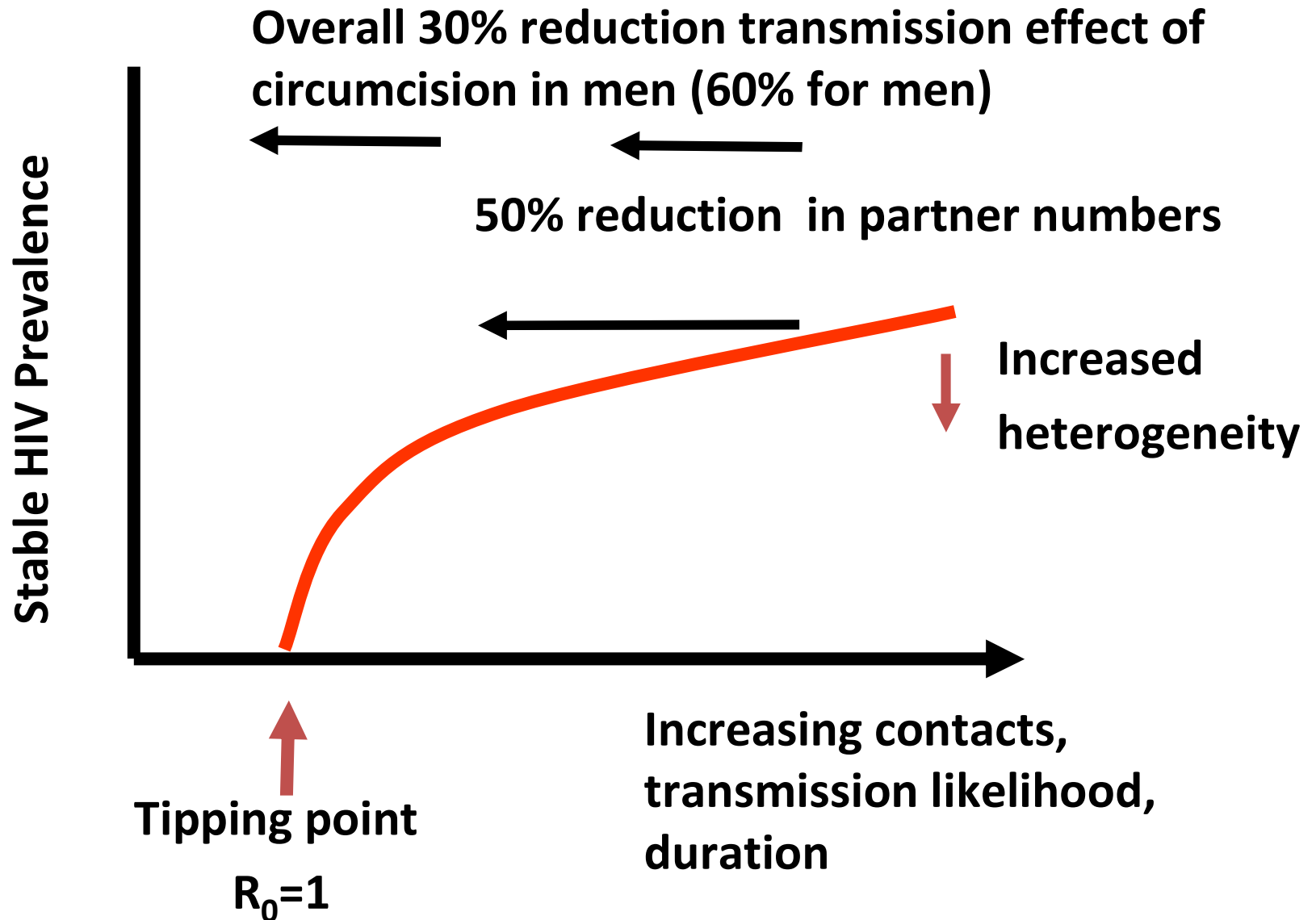
- Can we predict patterns of HIV incidence across the range of countries? How much could emerging epidemics, changes in risk behaviour and slower growing epidemics influence the spread of infection.
- Tipping points for incidence – changes in behaviour moving us below or above risk of spread.
- Current infections will progress over next 20 years.
- Resistance spread at worst will be on timescale of previous pandemic - how much a concern for now?

# The natural course of incidence and prevalence of a local HIV epidemic over time – from epidemic to endemic



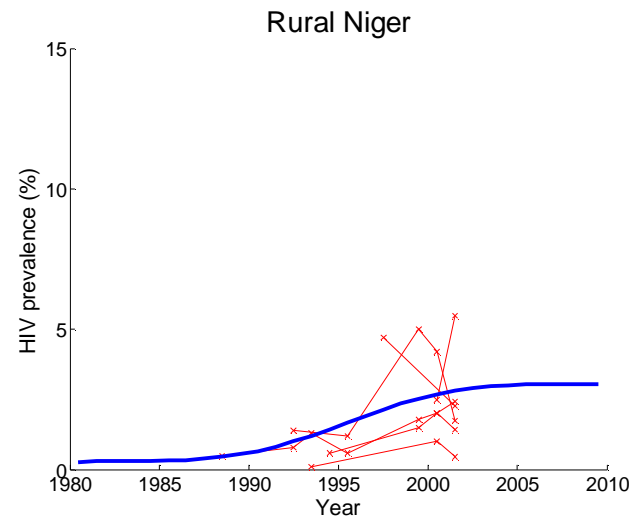
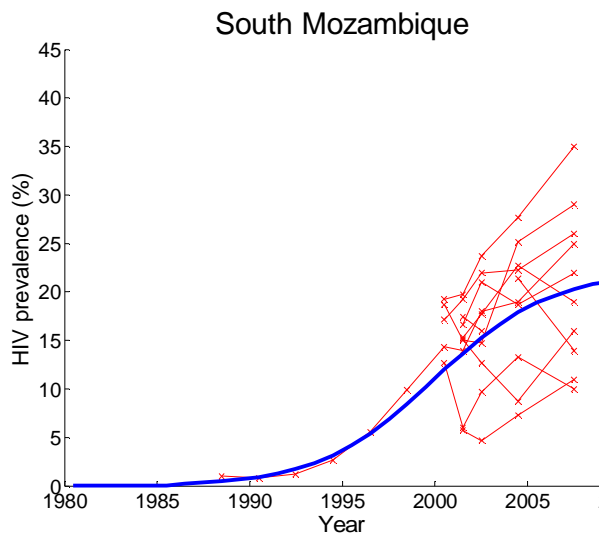
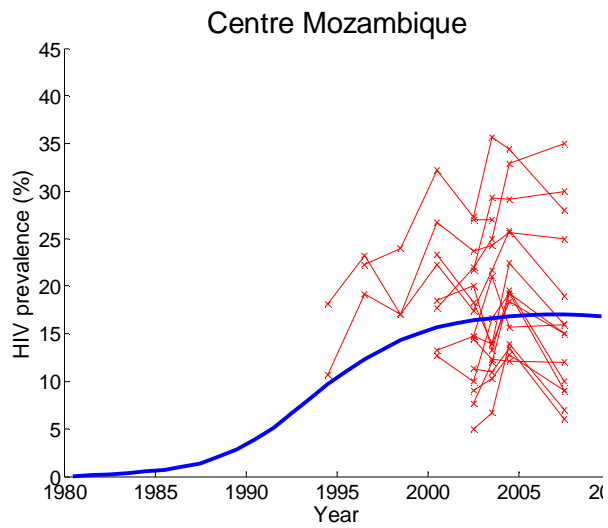
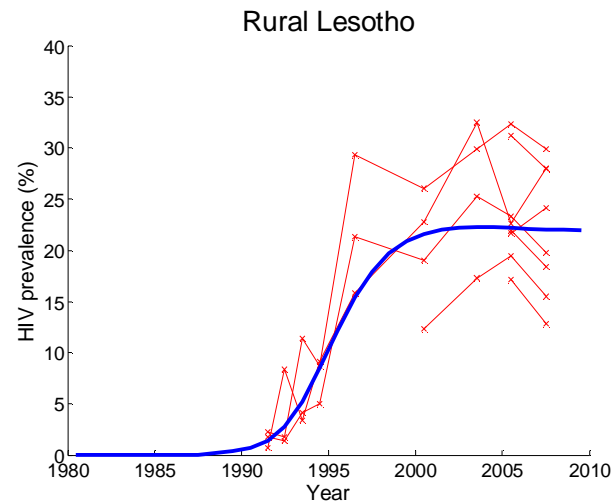
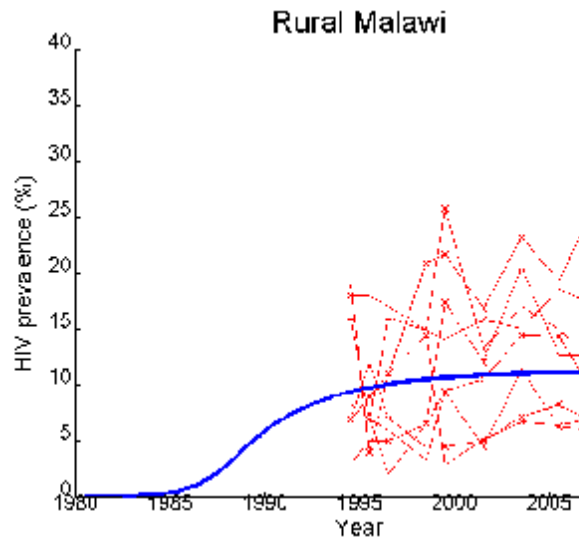
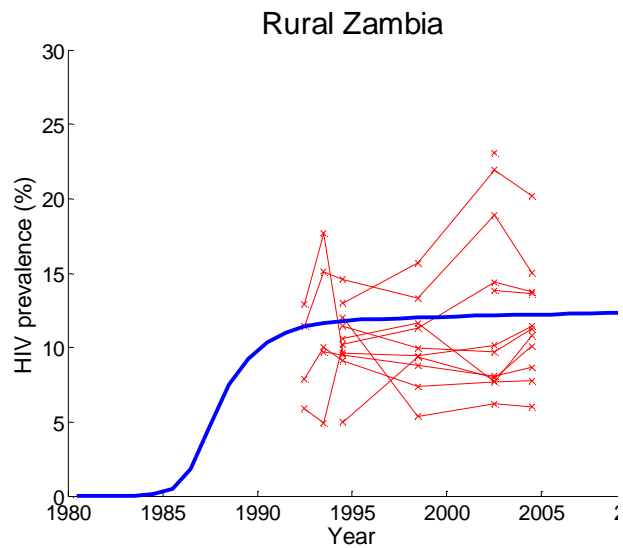
**Impact of interventions depends epidemiological context**

