



Estimating HIV incidence and the undiagnosed HIV population in the European Union/European Economic Area

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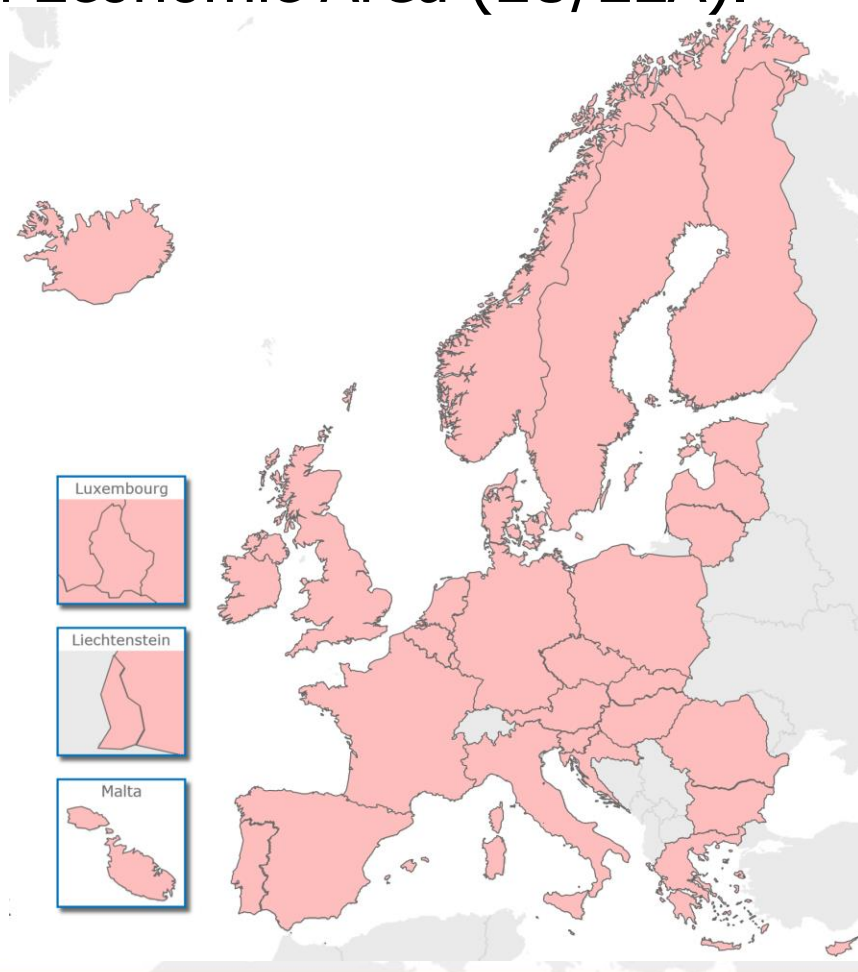
Disclosures

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- WHO
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- Janssen-Cilag
- Viiv Healthcare
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Introduction

- Each year, ca. 30,000 people are newly diagnosed with HIV in the European Union/European Economic Area (EU/EEA).
- 122,000 people living with HIV (PLHIV) estimated to be undiagnosed in 2015, or 15% of all PLHIV¹.
- Aim: estimate number undiagnosed by sub-region and stratified by CD4 cell count.



¹Pharris *et al*, Euro Surveill. 2016

TESSy HIV/AIDS



- Joint database for reporting HIV and AIDS within The European Surveillance System (TESSy).
- Coordinated by the European Centre for Disease Prevention and Control (ECDC) and WHO Regional Office for Europe.
- Data on HIV and AIDS diagnoses from all 53 countries in the European Region.
- Data collection is focussed on:
 - surveillance of HIV and AIDS
 - monitoring of the HIV care continuum

