

Health and budget impact of combined HIV prevention

[hikt]

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- | **Context and objectives**

- | **Modeling approach**

- | **Model validation**

- | **Results**

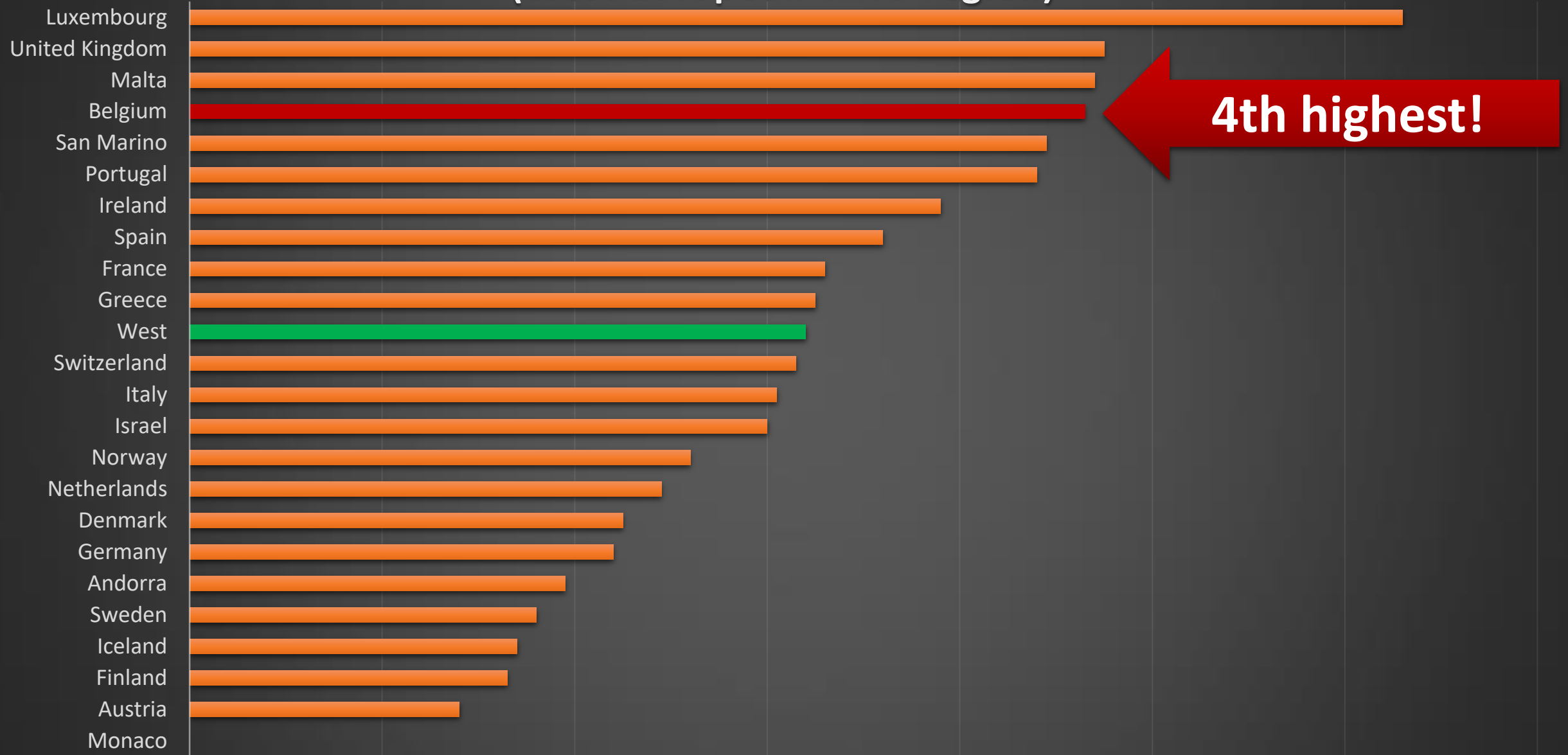
- | **Conclusions**

- | **Disclosures**

- | The study was performed independently by Sebastian Vermeersch and supervised by Lieven Annemans

- | hict and Lieven Annemans received financial compensation to perform this study as part of a consultancy agreement with Gilead.

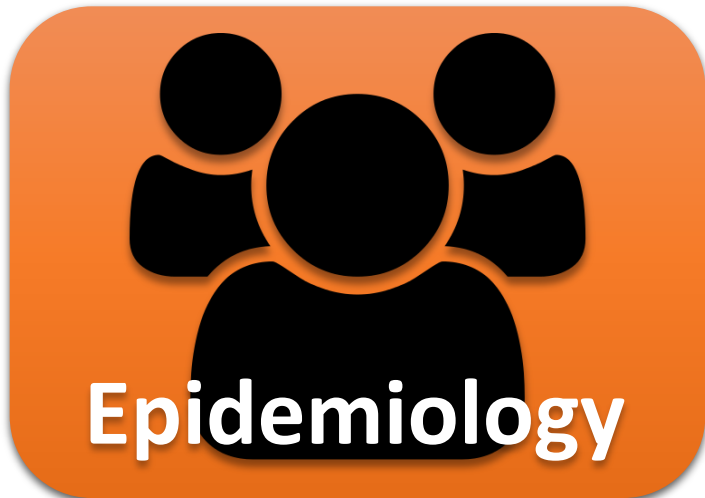
New HIV diagnoses rates per 100 000 population, by country, in 2014 (West European WHO region)



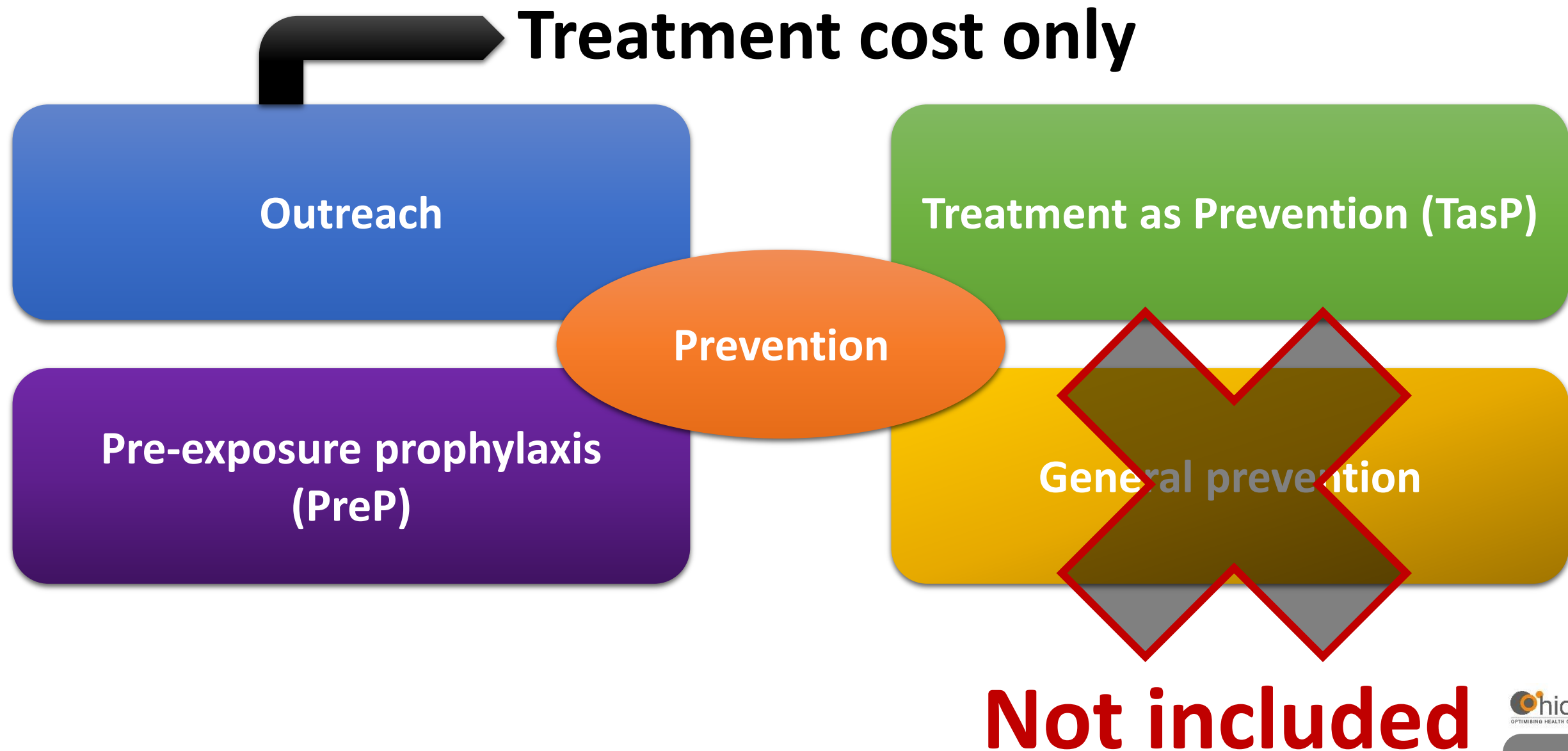
Can we make a difference?

→ Prevention!