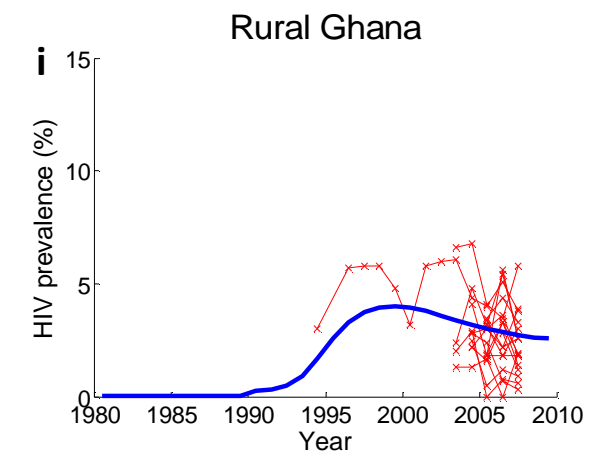
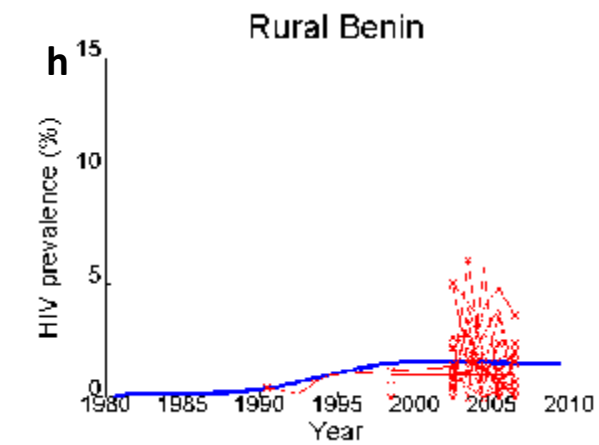
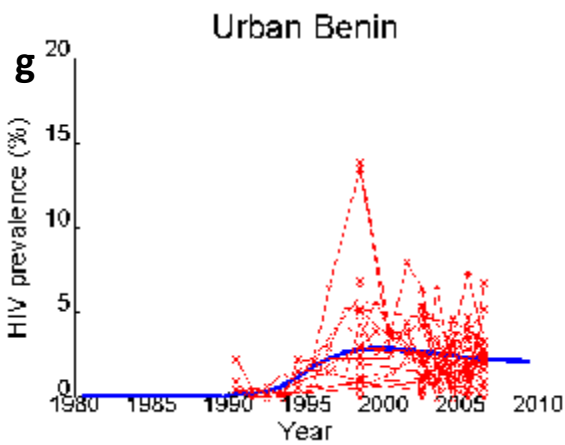
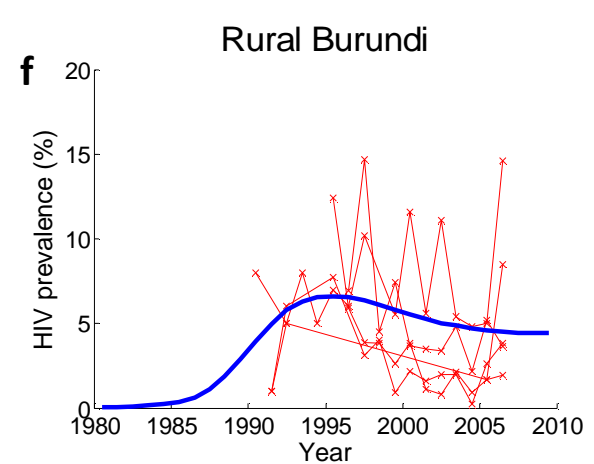
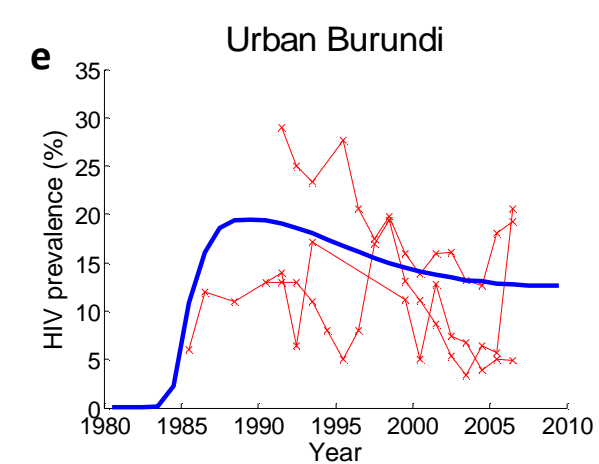
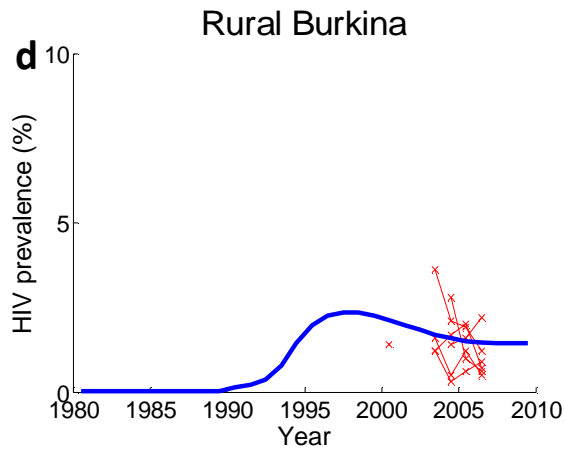
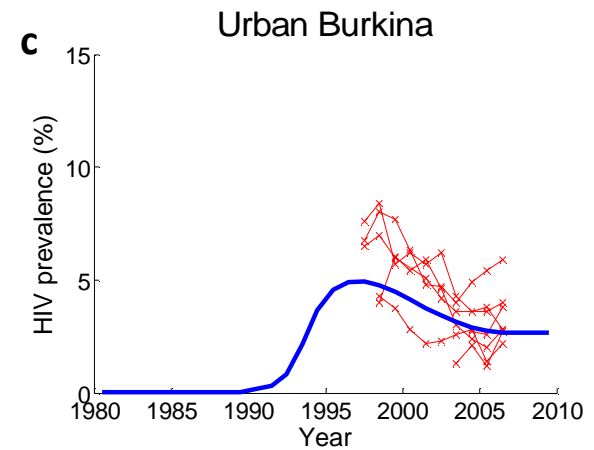
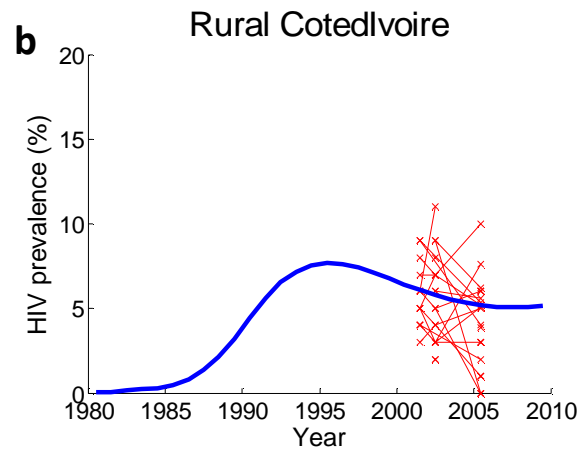
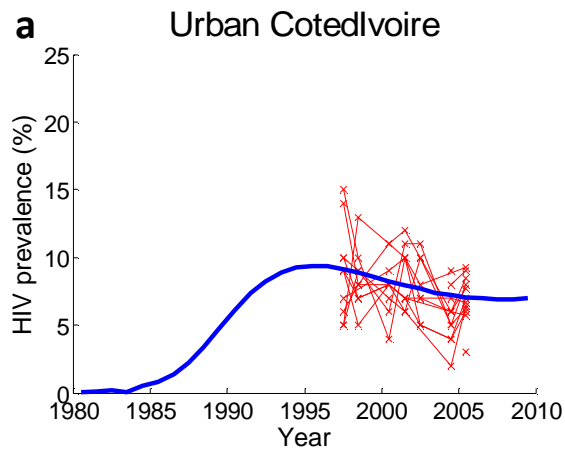
**Combining interventions can have synergies**