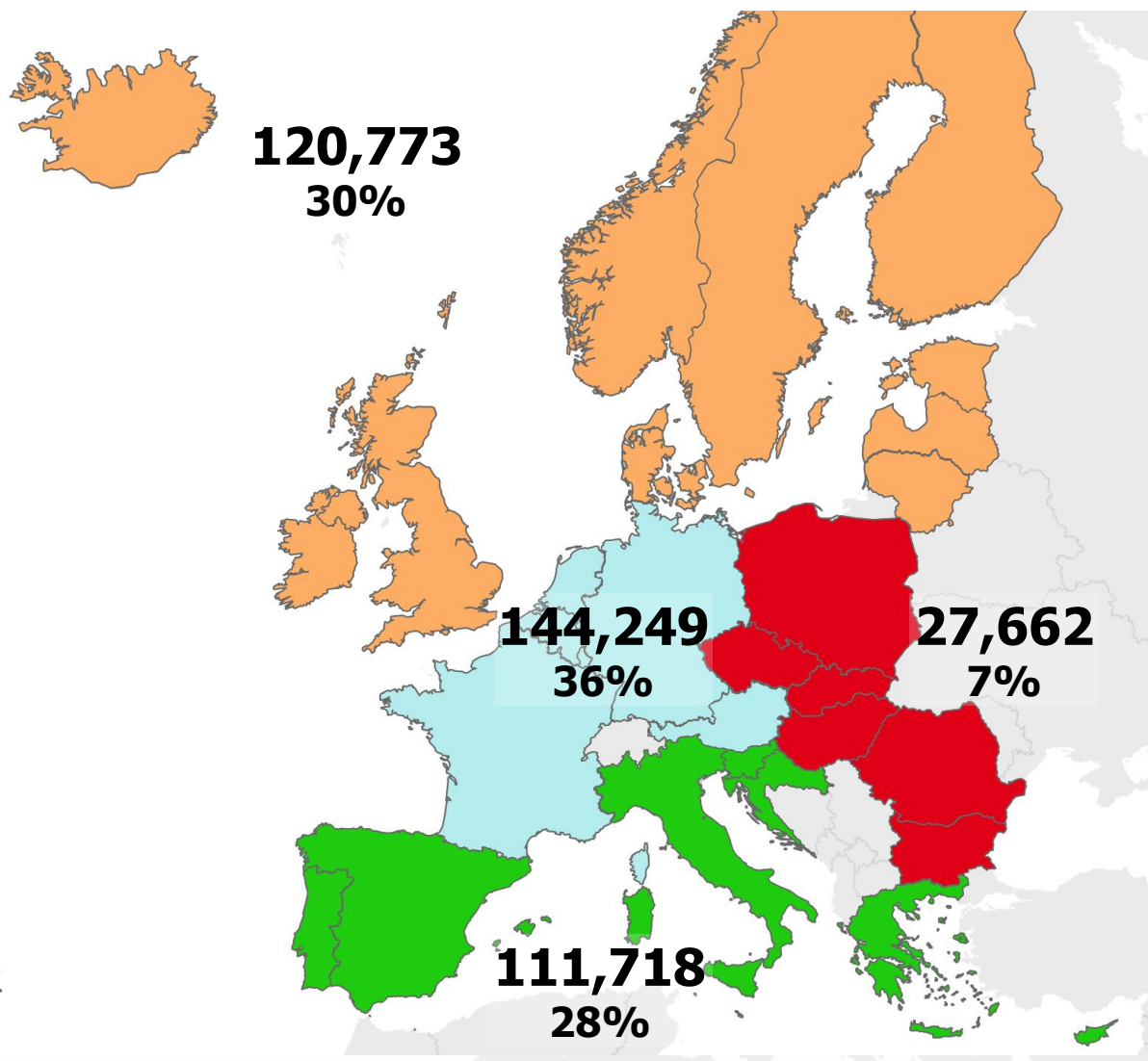
Surveillance data

- Annual data on HIV diagnoses in 2003-2015¹, stratified by:
 - presence of a concurrent AIDS diagnosis (≤ 3 months)
 - CD4 cell count category at diagnosis in people with no concurrent AIDS
- Adjusted for reporting delay and underreporting.
- Countries were grouped in four sub-regions based on the definition used by United Nations².
- Assume measured CD4 distribution to be representative of entire sub-region.