? Impact of prevention on



Model scope & terminology





Modeling approach

Model mechanics

Year

Patients in
medical follow-up



New HIV diagnoses
Entering follow-up



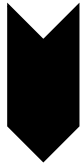
Death



NET LOSS =

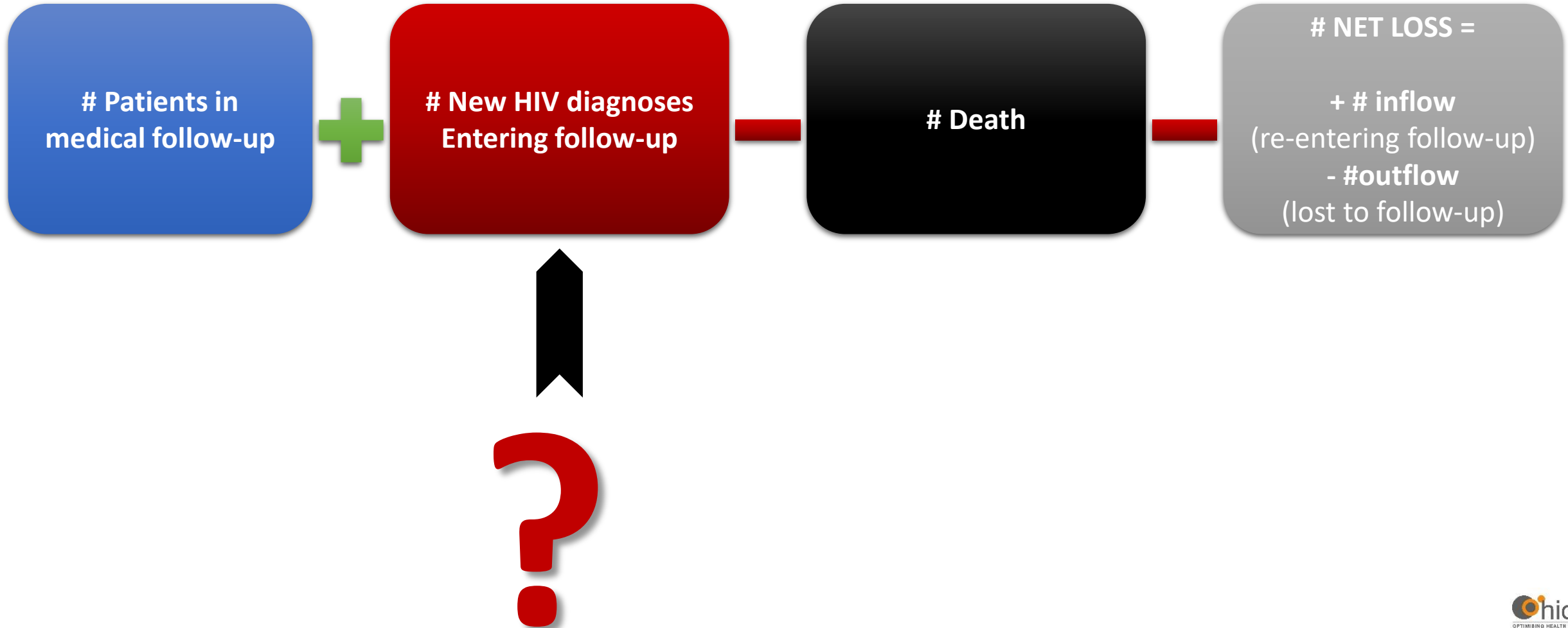
+ # inflow
(re-entering follow-up)
- #outflow
(lost to follow-up)