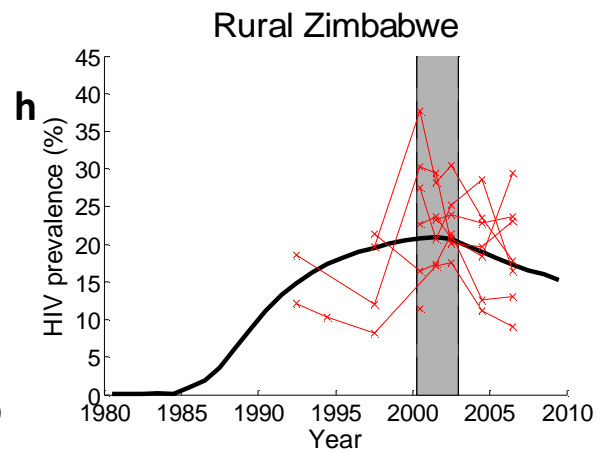
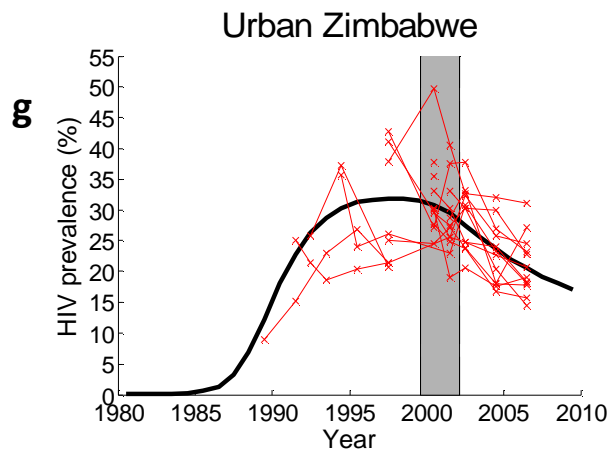
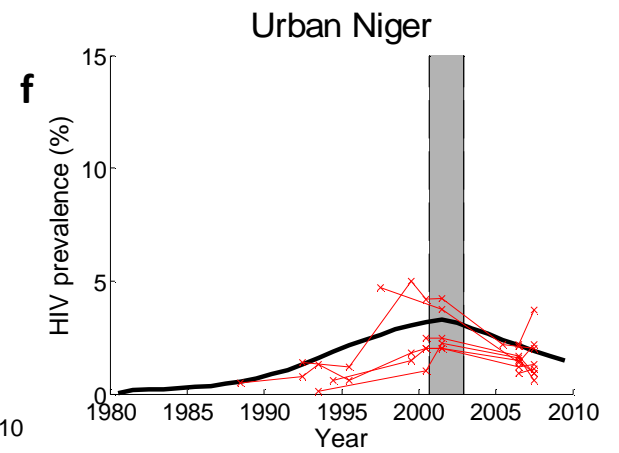
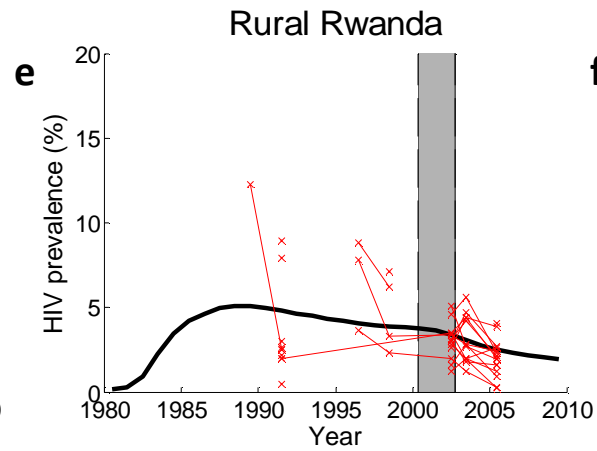
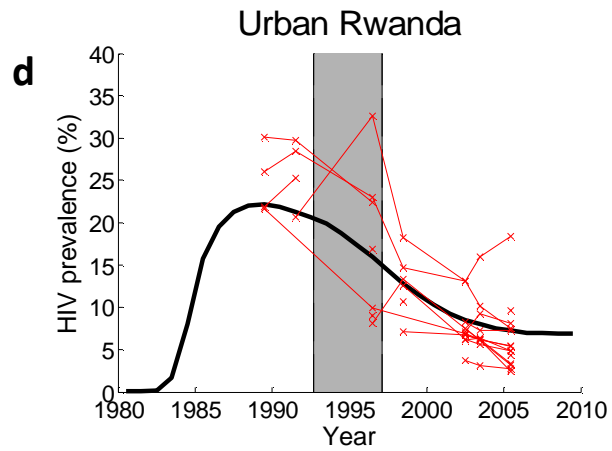
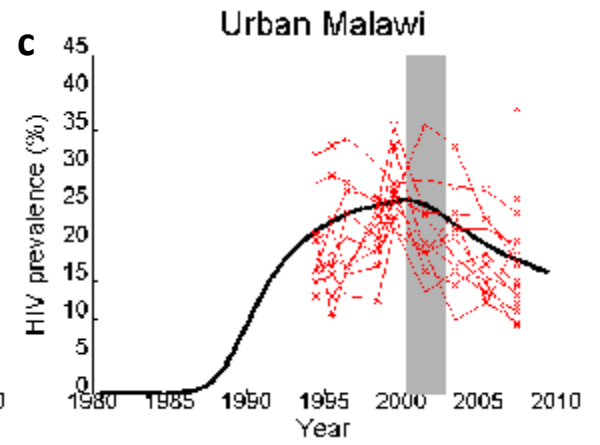
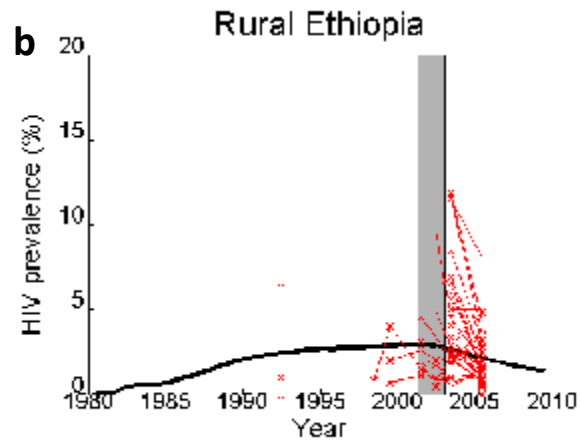
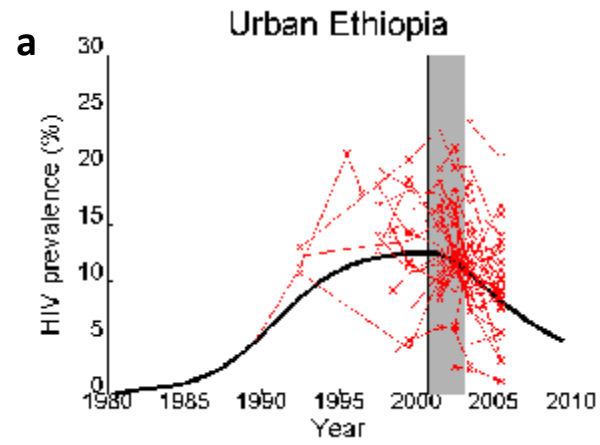