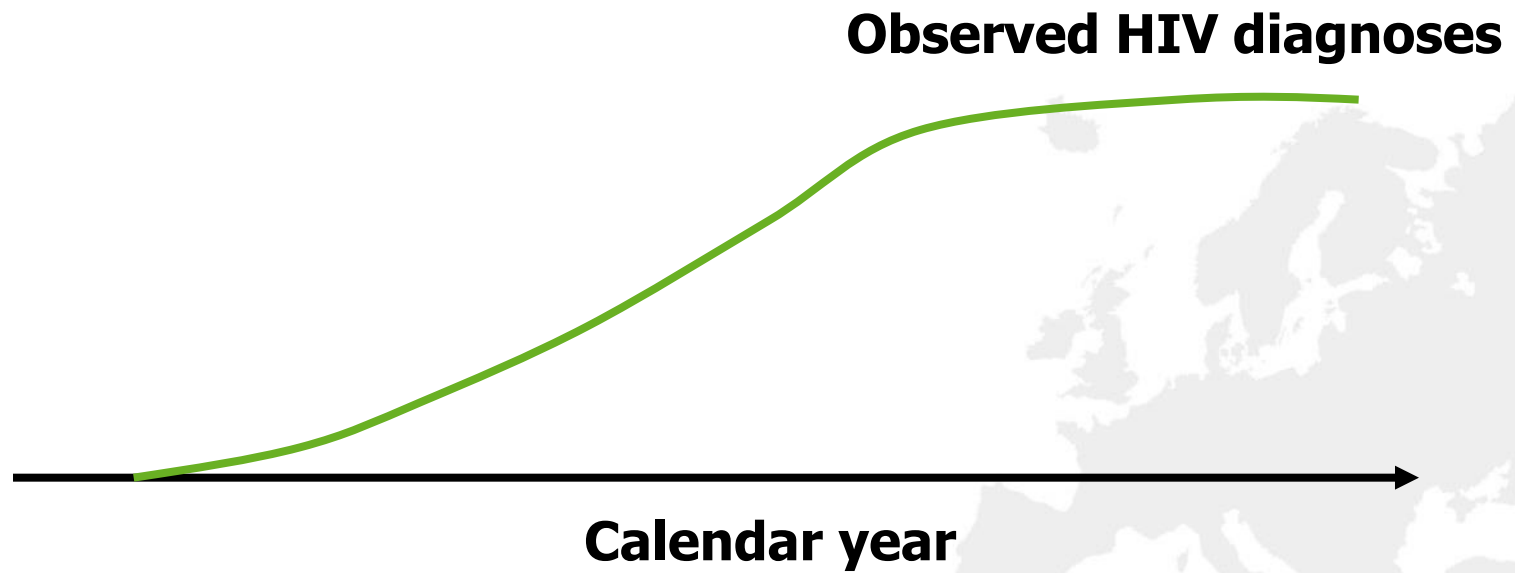
¹ECDC/WHO. HIV/AIDS surveillance in Europe 2015; ²<https://unstats.un.org/unsd/methodology/m49/>