Year+1

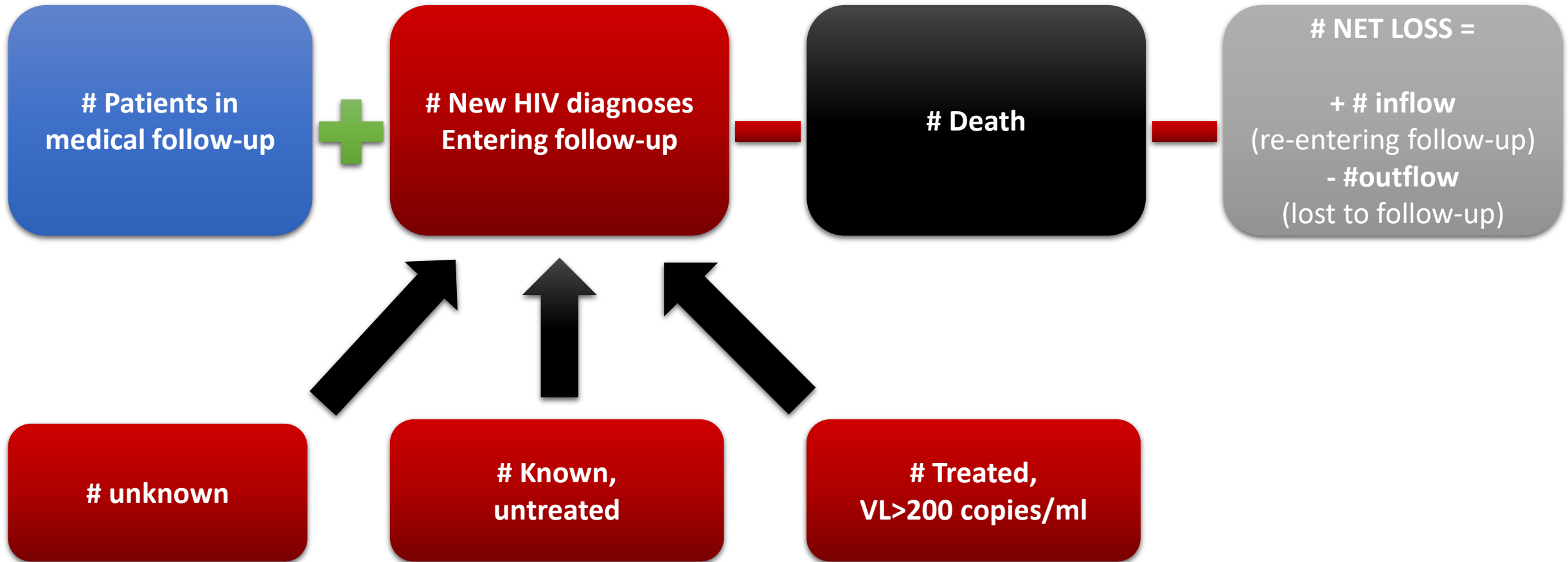


Patients in
medical follow-up

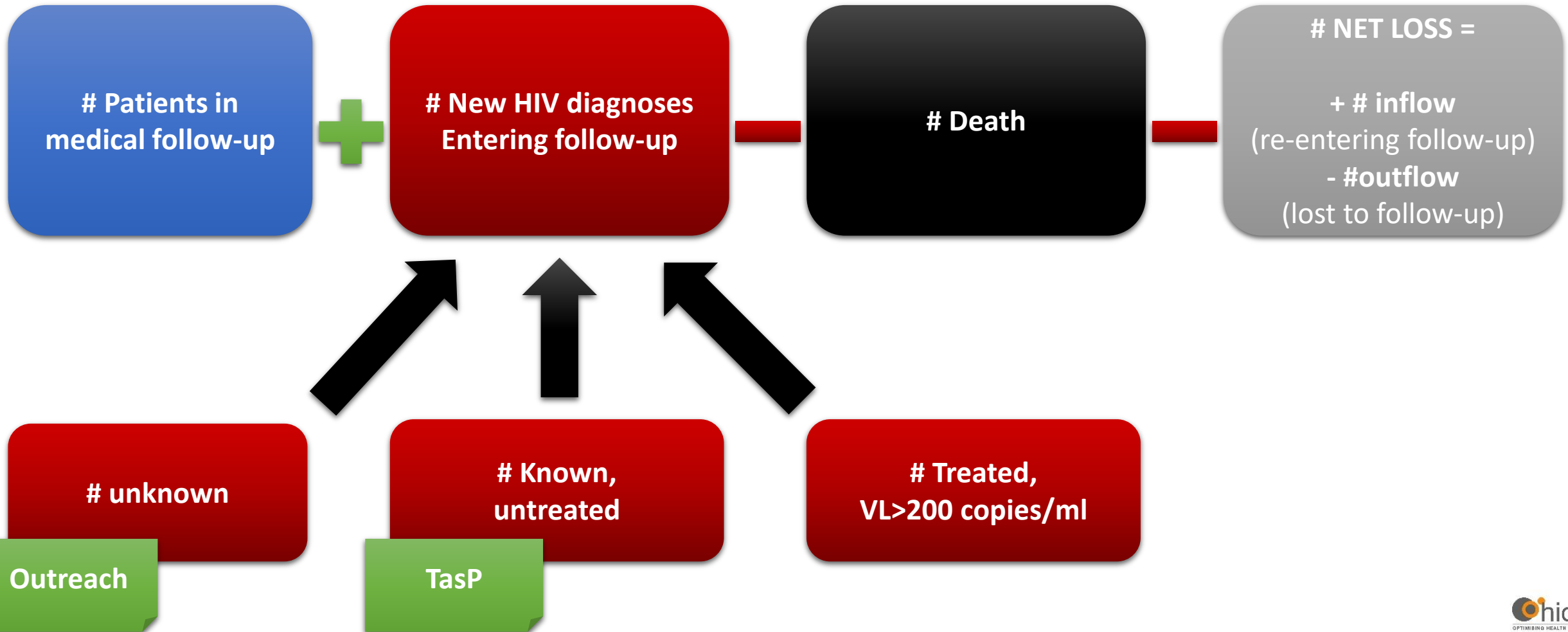
Model mechanics



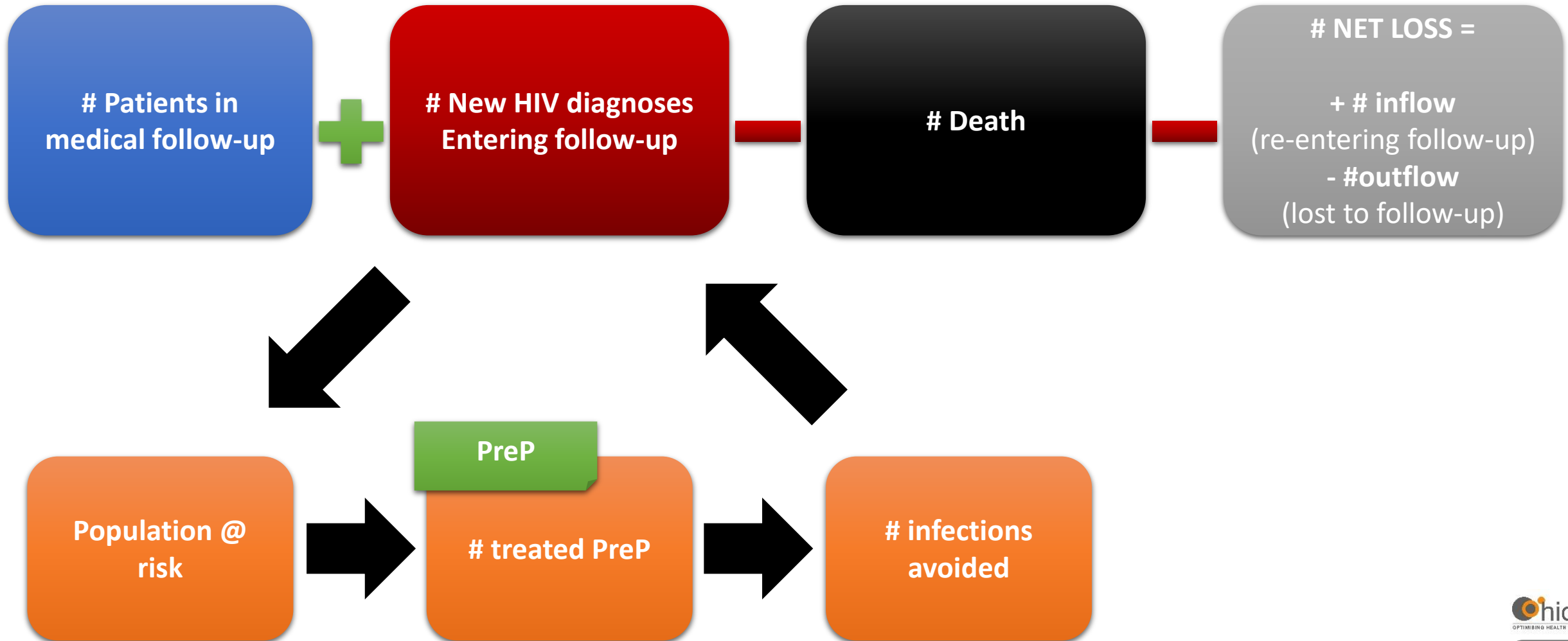
Model mechanics



Modeling prevention: Outreach & TasP



Modeling prevention: PreP



| HIV treatment:

| € 12 330/year¹

| PreP:

| € 6 328/year (before 2017)

| € 4 929/year (generics & cluster opening 2017)

| € 2 596/year (post 2017)

¹Vandijck et al., 2015

Additional principles

- | **(Sub)population differences**

- | MSM, hetero, PWID

- | **Differing 'infectiousness'**

- | Undiagnosed, diagnosed but untreated, treated and VL $\geq$ 200

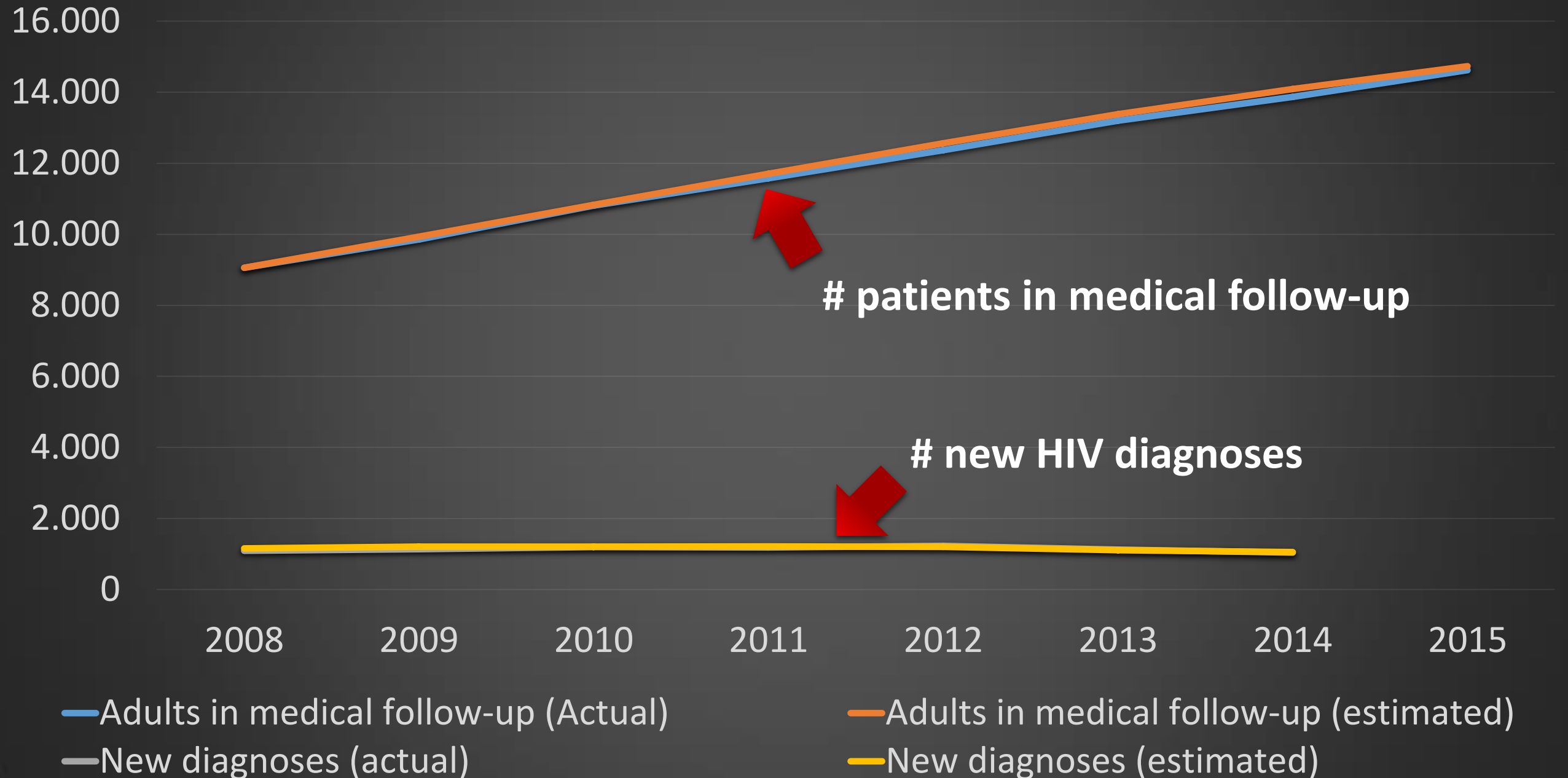
- | **HIV infections in migrants** occurring prior to migration