**CURRENT PATTERNS OF HIV SPREAD – STABILISING  
OR DECLINING PREVALENCE**

**ANALYSIS OF COUNTRIES FOR GLOBAL FUND  
EVALUATION**





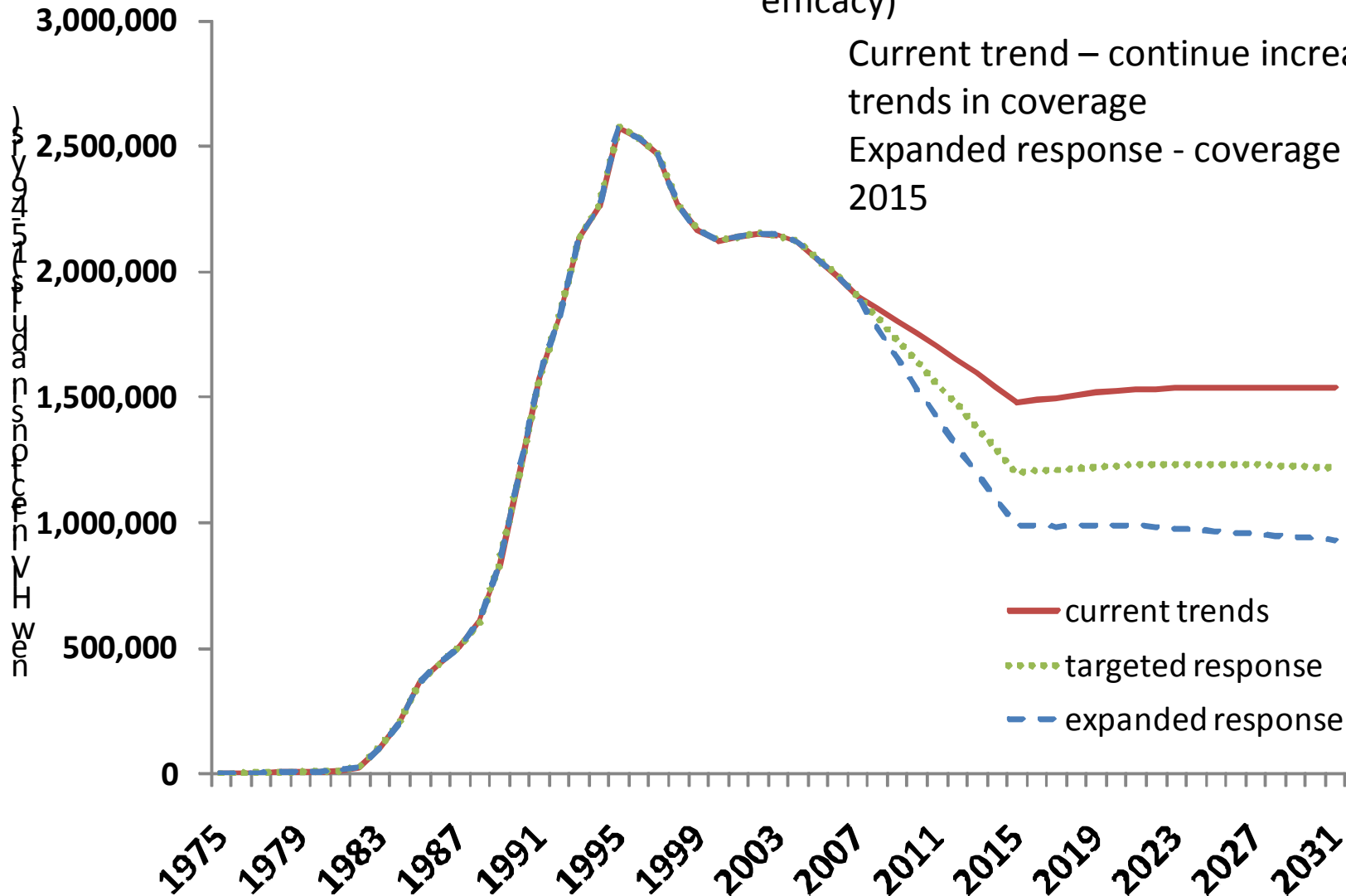


**GLOBAL PREDICTIONS FOR AIDS2031 – USING  
FUTURES INSTITUTE MODEL FITTED TO  
PREVALENCE ESTIMATES IN 2001 AND 2007**

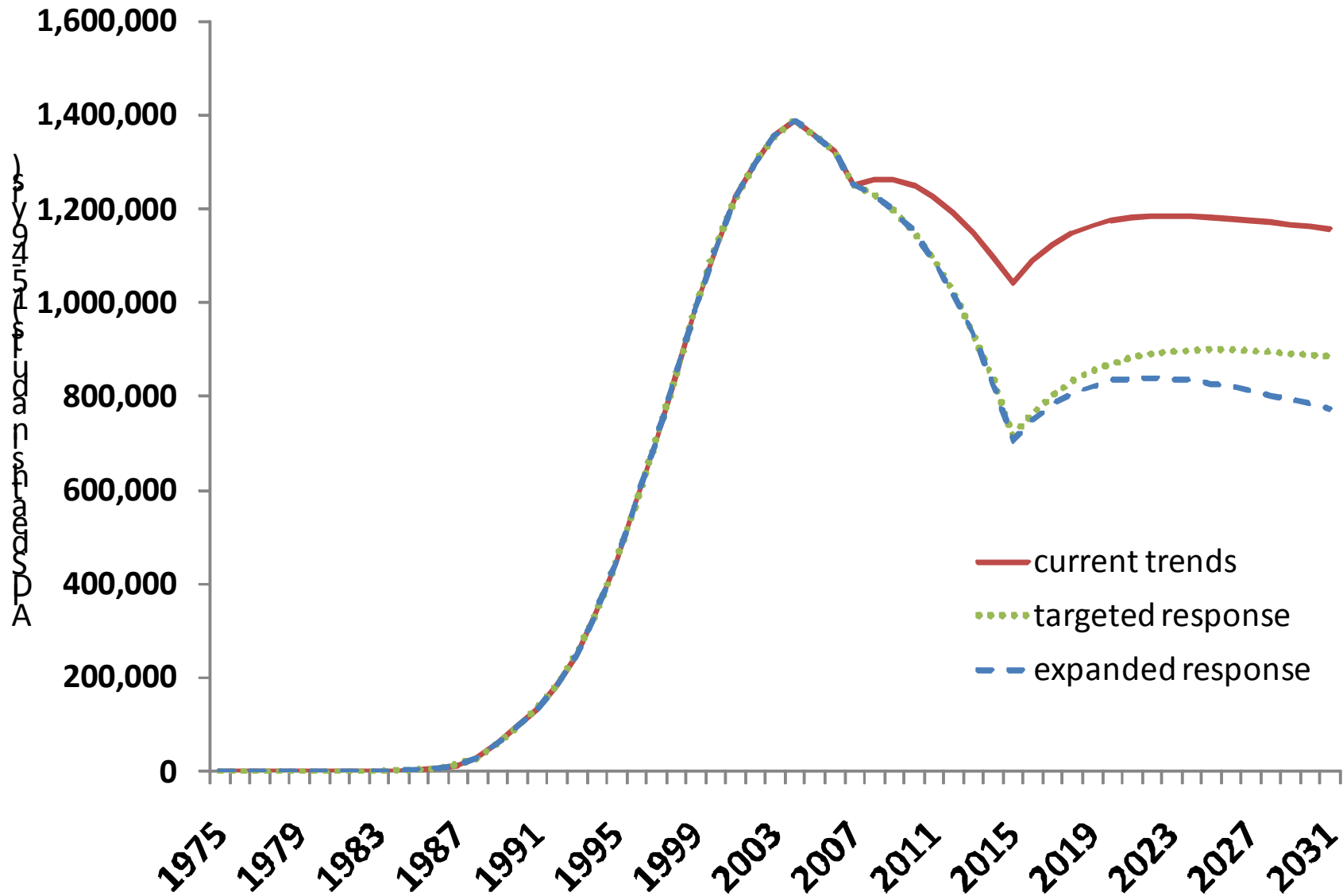
# A Annual new HIV infections (adults 15-49 yrs) 22 countries Representing 85% cases.

Assumes efficacy from Futures Institute  
Impact Matrix (systematic reviews of  
efficacy)

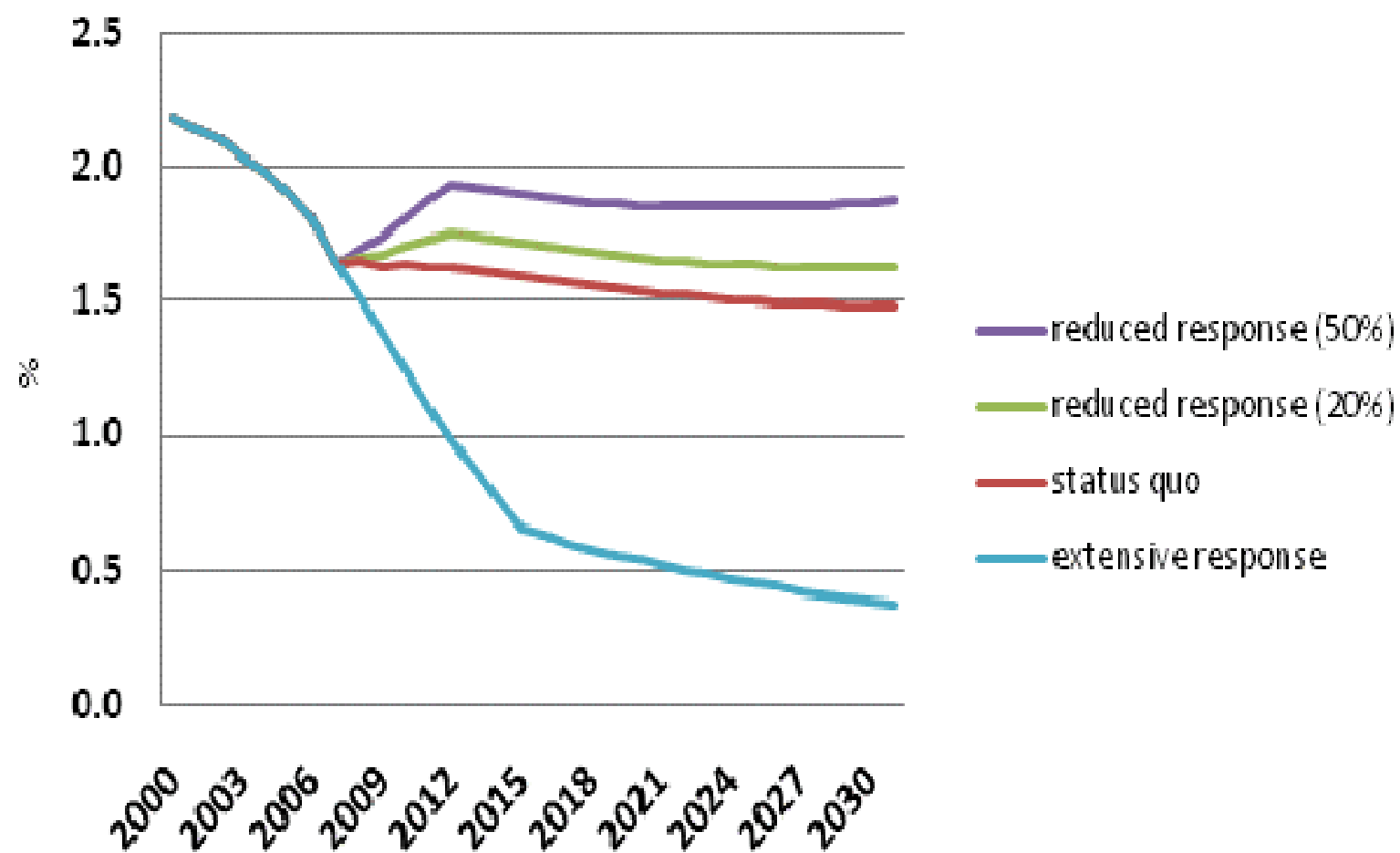
Current trend – continue increasing  
trends in coverage  
Expanded response - coverage at 80% by  
2015



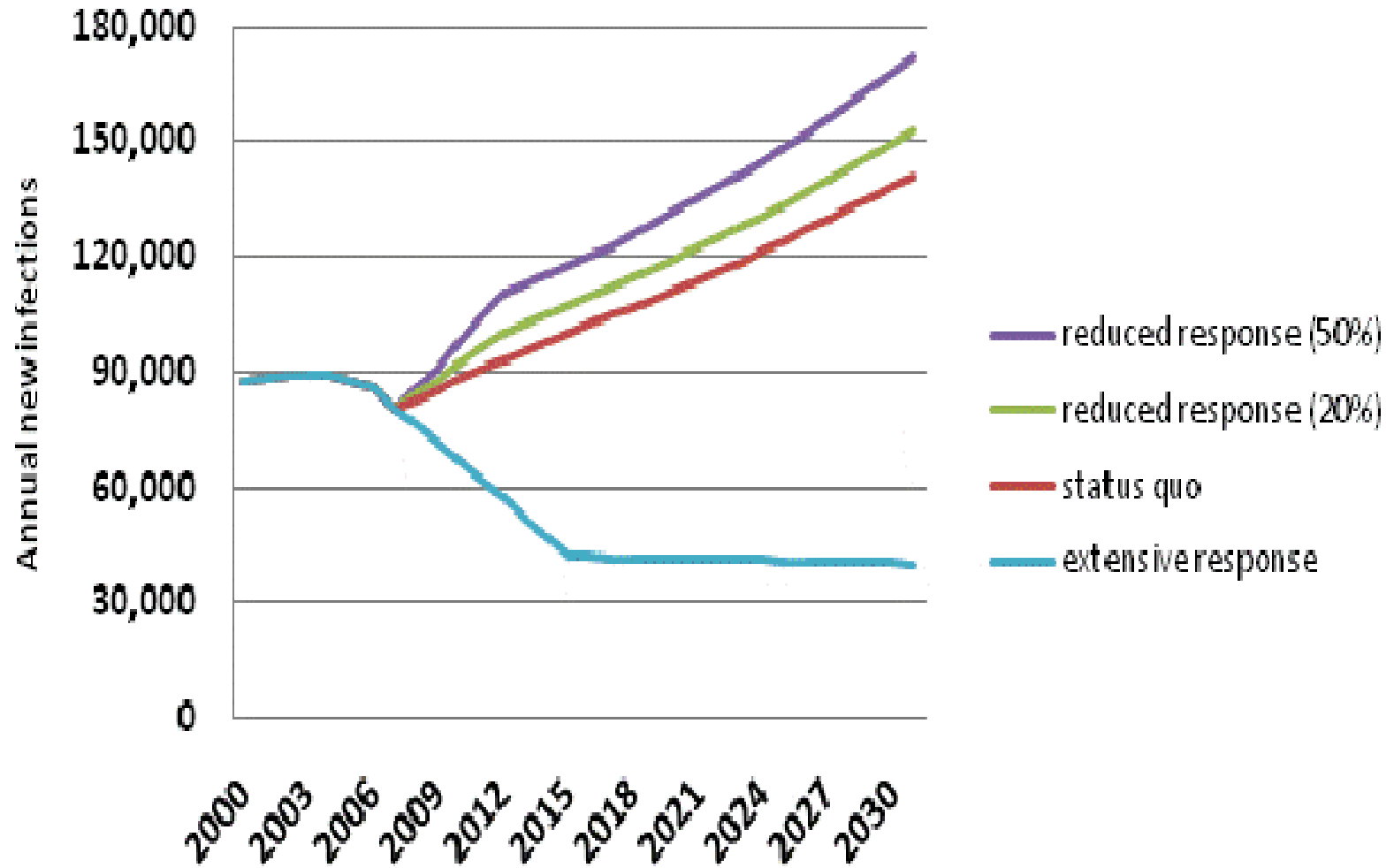
# Annual AIDS deaths (adults 15-49 yrs)