HIV diagnoses 2003-2015

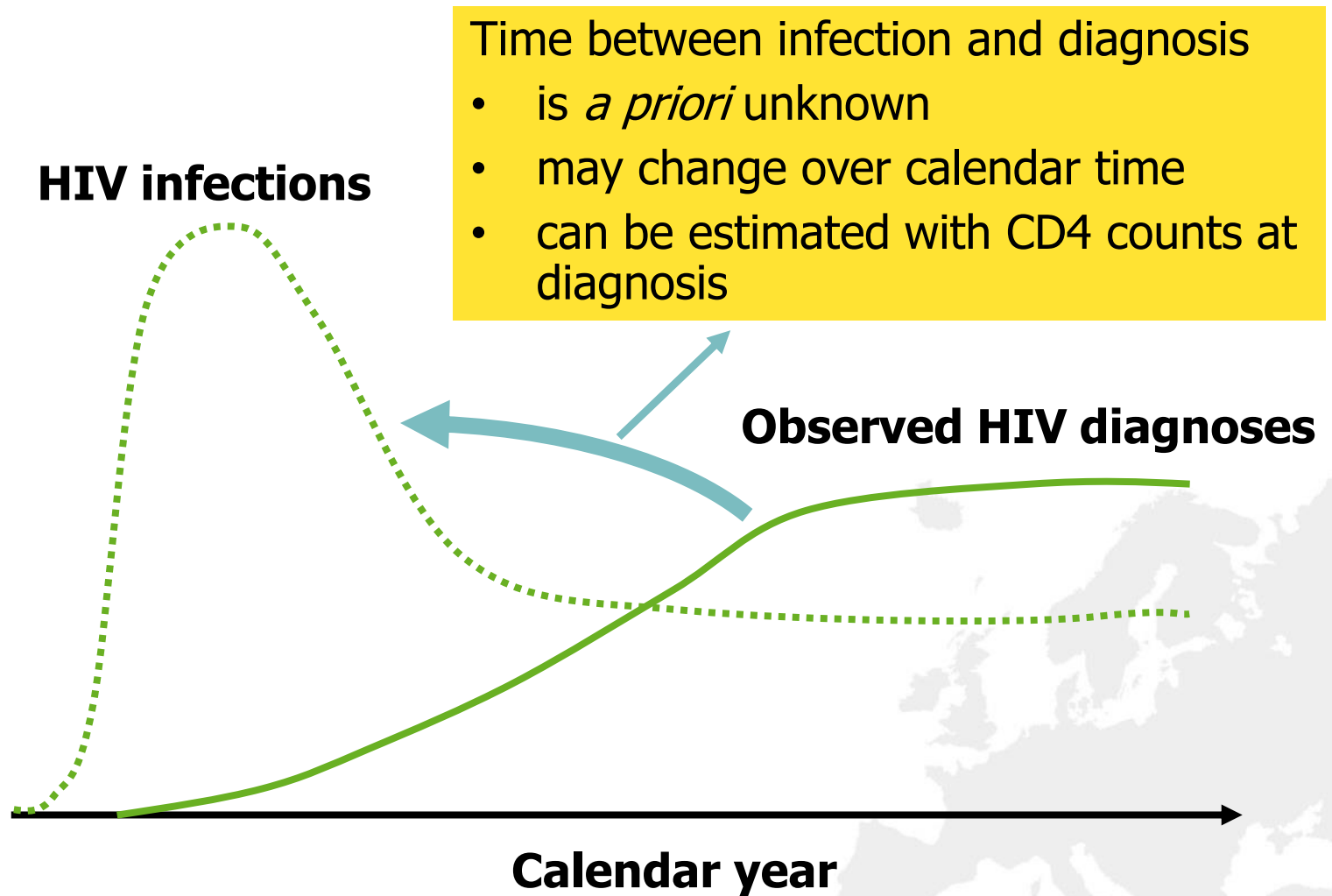
EU/EEA total
404,402



Back-calculation



Back-calculation

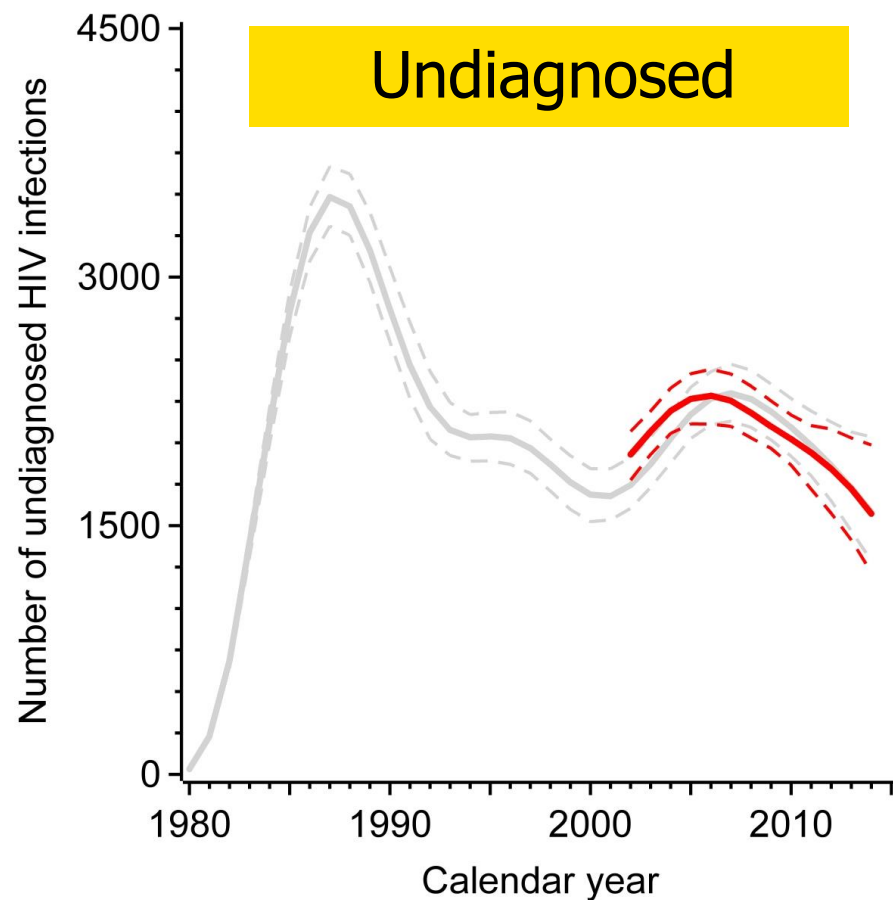
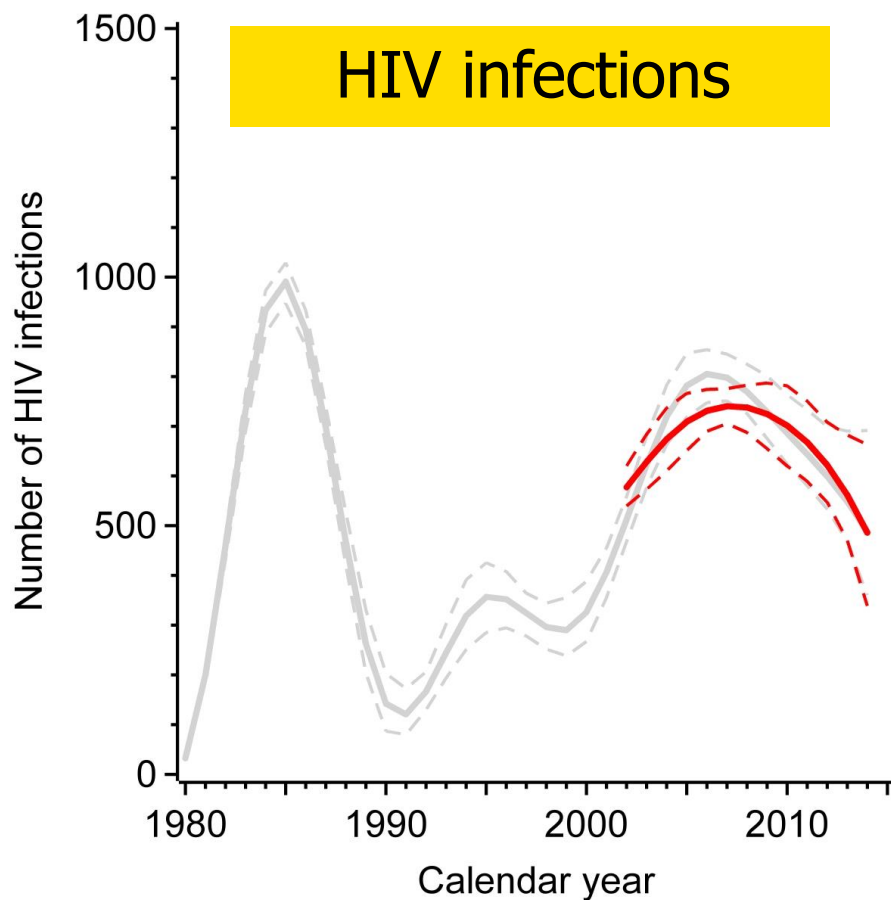


Estimates

- Back-calculation similar to ECDC HIV Modelling Tool¹:
 - annual number of newly acquired HIV infections
 - distribution of time between infection and diagnosis.
- For each calendar year of infection, we calculated the number of people still undiagnosed by the end of 2015.
- No data on HIV diagnoses before 2003:
 - small proportion of infections acquired before 2003 were still undiagnosed in 2015.
 - estimates of HIV infections and number undiagnosed only reliable for most recent calendar years.