- | **Effect of aging HIV population**



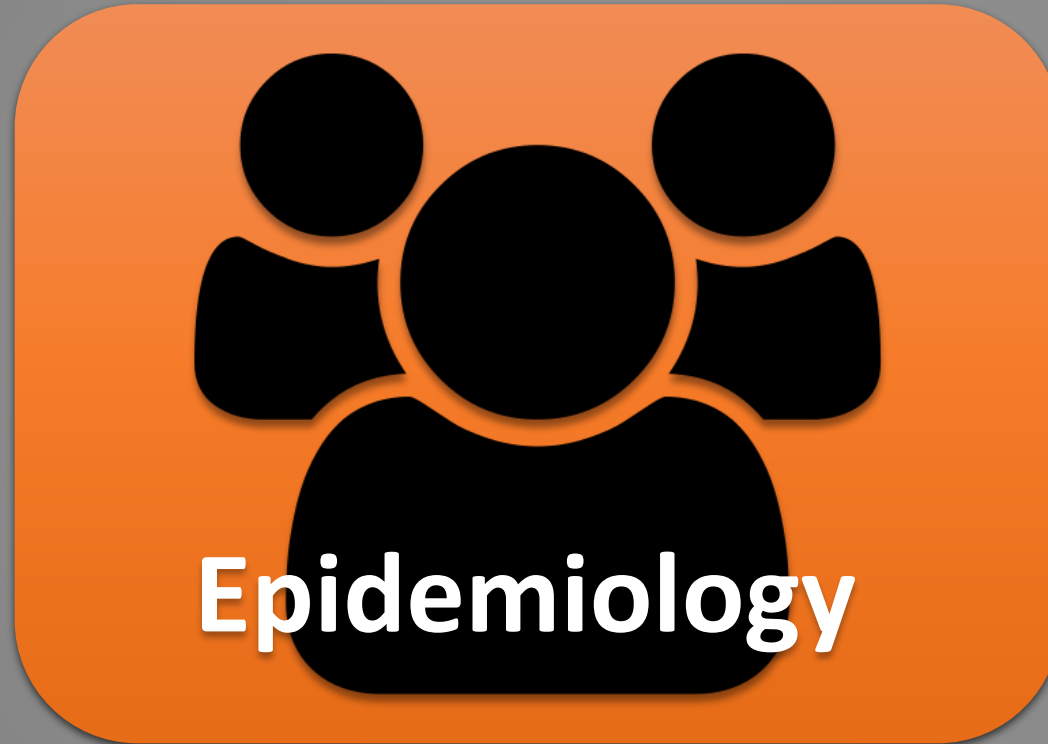
Model validation

Model validation - Actual vs estimated

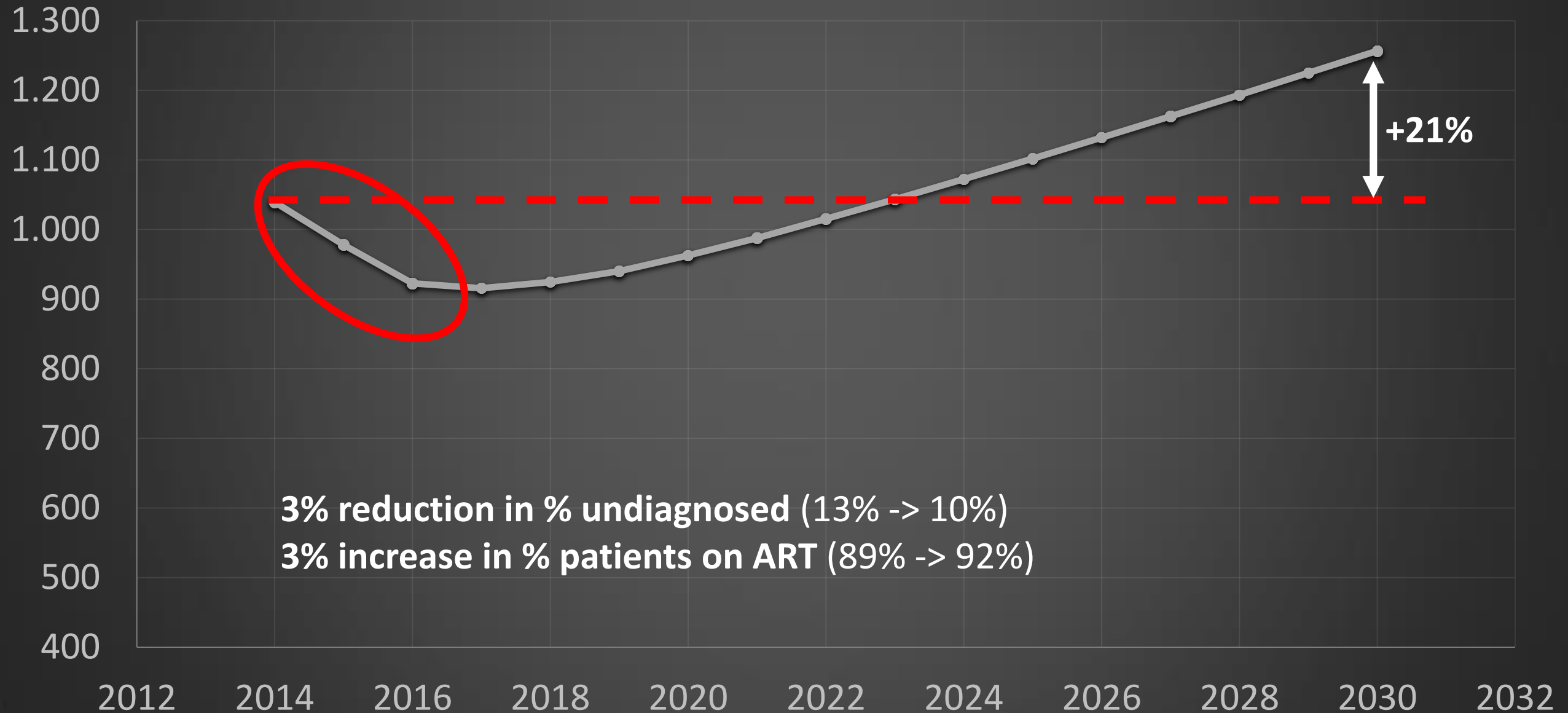




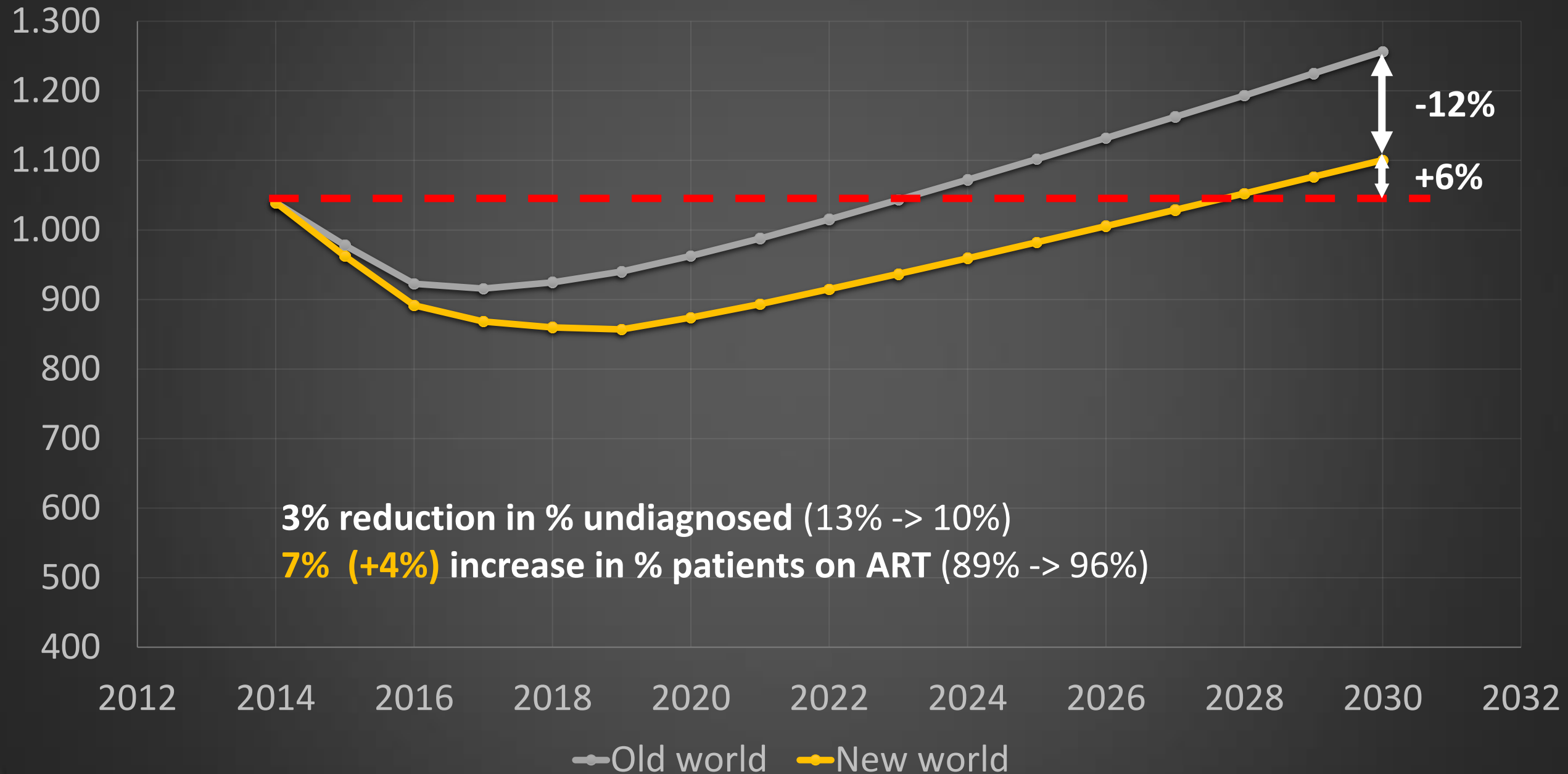
Results



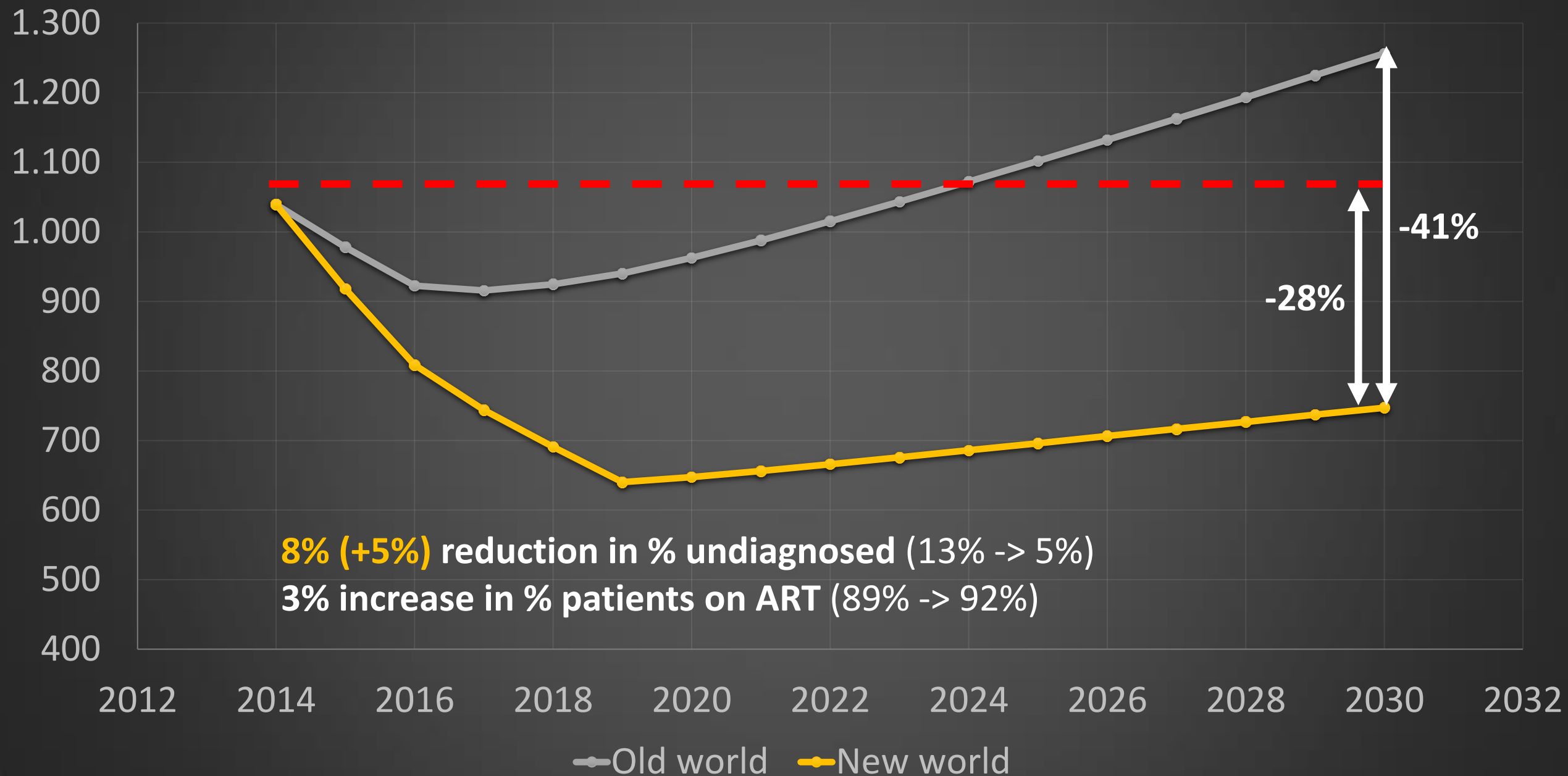
New HIV diagnoses in the absence of additional prevention effort