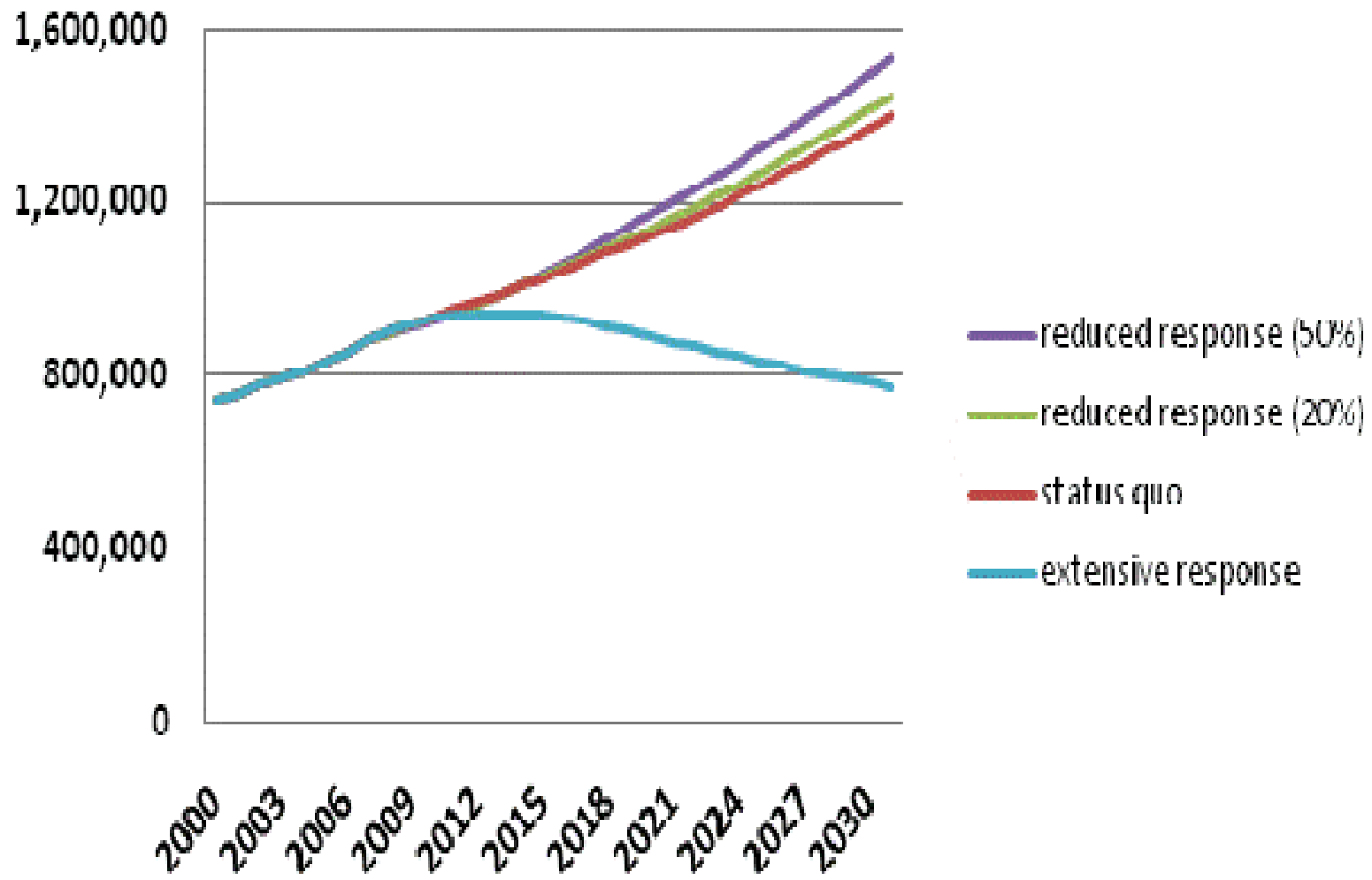
### Zambia - incidence (adult 15-49 years)