¹<https://ecdc.europa.eu/en/publications-data/hiv-modelling-tool>

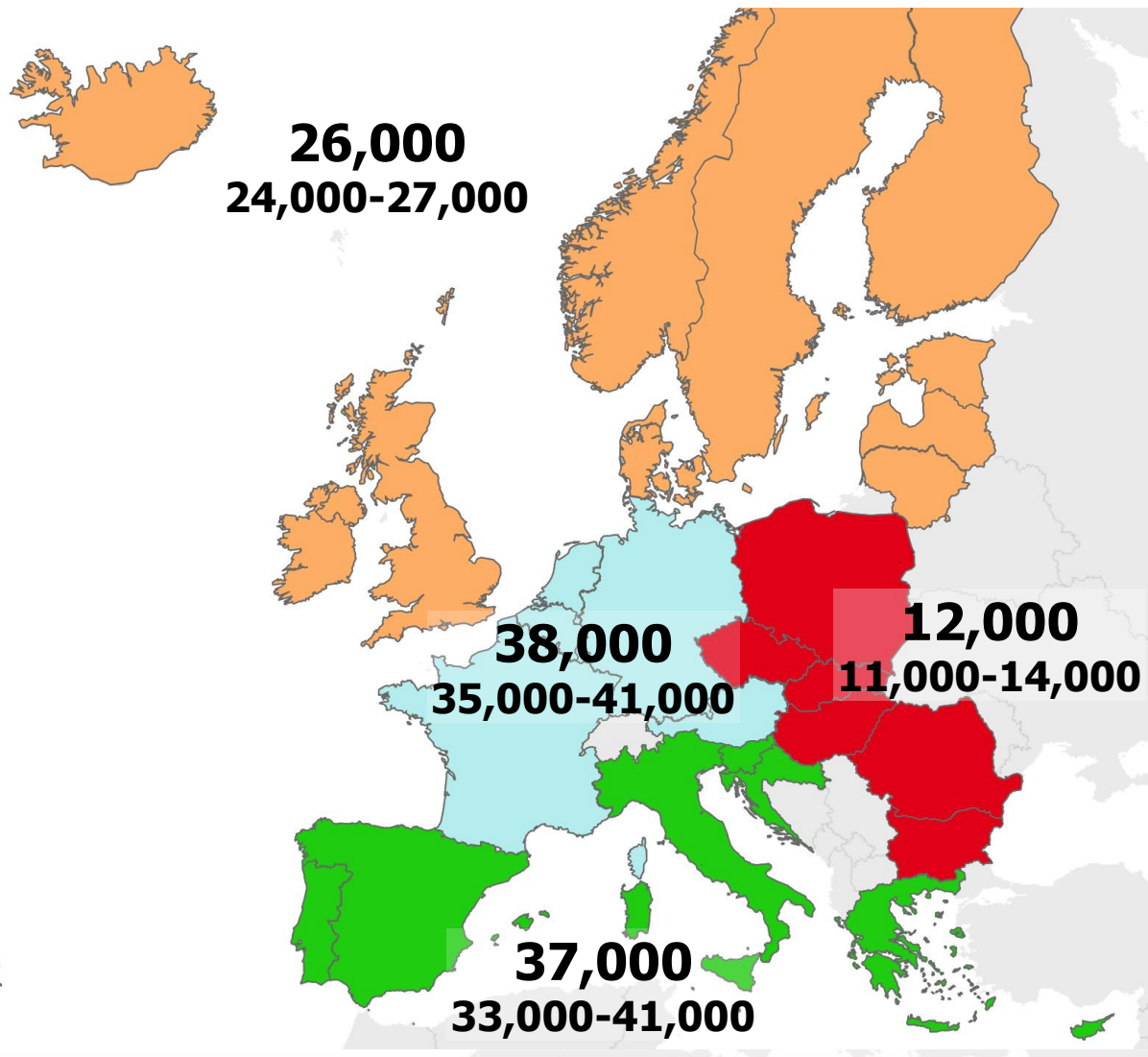
Does it work?