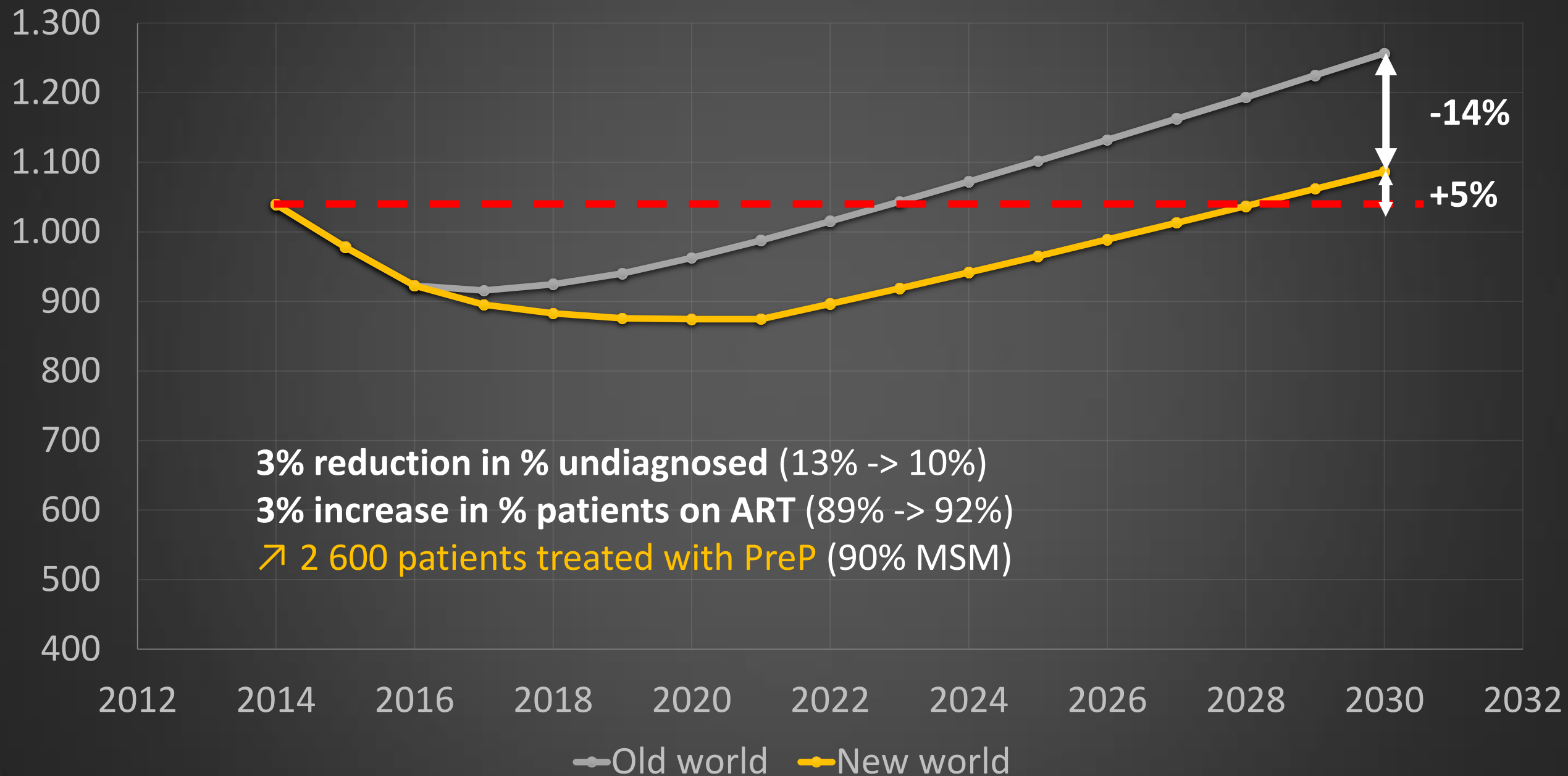
New HIV diagnoses - TasP



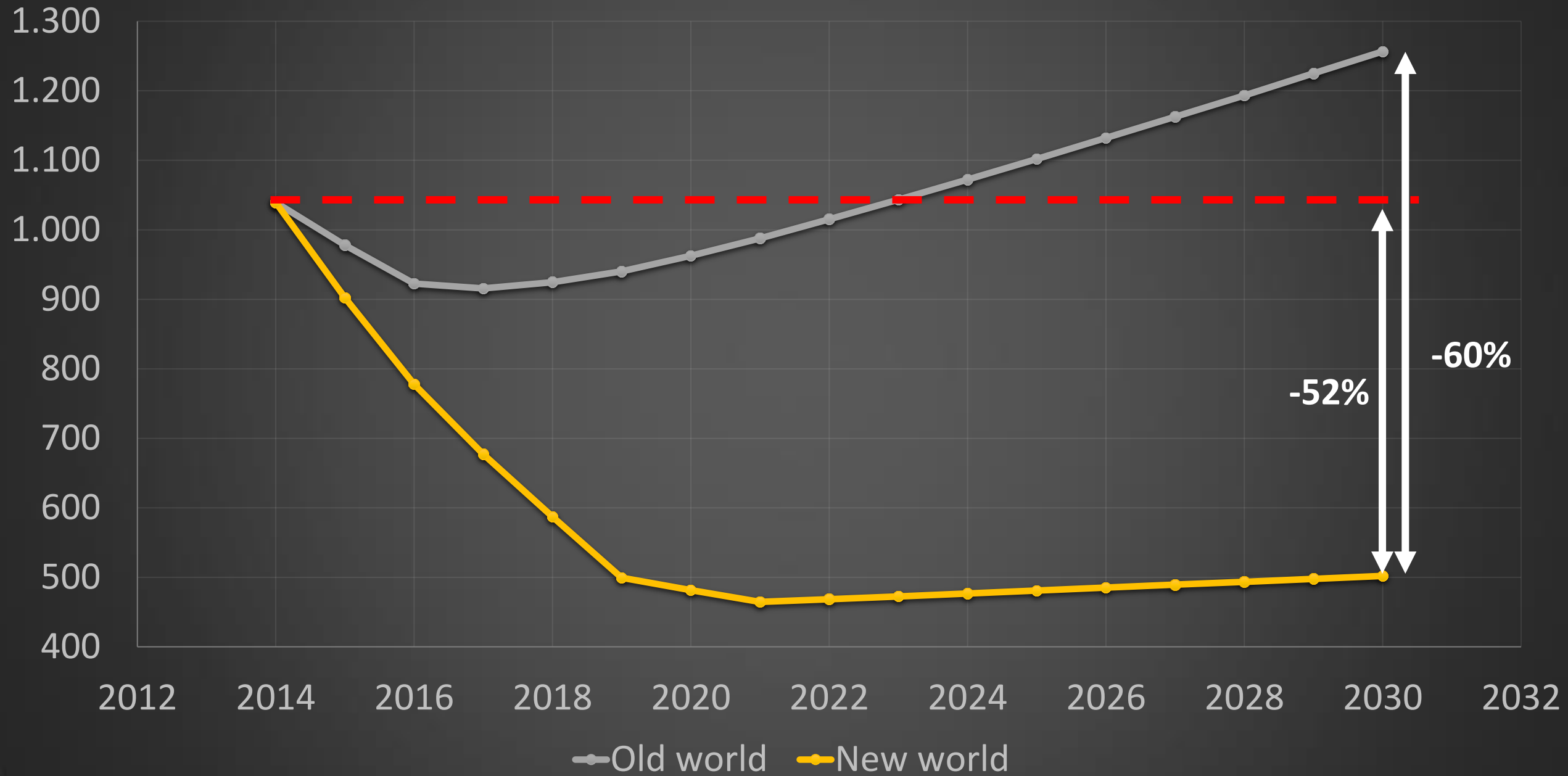
New HIV diagnoses - Outreach



New HIV diagnoses - PreP

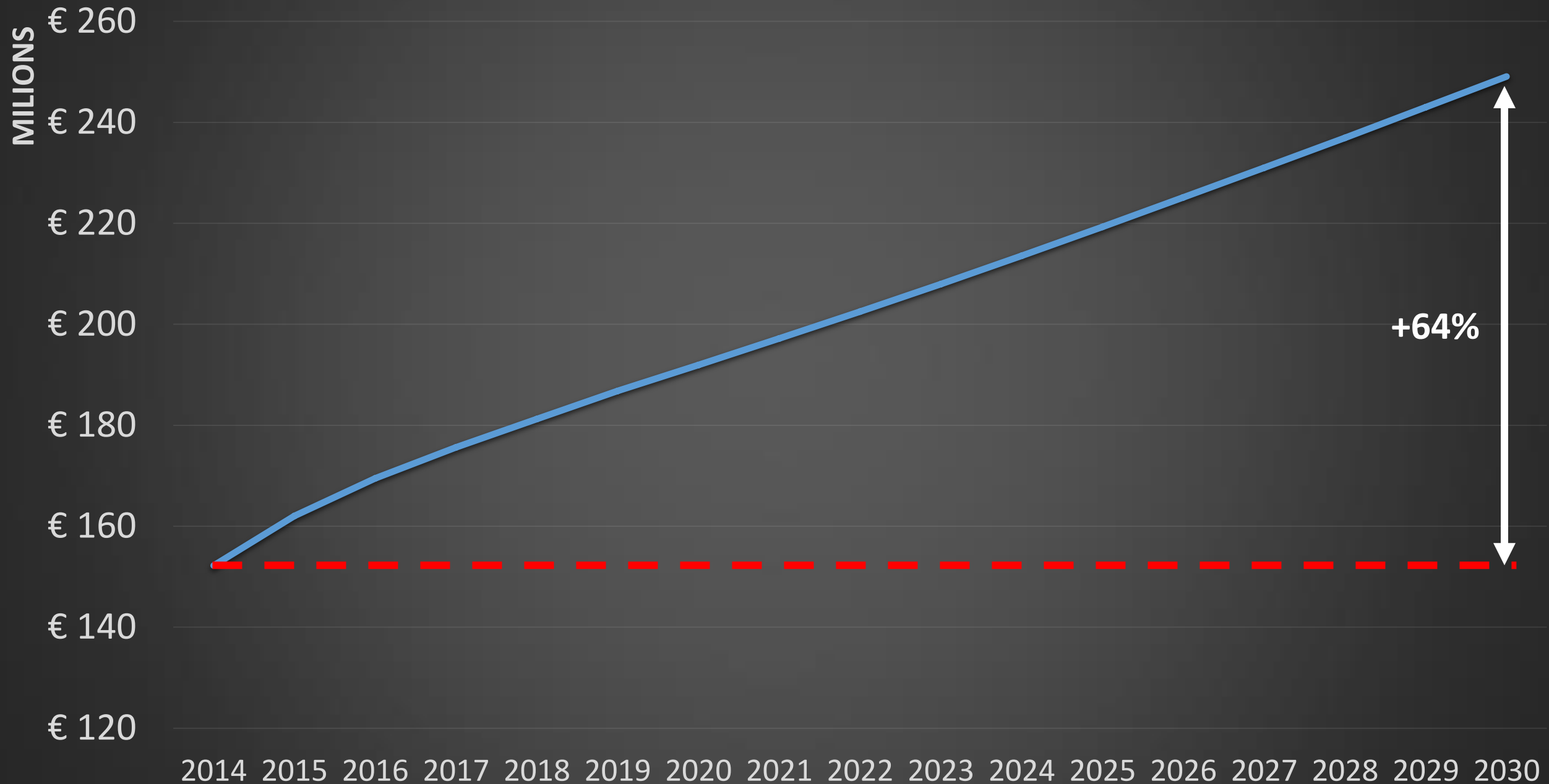