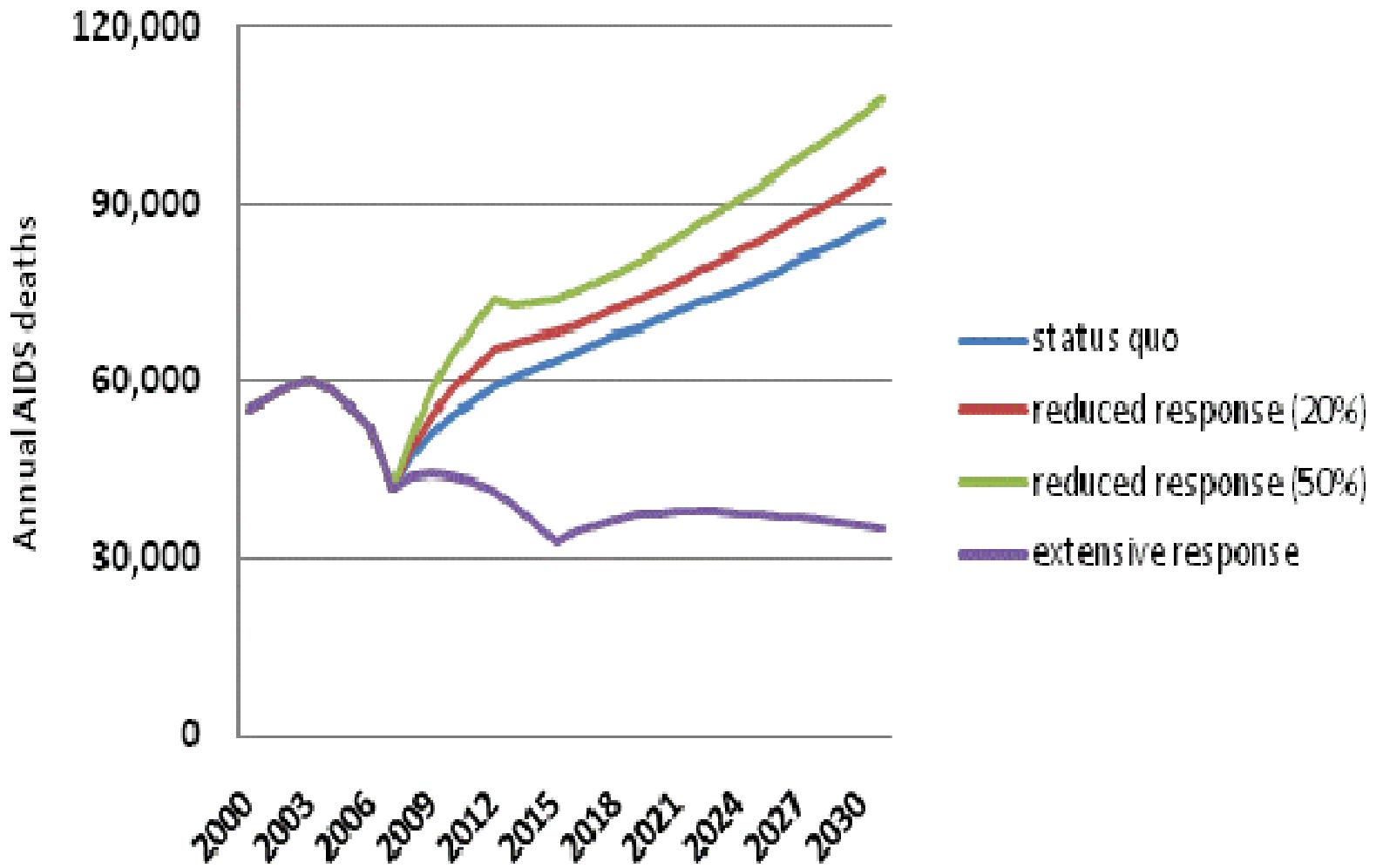
### Zambia - annual new infections



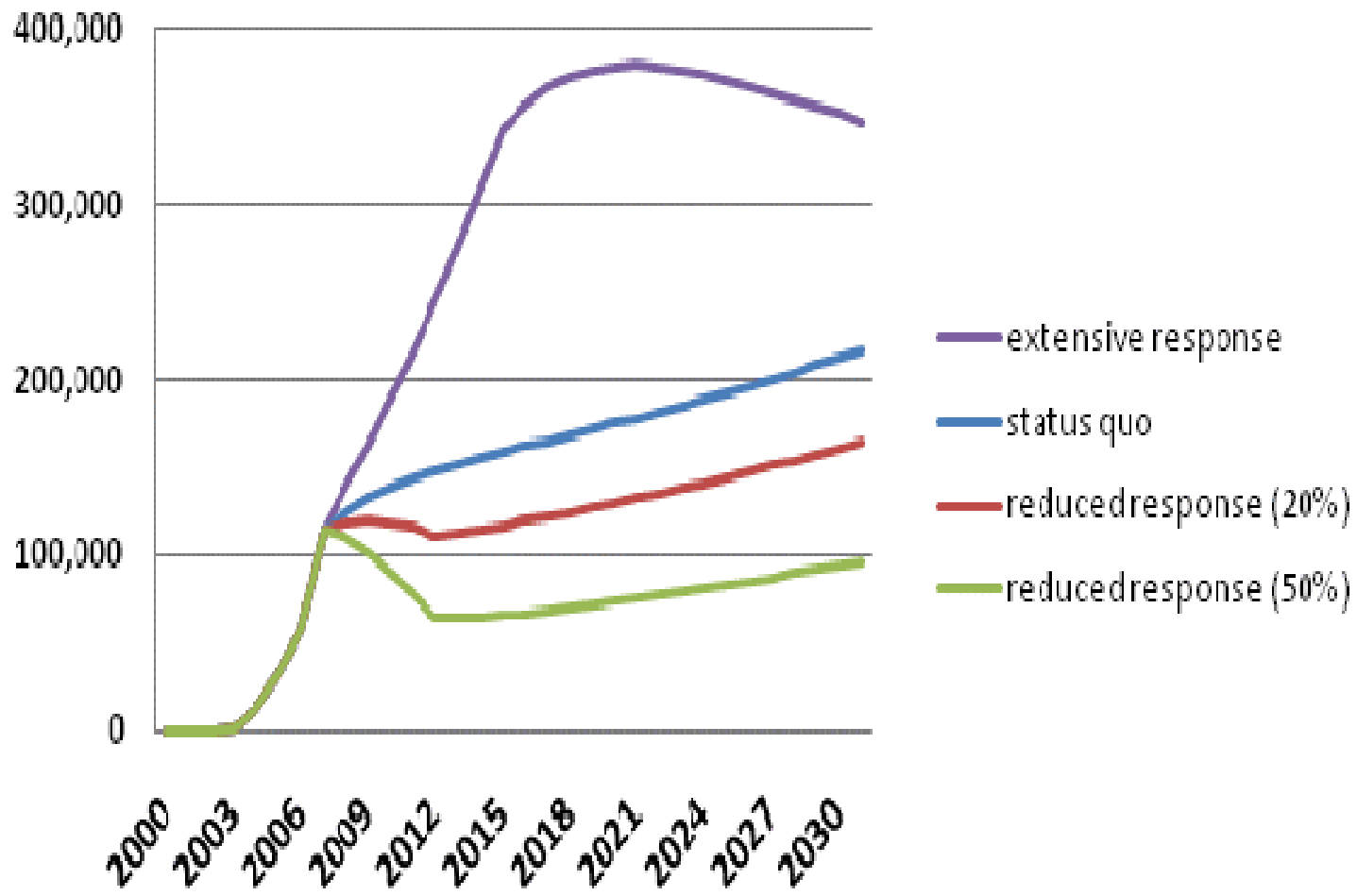
### Zambia - number currently infected



### Zambia - annual AIDS deaths

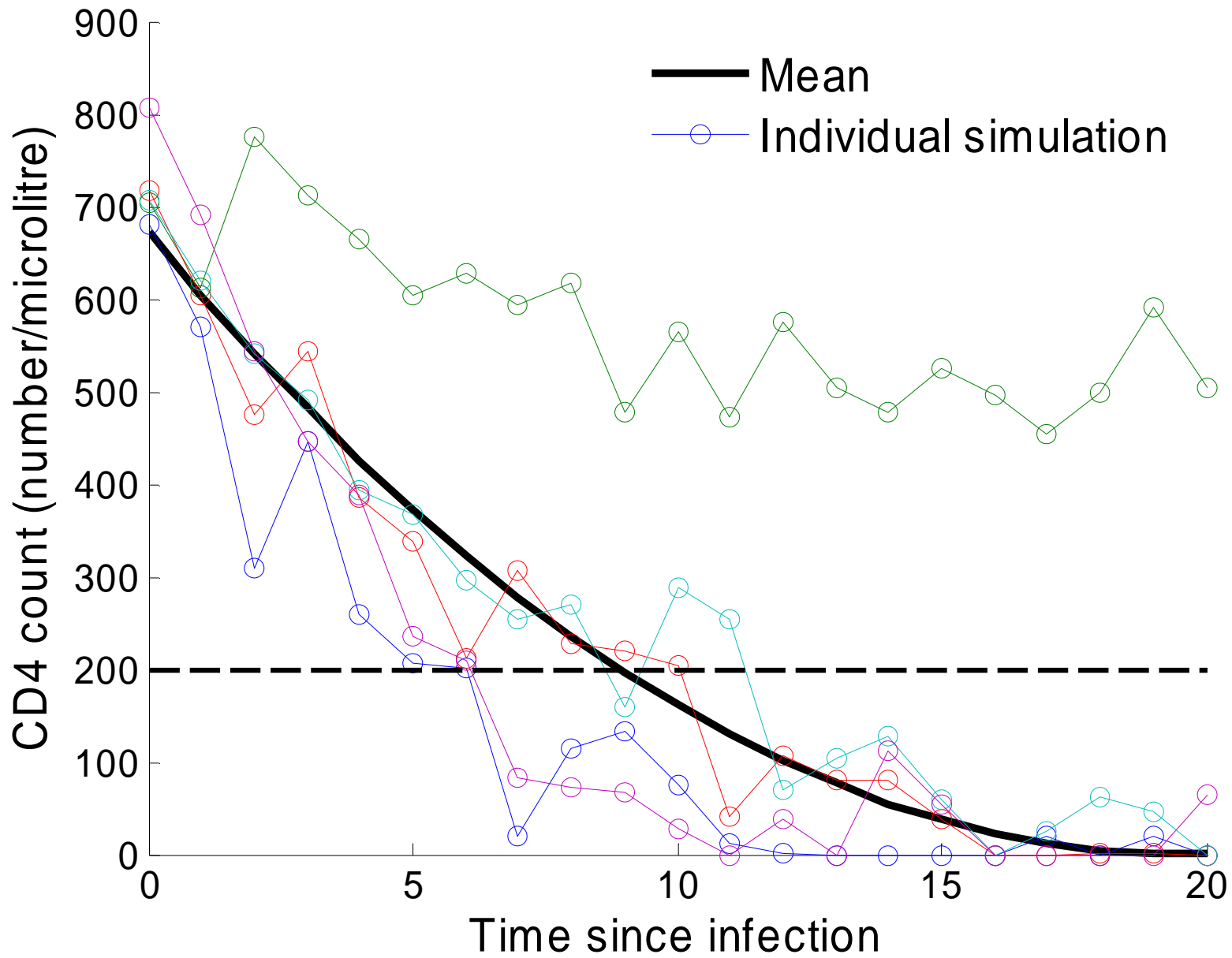


### Zambia - number on ART

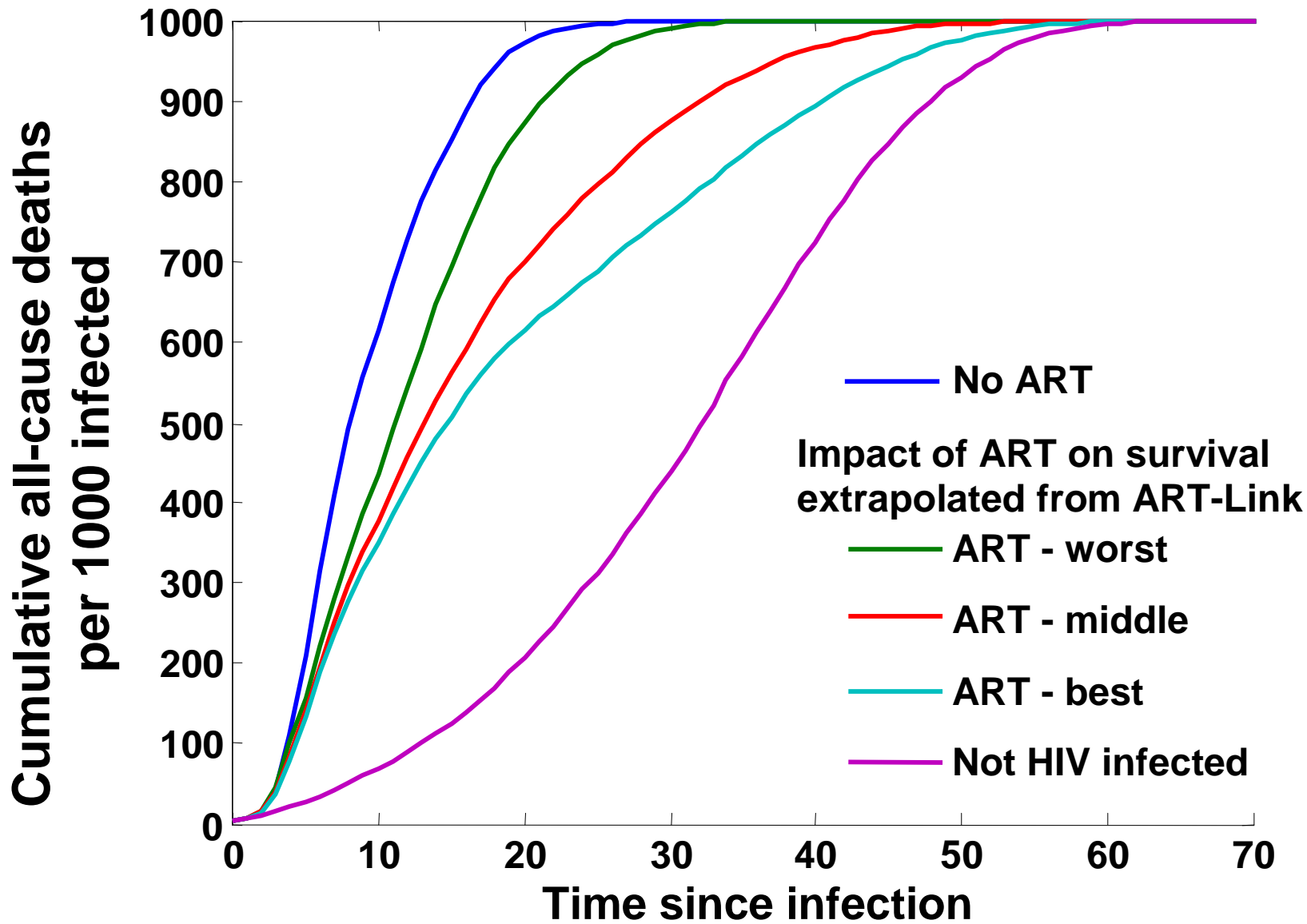


**PREDICTIONS OF THE IMPACT OF TREATMENT AND  
STRATEGIES FOR CASE FINDING, INITIATION &  
MANAGEMENT**