— all ATHENA data

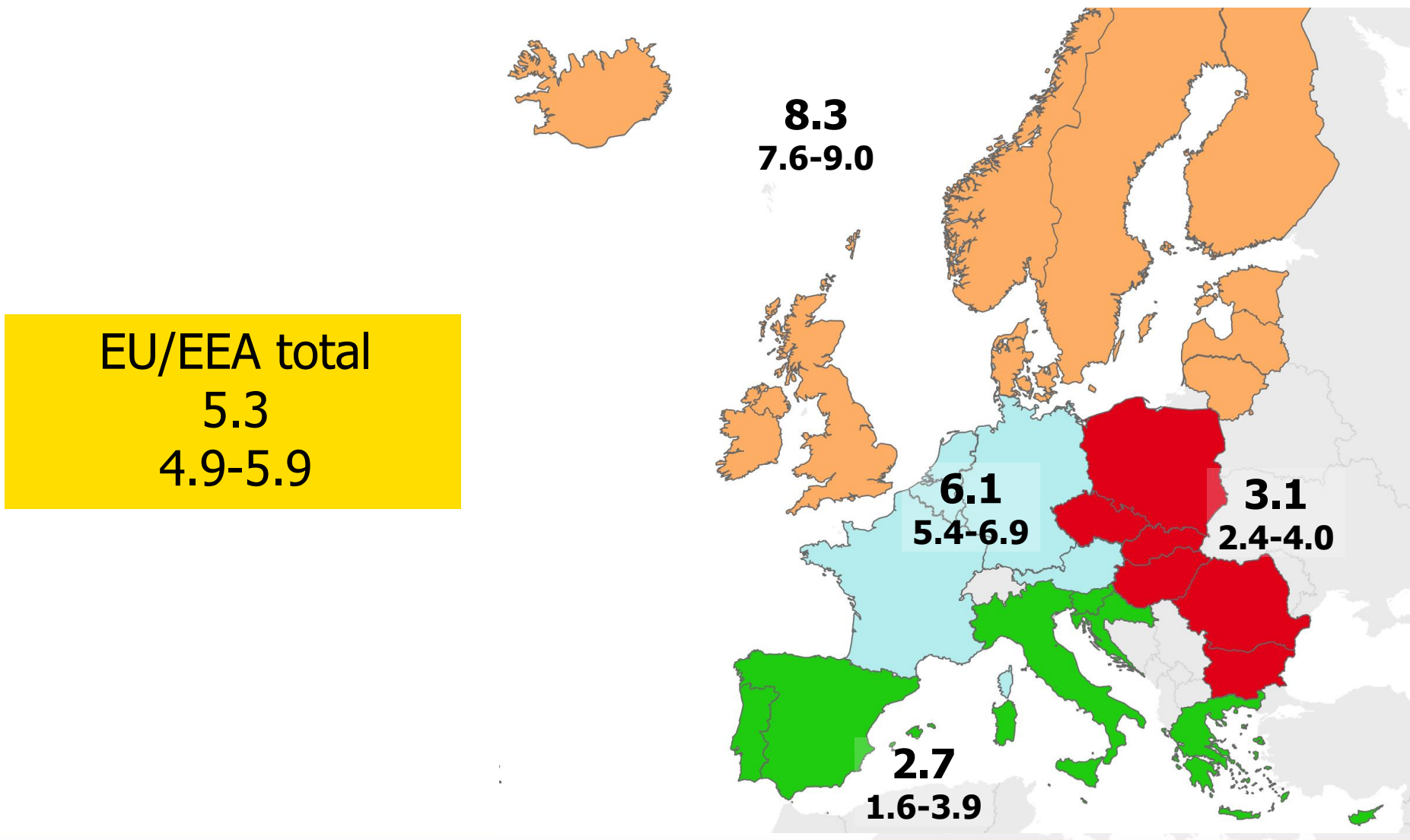
— ATHENA data ≥ 2002

People living with undiagnosed HIV 2015



EU/EEA total
120,000
114,000-126,000

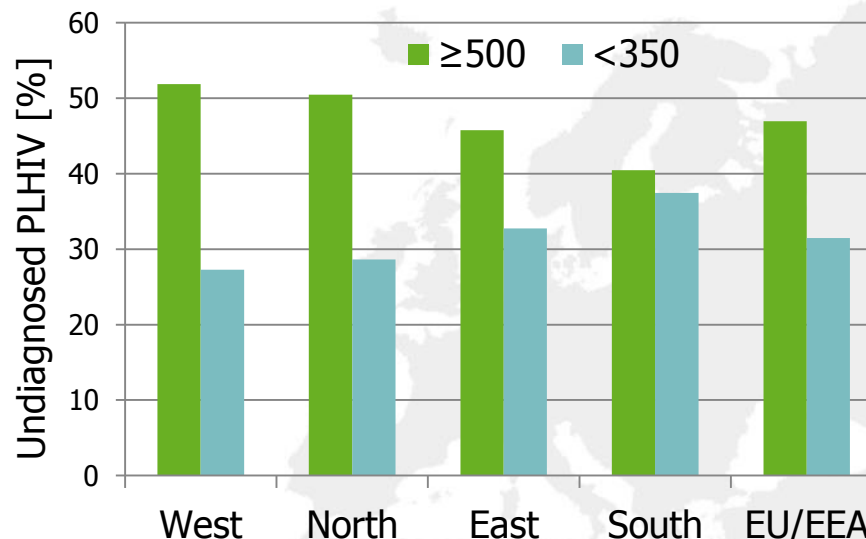
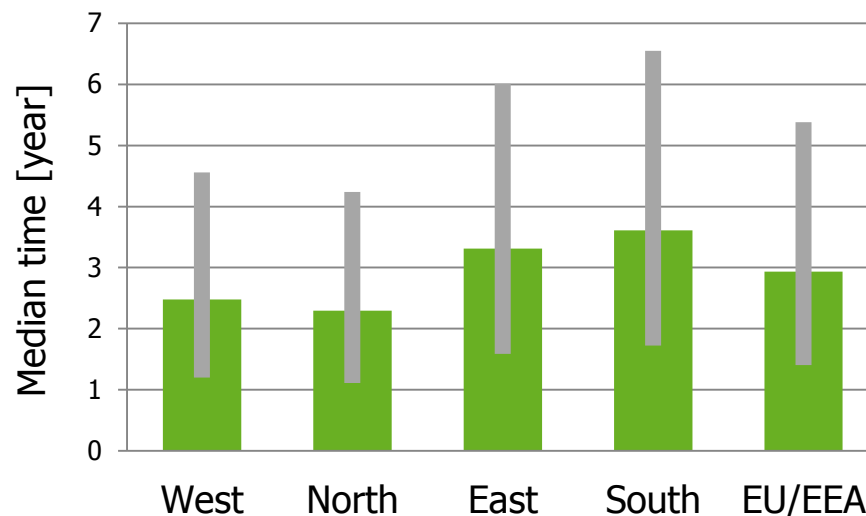
Infection rate per 100,000 population



Time to diagnosis and CD4 cell distribution in undiagnosed PLHIV

Time to diagnosis

EU/EEA	
2.9 year	IQR, 1.4-5.4



CD4 distribution

EU/EEA	
≥500	47%
<350	31%

Strengths and limitations

Strengths

- Only need routine surveillance data.
- No need for historical data.
- May be stimulus for countries to improve data collection.

Limitations

- No estimate of total HIV epidemic: need additional data to estimate all PLHIV.
- No adjustment done for incomplete coverage (Italy, Spain).
- Adjustment for underreporting could only be done for the most recent calendar years.

Conclusions

- A substantial number of people in the EU/EEA are living with undiagnosed HIV.
- Number of undiagnosed PLHIV highest in Western and Southern Europe.
- Infection rates highest in Northern Europe.
- The estimated CD4 distribution suggests that approximately half of them are in an early stage of infection.
- A significant proportion are estimated to have late stage infection, suggesting more efforts are needed to test and diagnose these people.

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