New HIV diagnoses – Combined prevention

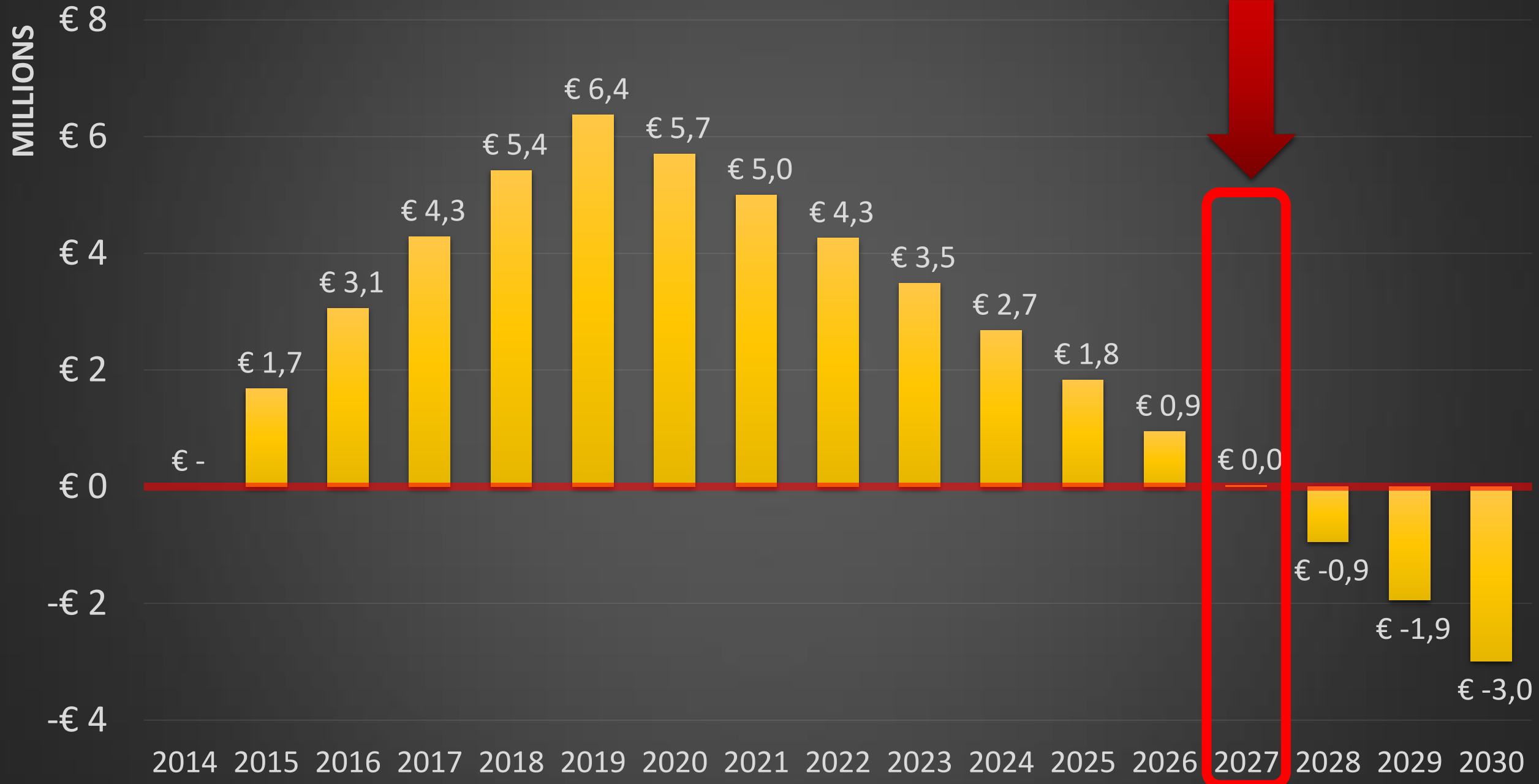




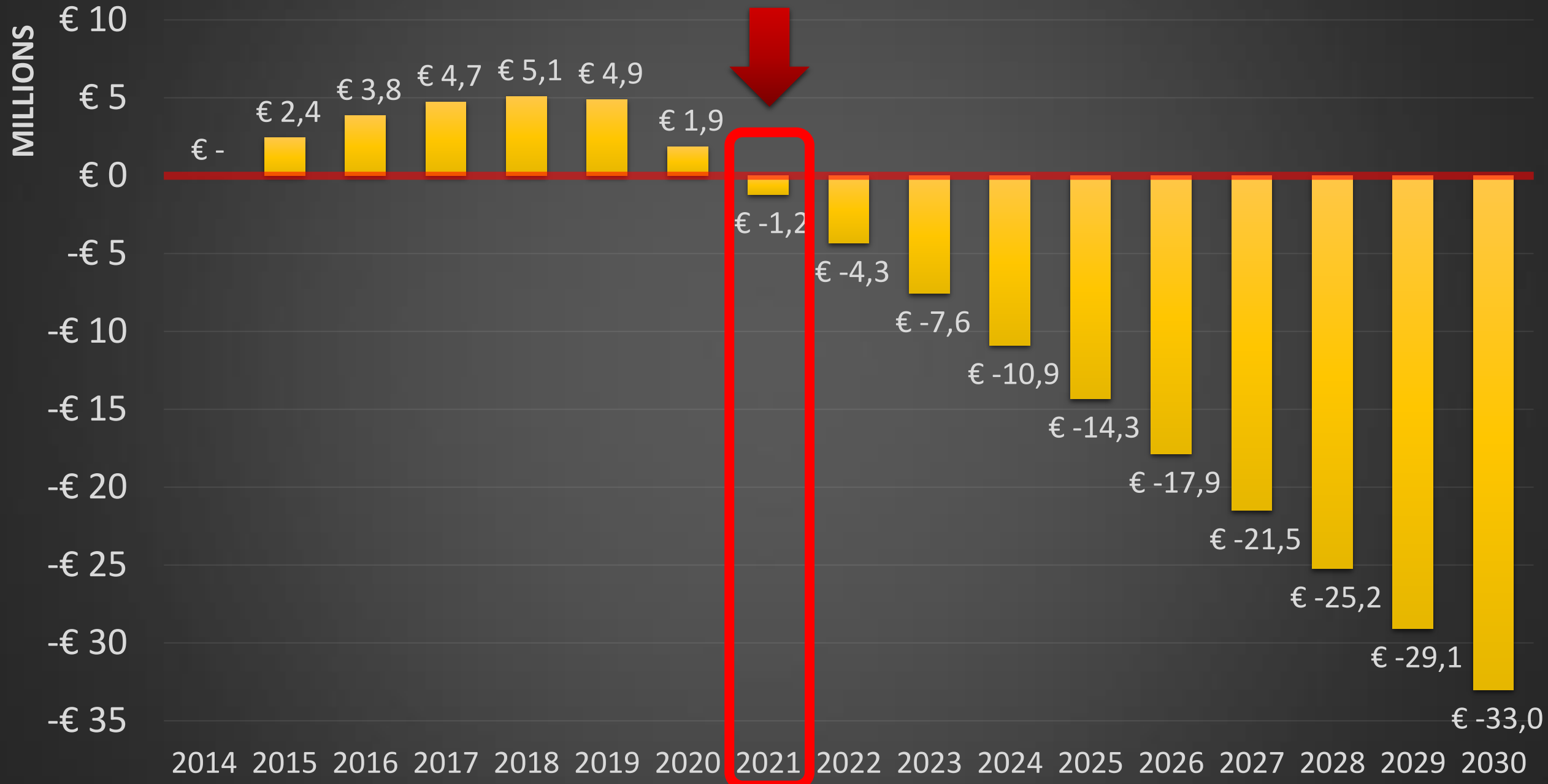
Total budget in the absence of additional prevention