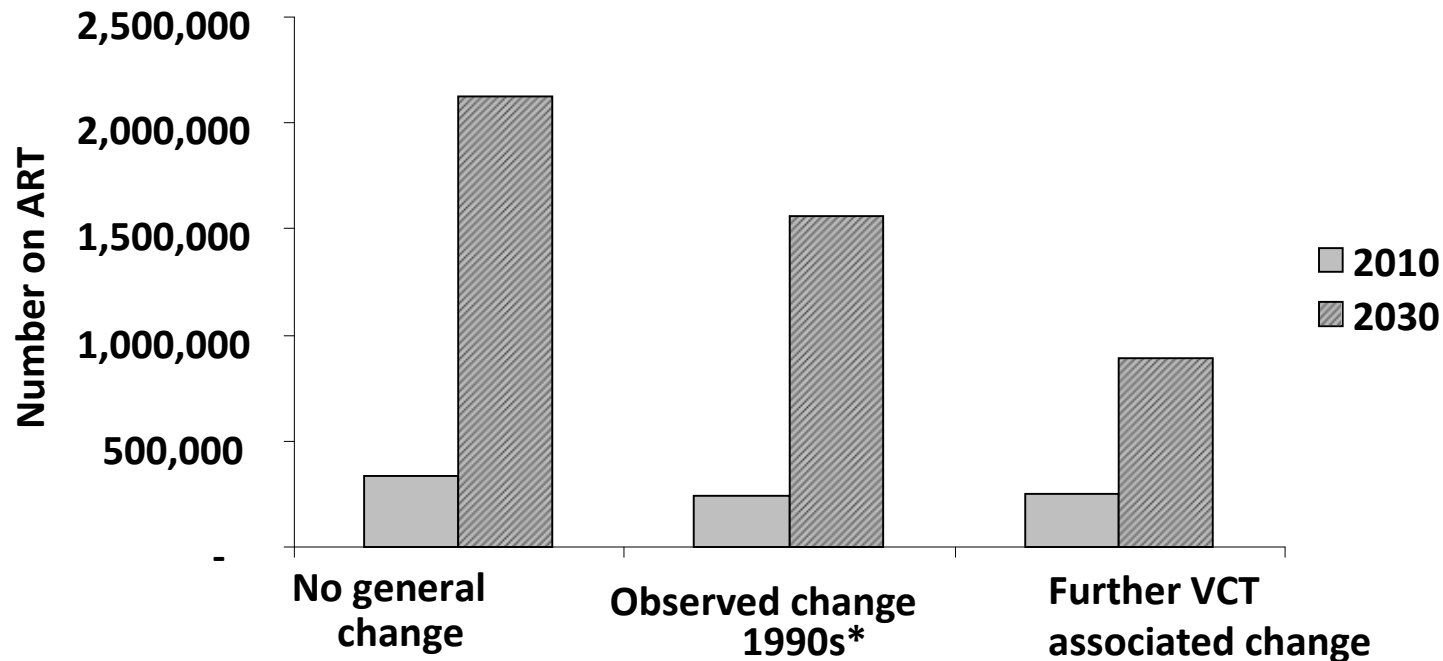
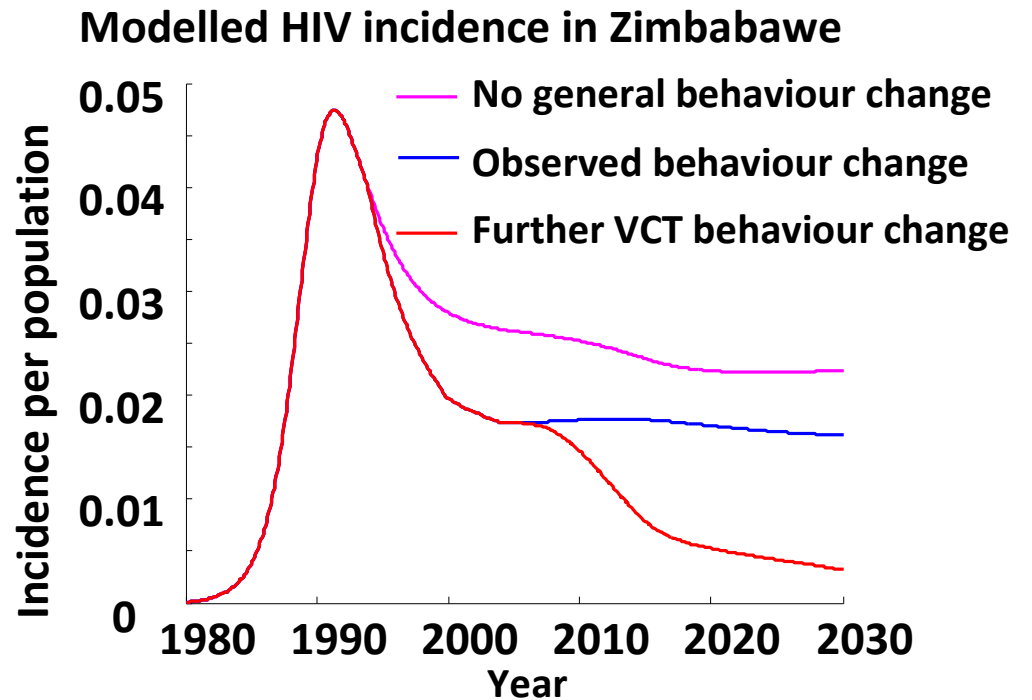
# Modelled decline in CD4+ cells – 5 realisations from 1000



# Presentation earlier than suggest, high ANC referral, Initiation based upon symptoms

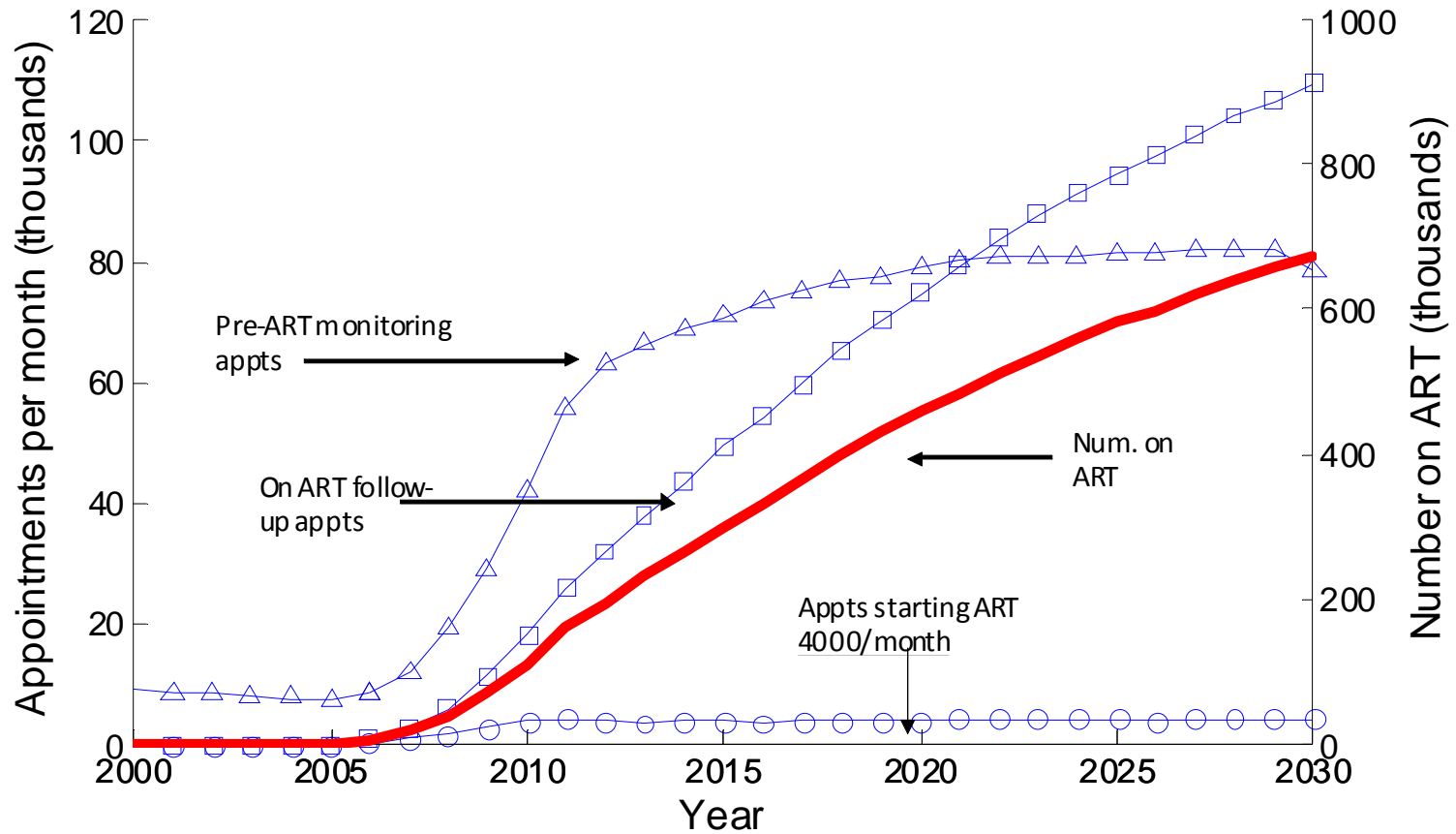


**Model of scaled up ARV and VCT in Zimbabwe – prevention of infections dramatically reduces treatment need for 2030 (Hallett et al 2008)**



# Treatment need and health system capacity

## Future treatment need in Zimbabwe:

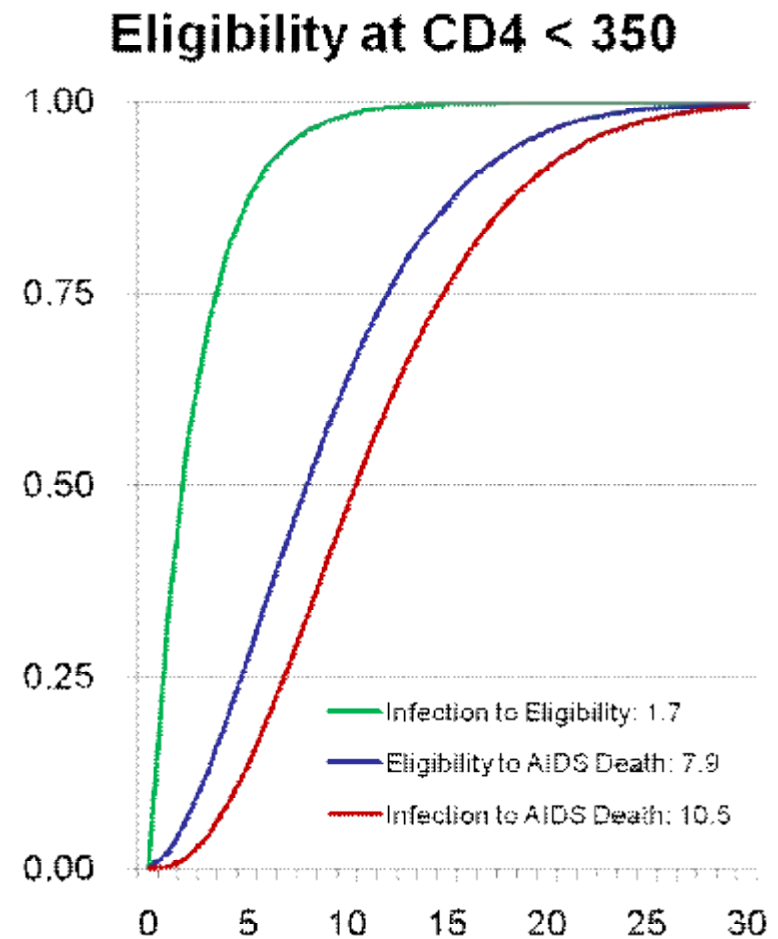
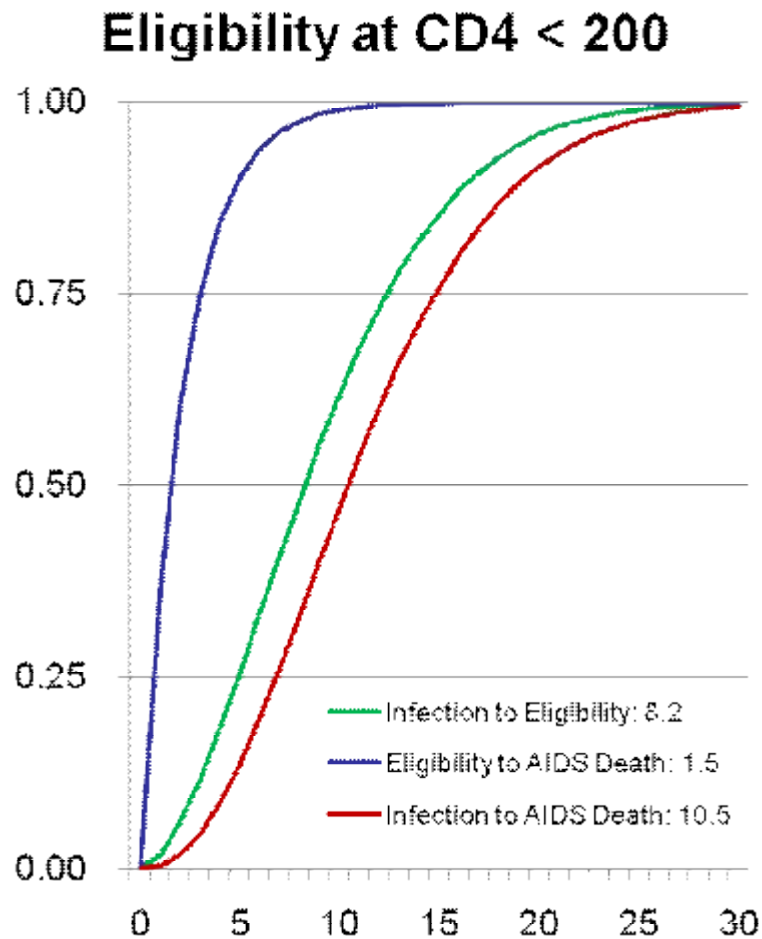


Universal access à **110,000** on treatment in 2010; **670,000** in 2030

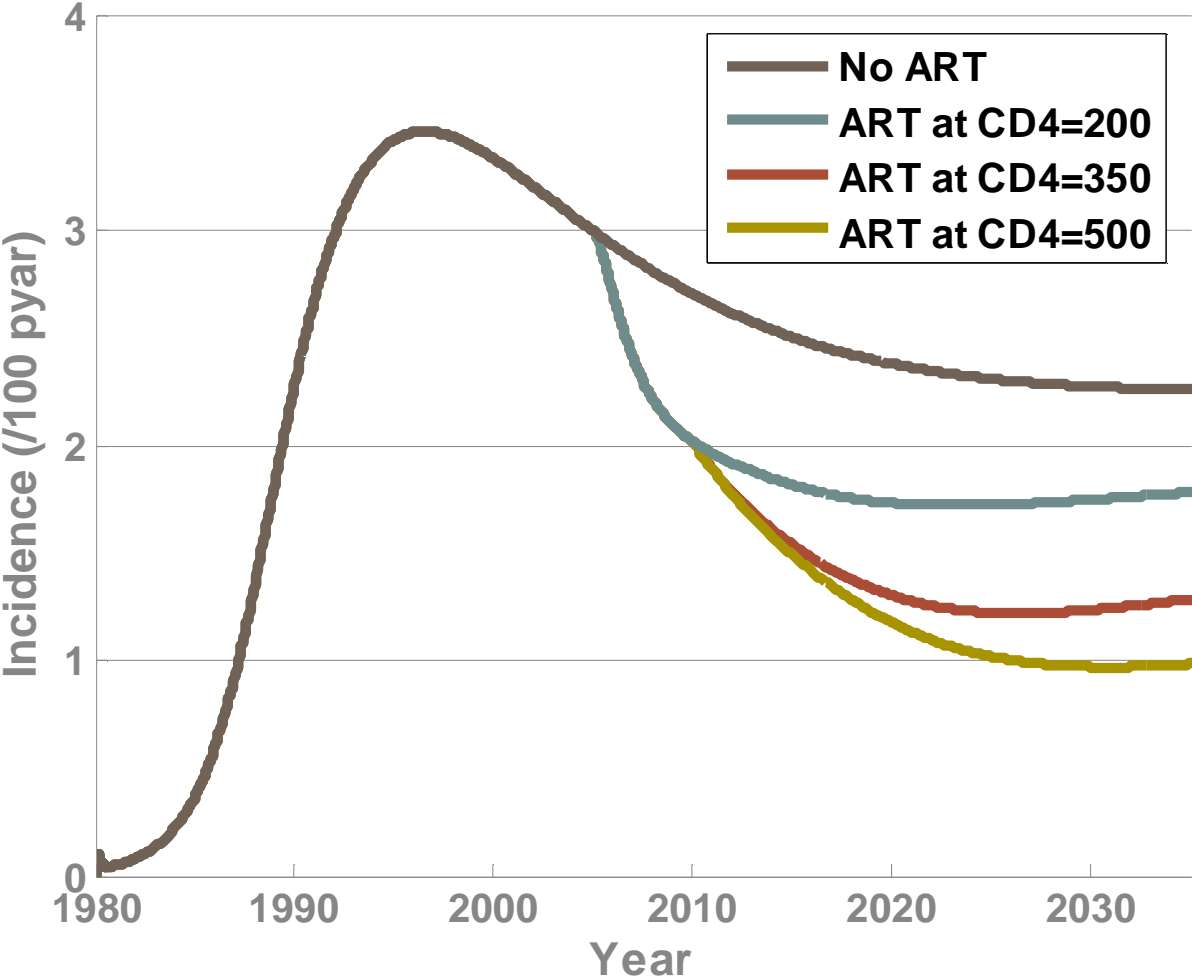
**IMPACT OF TREATMENT GUIDELINES ON PEOPLE  
IN NEED AND EARLY INITIATION ON  
TRANSMISSION**

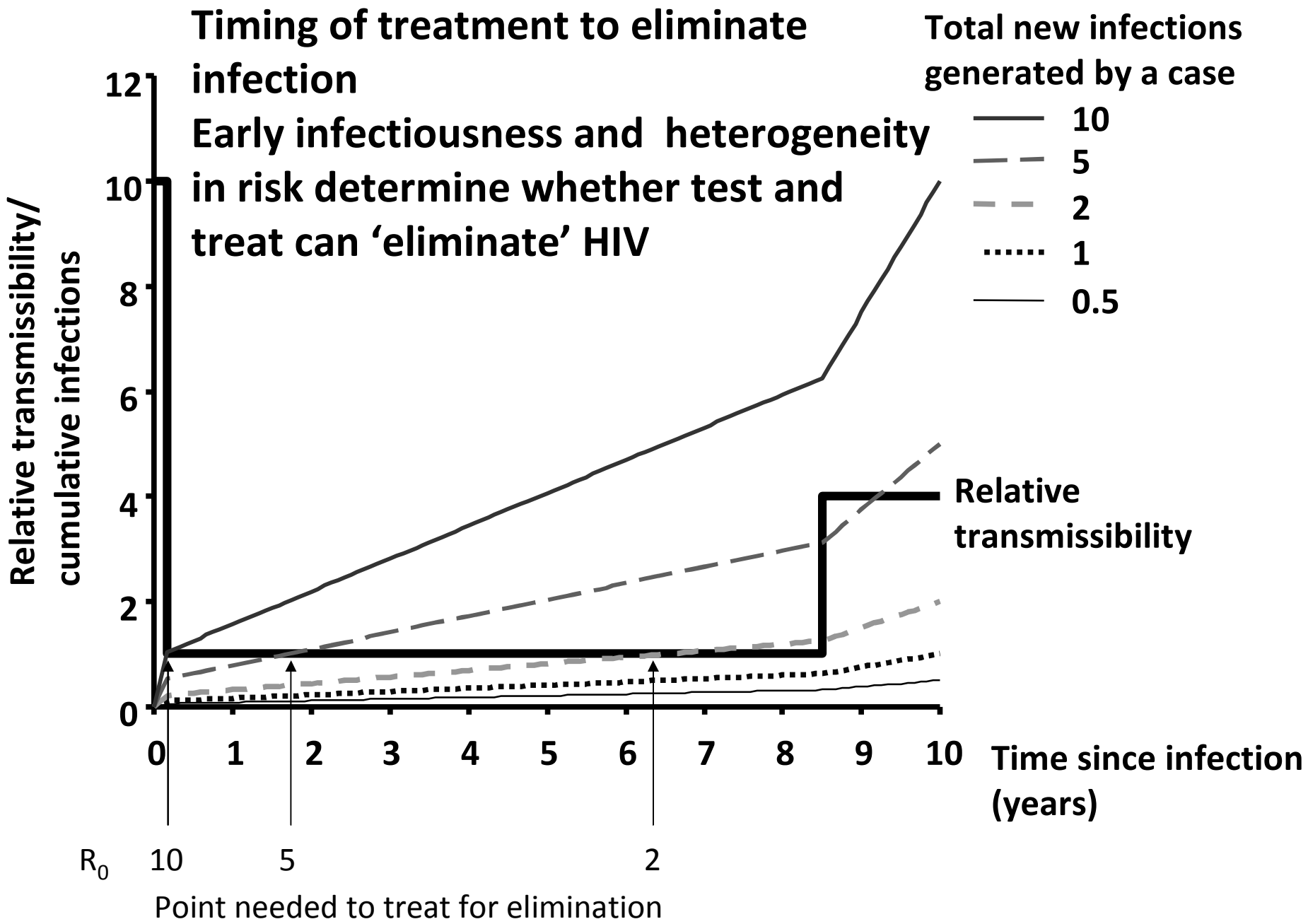
# Impact of treatment guidelines and treating earlier

## Progression Patterns



# Impact of treatment on incidence – earlier treatment





# Conclusions

- Moving to endemic infection levels
- Treatment need in 2008-2013 driven largely by those currently infected.
- Societal changes can bring down infection levels – but current interventions are inadequate.
- Less intense, complex patient management reduces effects of treatment, but need to weigh individual and public health approaches