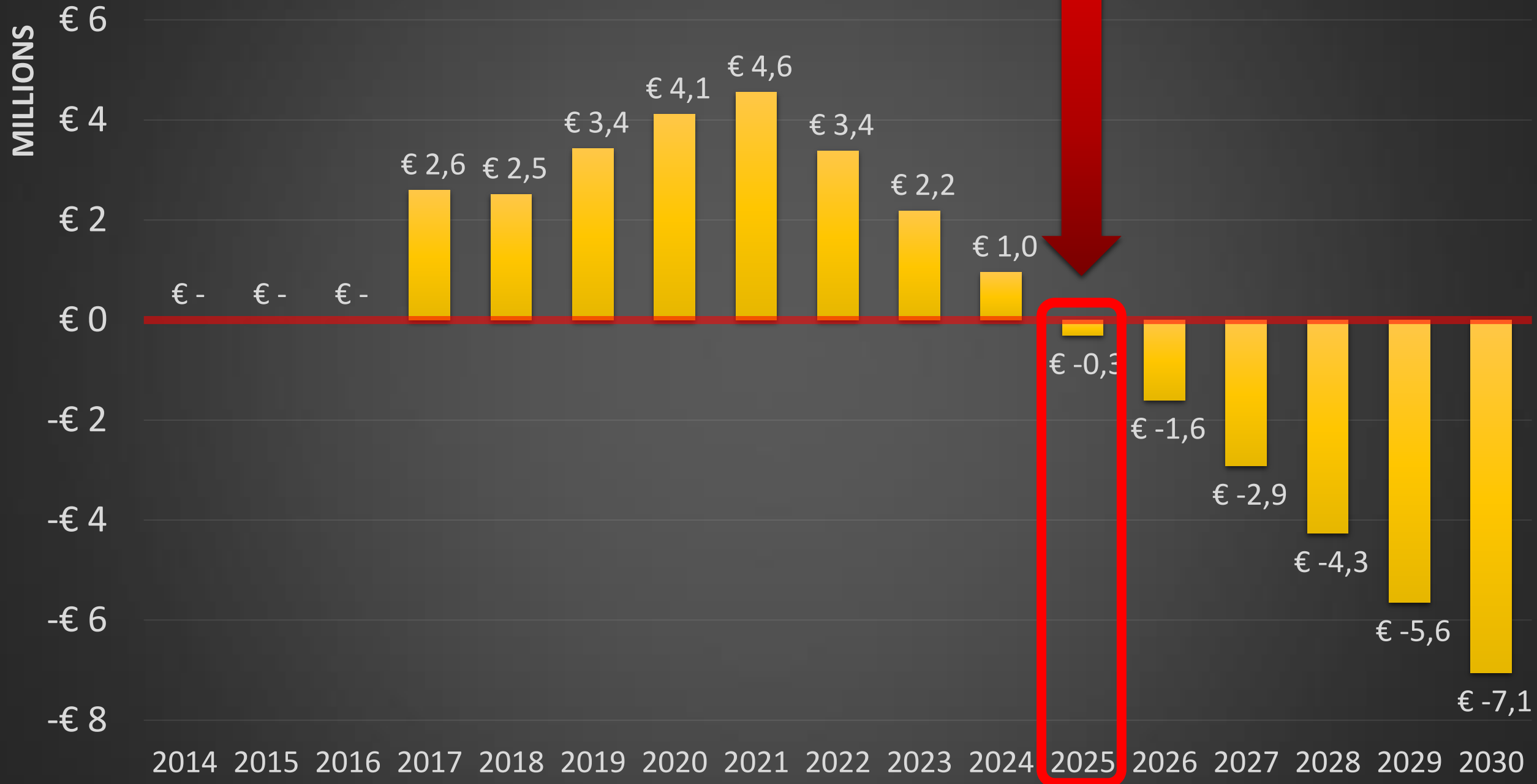
Budget impact - TasP



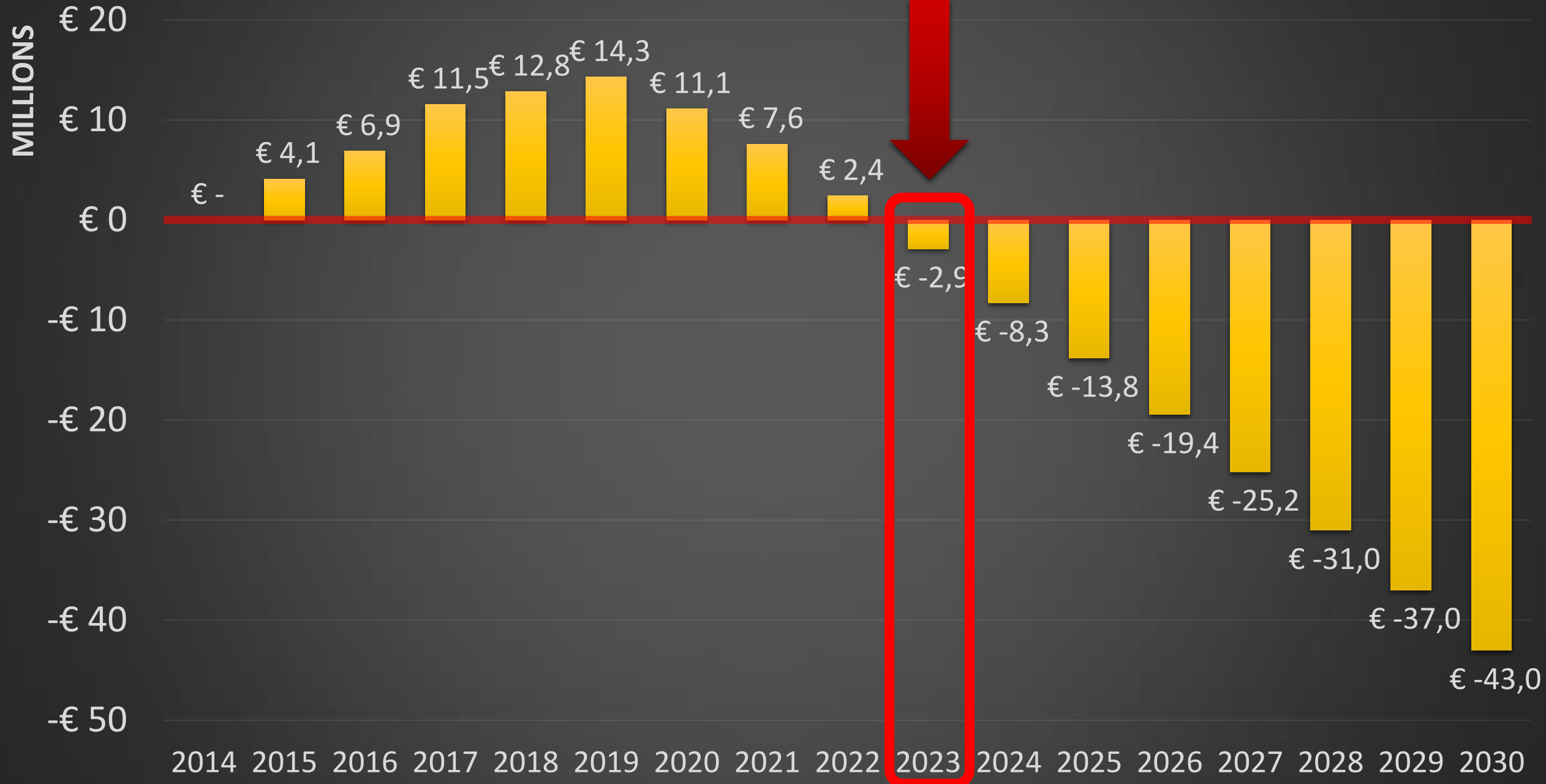
Budget impact - Outreach



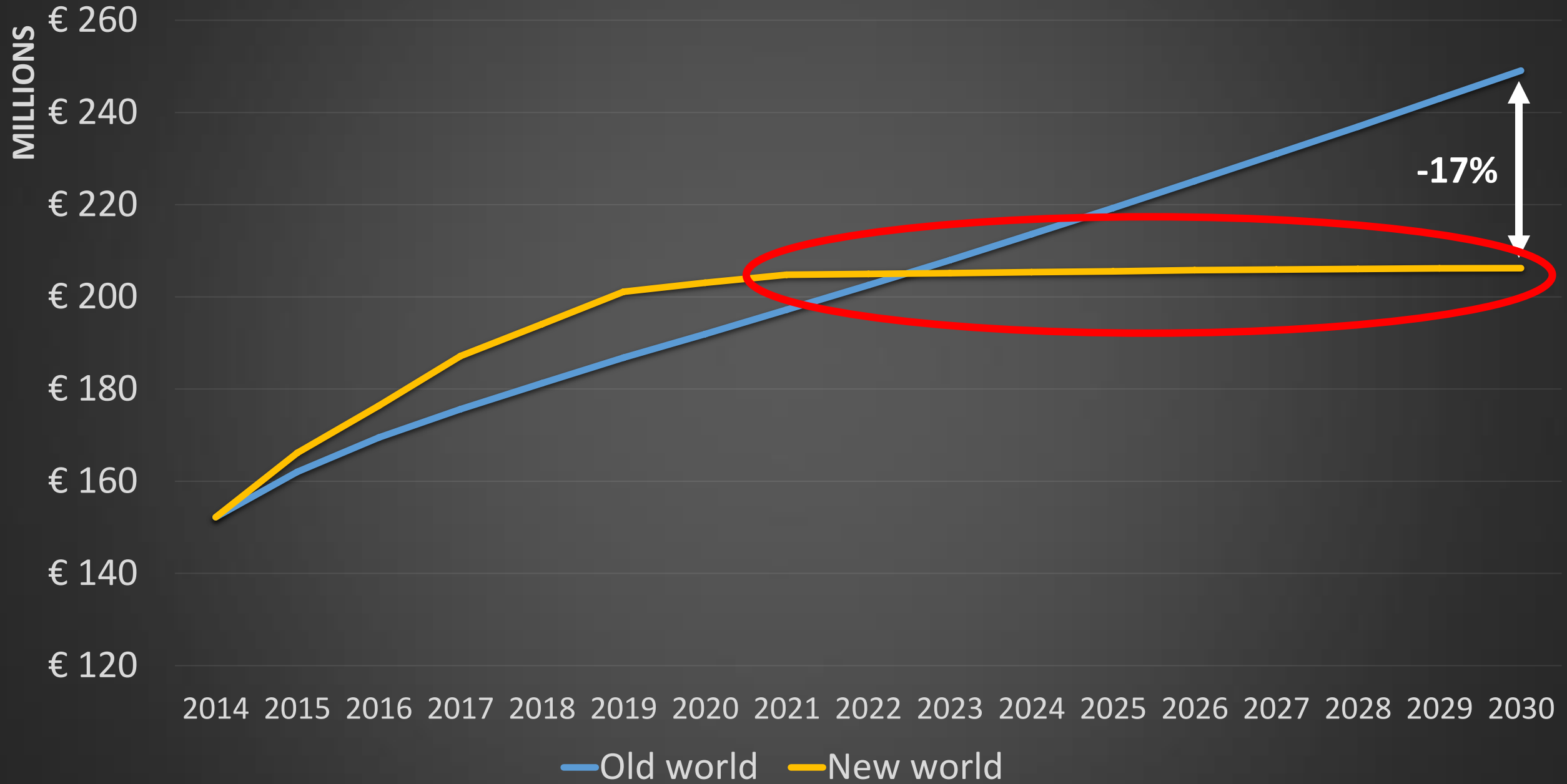
Budget impact - PreP



Budget impact – Combined prevention



Total budget – Combined prevention

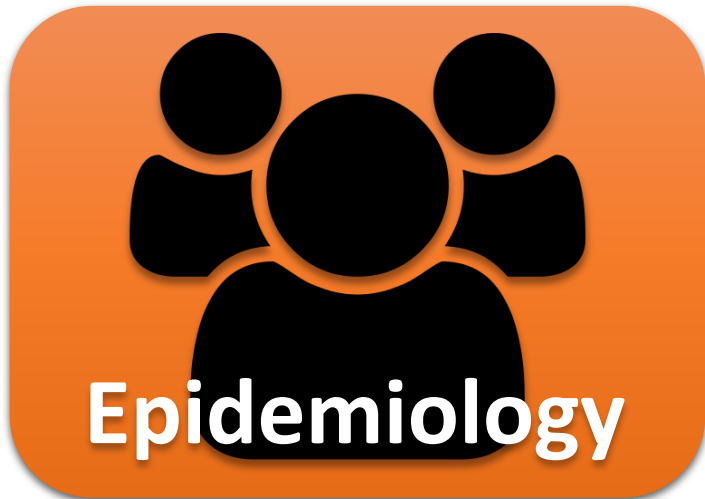




Conclusions

Can we make a difference?

? Impact of prevention on



Can we make a difference?

Yes, we can!

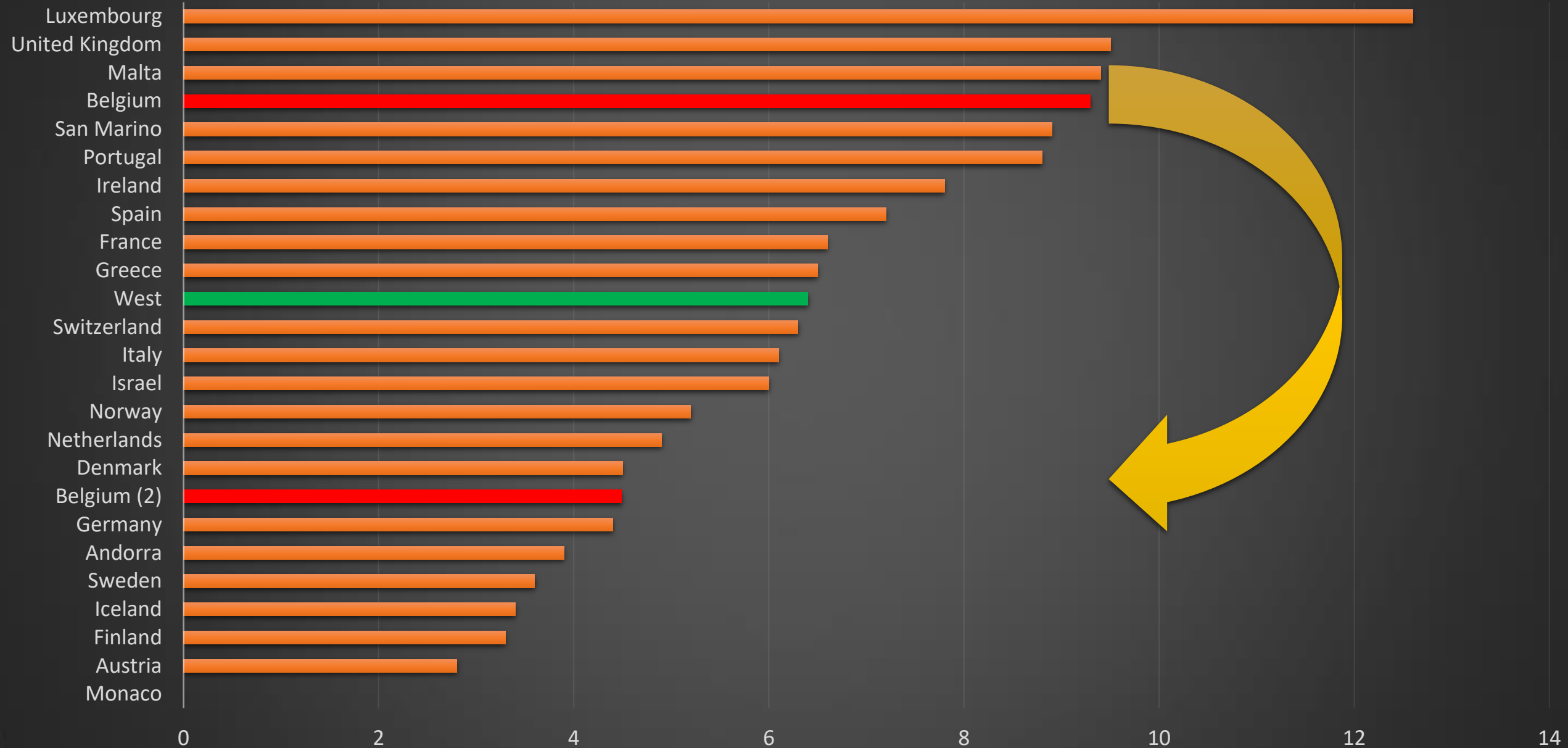
| **Not investing in prevention = not an option!**

| ↗ new diagnoses $\Rightarrow$ ↗↗ total budget

| **Added value of *combined* prevention:**

| ↘↘ new diagnoses $\Rightarrow$ → total budget

New HIV diagnoses and rates per 100 000 population, by country, in 2014 (West European WHO region)



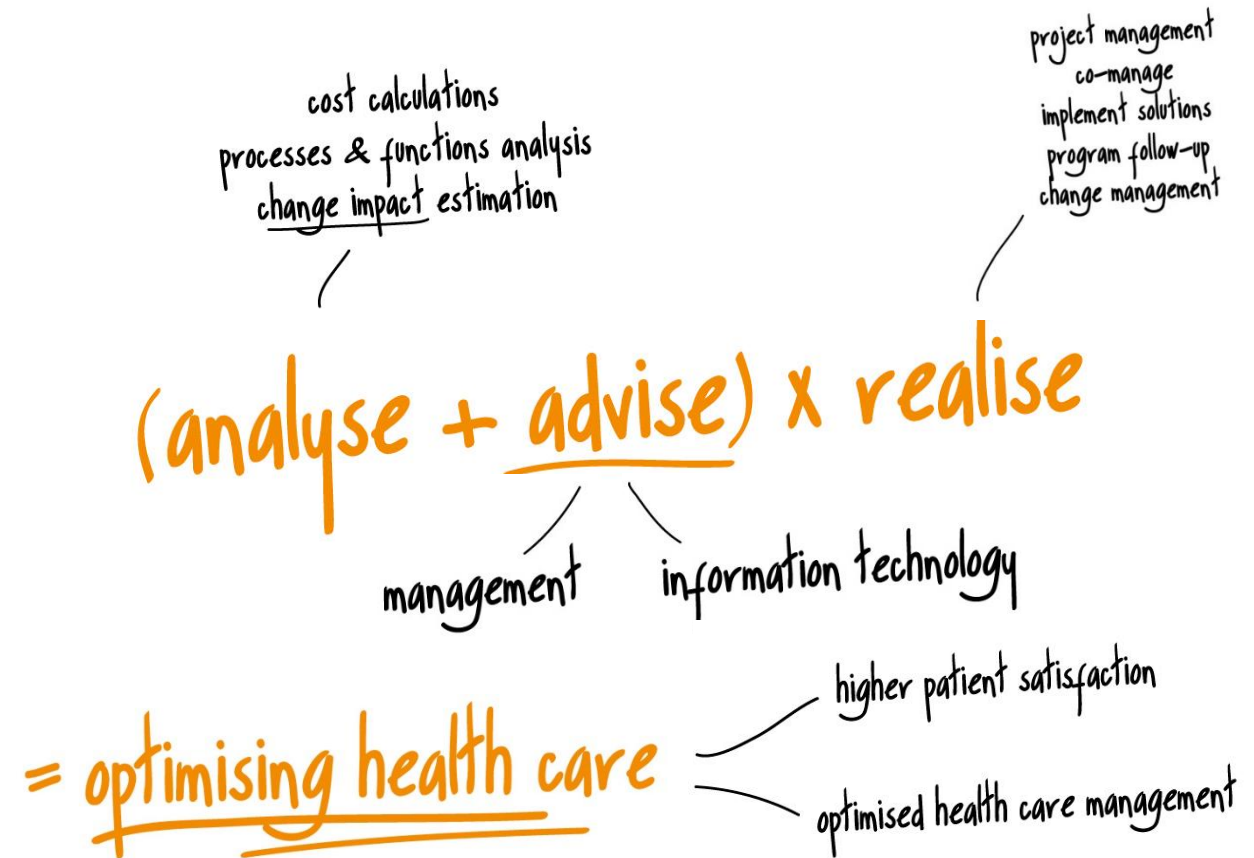
Acknowledgements

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Data sources

| Main data source:

| WIV-ISP. *Epidemiologie van aids en hiv infectie in België. Toestand op 31 december 2014.*

| Additional references:

- | Smit et al. *Future challenges for clinical care of an ageing population infected with HIV: a modelling study.* Lancet Infect Dis 2015;15:810-818
- | Skarbinsky et al. *Human immunodeficiency virus transmission at each stage of the care continuum in the United States.* JAMA Intern Med 2015; 175(4):588-596
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- | Grant et al. *Preexposure Chemoprophylaxis for HIV Prevention in Men Who Have Sex with Men.* N Engl J Med 2010; 363:2587-2599
- | Thigpen et al. *Antiretroviral Preexposure Prophylaxis for Heterosexual HIV Transmission in Botswana.* N Engl J Med 2012; 367:423-434
- | Choopanya et al. *Antiretroviral prophylaxis for HIV infection in injecting drug users in Bangkok, Thailand (the Bangkok Tenofovir Study): a randomised, double-blind, placebo-controlled phase 3 trial.* The Lancet 2013; 381:2083-2090